



Anesthesiology and Reanimation Specialists' Society Congress

ARUD2018

BALKAN STATES ANESTHESIA DAYS - V

May 9-12 ,2018

Gaziantep, Turkey

**BOOK of PROCEEDINGS
and ABSTRACTS**

in collaboration with



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Anesthesiology and Reanimation Specialists' Society Congress



BOOK OF PROCEEDINGS AND ABSTRACTS

**BALKAN STATES ANESTHESIA DAYS – V
GERIATRIC ANESTHESIA AND INTENSIVE CARE**

**Gaziantep, Turkey
9-12 May
2018**

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Dear Colleagues,

On behalf of the Anesthesiology and Reanimation Specialists' Society (ARUD) and the Organizing Committee it is my great pleasure to invite you to join ARUD2018 Balkan States Anesthesia Days-V Gaziantep, Turkey, May 09 – 12, 2018. This year Balkan States Anesthesia Days is organized by ARUD with the contributions of Albanian Society of Anaesthesia and Intensive Care, The Association of Medical Doctors Anesthesiologist-Reanimatologists in FB&H, Association of Kosovar Anaesthesiologists, Macedonia Society of Anaesthesiologists, Serbian Association of Anaesthesiologists and Intensivists, Bulgarian Society of Anaesthesiology and Intensive Care, Croatian Society for Anaesthesia and Intensive Care, Slovenian Society of Anaesthesiology and Intensive Care Medicine, and Montenegro anesthesiologists.

This year's topic is 'Geriatric Anesthesia and Intensive Care'. Our Scientific Committee has put together a comprehensive and clinically relevant programme that will update you on the latest standards and innovations in geriatric anesthesia and intensive care. On the other hand, we will have the opportunity to discuss the findings of our latest clinical and experimental studies with experts on the subject.

Of course, you are also welcome to discover the city of gastronomy Gaziantep, the magical stop of historical Silk Road which reflects the spirit of Turkey. A city whose roots go back more than ten thousands years, that reflects the power of Mesopotamia. Don't go home without visiting the largest mosaic museum in the world - the Zeugma Mosaic Museum, going round the old streets and restored historical Antep houses, sampling the typical local dishes, kebabs and desserts, and rounding off your meal with some menengiç (terebinth) "coffee", or some zahter (thyme) tea.

We are aiming at organizing a Congress which is both socially satisfying and scientifically enriching. We look forward to seeing you in Gaziantep to have an energetic and serene Congress.

Prof. Meral Kanbak, MD
Congress Chair
President of ARUD

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Prof. Dusanka Janjevic, MD, PhD	Asst. Prof. Jasmina Smajic, MD, PhD

All the committee members are listed in alphabetical order

SCIENTIFIC PROGRAM

May 09, 2018 Wednesday

09:00-10:00	Opening ceremony	<i>Meral Kanbak (Turkey)</i>
10:00-10:30	Coffee break	
10:30-11:00	Conference I	<i>Meral Kanbak (Turkey), Güner Dağlı (Turkey)</i>
	Aging society and Health in Turkey	<i>İsmail Tufan (Turkey)</i>
11:00-12:15	Panel I: Challenges in the preoperative care in the geriatric patient	<i>Andrijan Kartalov (Macedonia), Anış Arıboğan (Turkey)</i>
	Preoperative risk stratification and methods to reduce risk	<i>Meldijana Omerbegovic (Bosnia-Herzegovina)</i>
	Timing of surgery	<i>Nurdan Bedirli (Turkey)</i>
	Preoperative evaluation: Which tests?	<i>Peter Poredos (Slovenia)</i>
	Preoperative journey through the organs:The effect of aging	<i>Namık Özcan (Turkey)</i>
12:15-13:15	Lunch	
13:15-14:15	Panel II: Optimal perioperative assessment of the geriatric patient	<i>Maja Sostaric (Slovenia), Suna Gören (Turkey)</i>
	From anesthesiologist's perspective	<i>Dusanka Janjevic (Serbia)</i>
	From surgeon's perspective	<i>Gökhan Demirkıran (Turkey)</i>
	From geriatrician's perspective	<i>Zeynel Abidin Öztürk (Turkey)</i>
14:15-15:15	Panel III : Geriatric trauma patient	<i>Vojislava Neskovic (Serbia), Fatma Sarıcaoğlu (Turkey)</i>
	Intraoperative problems and management in the geriatric patient	<i>Iztoc Potocnik (Slovenia)</i>
	Joint replacement and fractures	<i>Vladimir Vrsajkov(Serbia)</i>
	Anticoagulated geriatric trauma patient	<i>K. Sanem Çakar Turhan (Turkey)</i>
15:15-15:45	Coffee break	
15:45-17:00	Panel IV: Important points in elderly patient	<i>Hektor Sula (Albania), Ömer Kurtipek (Turkey)</i>
	The physiology of the aging process.	<i>Rudin Domi (Albania)</i>
	Frailty: Physiology, diagnosis	<i>Tuğhan Utku (Turkey)</i>
	Polipharmacy in the elderly	<i>Ayşe Karcı (Turkey)</i>
	Comorbidity and Multimorbidity in the elderly	<i>Mukadder Orhan Sungur (Turkey)</i>

May 10, 2018 Thursday

08:30-09:30	Panel V: Anaesthesia in the geriatric outpatient	<i>Dusanka Janjevic (Serbia), Kamil Toker (Turkey)</i>
	When should the elderly patient not be ambulatory?	<i>Igli Zhilla (Albania)</i>
	Regional anaesthesia in the geriatric outpatient	<i>Atanas Sivevski (Macedonia)</i>
	General anaesthesia in the geriatric outpatient	<i>Gözde Bumin Aydın (Turkey)</i>
9:30-10:15	Pro/Con : Advanced age and ICU admission	<i>Necmettin Ünal (Turkey), Fatma Aşkar (Turkey)</i>
	Advanced age is an indication for ICU admission	<i>Birgül Büyükkıdan Yelken (Turkey)</i>
	Advanced age is not an indication for ICU admission	<i>Dilek Memiş (Turkey)</i>
10:15-10:45	Coffee break	
10:45-12:00	Panel VI: Anaesthesia in the geriatric patient	<i>Hasib Lukac (Montenegro), Jülide Ergil (Turkey)</i>
	Geriatric Anesthesiology; Where have we been and where are we going?	<i>Nevriye Salman (Turkey)</i>
	Checklists for optimal perioperative management	<i>Nuray Altay (Turkey)</i>
	Perioperative management to reduce postoperative complications	<i>Dilek Erdoğan Arı (Turkey)</i>
	Blood and fluid management in the geriatric patient	<i>Jasmina Smajic (Bosnia-Herzegovina)</i>
12:00-13:00	Lunch	
13:00-14:15	Panel VII: Is advanced age too old	<i>Ülkü Aypar (Turkey), Ljubica Pejakov (Montenegro)</i>
	Old organs for transplantation	<i>Jasna Uranjek (Slovenia)</i>
	Aged anaesthesiologists	<i>Canan Atalay (Turkey)</i>
	Older mother giving birth	<i>Vlatka Sotosek Tokmadzic (Croatia)</i>
	Superelderly: outcome and perioperative management	<i>Filiz Üzümcügil (Turkey)</i>
14:15-14:45	Coffee break	
14:45-15:45	Panel VIII: Geriatric anesthesia for nonoperating room procedures	<i>Ludmilla Nazirova (Uzbekistan), Mustafa Aksoy (Turkey)</i>
	Sedation and monitored anesthetic care in the elderly	<i>Nesil Coşkunfırat (Turkey)</i>
	Cardiovascular interventions (TAVR, TEVAR, EVAR)	<i>Seyhan Yağar (Turkey)</i>
	Neurovascular intervention (CAS, Cerebral aneurysm)	<i>A. Gülsün Pamuk (Turkey)</i>

May 11, 2018 Friday

08:30-09:45	Panel IX: Problems and solutions for the elderly	Jasmina Smajic (Bosnia-Herzegovina), Zühal Aykaç (Turkey)
	Anesthesia and elderly brain	Jasmina Bozic Markovic (Slovenia)
	Early postoperative delirium	Elif Ayşe Çizmeci (Turkey)
	Gerontechnology: Don't miss the train, but which is the right wagon	İsmail Cinel (Turkey)
	Ethical and legal issues of geriatrics	Osman Ekinci (Turkey)
09:45-10:45	Panel X: Neuropsychological dysfunction in the geriatric patient	Andrijan Kartalov (Macedonia), Ateş Duman (Turkey)
	Does anesthesia/ surgery accelerate the course of dementia?	Berna Kaya Uğur (Turkey)
	Drugs used in treating dementia and potential perioperative interactions	Ertuğrul Kılıç (Turkey)
	Ambulatory anaesthesia/analgesia and cognitive dysfunction	Ezgi Erkıılıç (Turkey)
10:45-11:15	Coffee break	
11:15-12:30	Panel XI: Monitoring in the elderly	Sahmurad Takirov (Uzbekistan), Aslı Dönmez (Turkey)
	Hemodynamic monitoring	Vojislava Neskovic (Serbia)
	Cerebral oximetry or biomarkers: Is effective to predict postoperative cognitive outcome	Slavenka Straus (Bosnia-Herzegovina)
	How to achieve "black belt" in neuromuscular monitoring?	Janez Kompan (Slovenia)
	Temperature monitoring and perioperative Thermoregulation	Süleyman Ganıdağlı (Turkey)
12:30-13:30	Lunch	
13:30-14:30	Panel XII: Pain management in the elderly patient	Feyhan Ökten (Turkey) Altan Şahin (Turkey)
	Pain management in geriatric patients	Altan Şahin (Turkey)
	Pain services and palliative medicine - an integrated approach to pain management	Handan Birbiçer (Turkey)
	Pain control for the ambulatory elderly	Didem Akçalı (Turkey)
14:30-15:30	Panel XIII: Nutrition in the elderly	Ahmet Coşar (Turkey), Lale Karabıyık (Turkey)
	Malnutrition and sarcopenia in the elderly population	Pınar Zeyneloğlu (Turkey)
	Nutritional support in the elderly	Lale Karabıyık (Turkey)
	Neuronutrition	İşıl Özkoçak Turan (Turkey)
	Immunonutrition	Seda Banu Akıncı (Turkey)
15:30-16:00	Coffee break	

16:00-16:30	Conference II: Antiaging	<i>Turgay Öcal (Turkey), Haluk Gümüş (Turkey)</i>
	Who is old? I know what it is to be young: Antiaging products	<i>Mehtap Özcan (Turkey)</i>
16:30-17:00	Closing ceremony	<i>Meral Kanbak (Turkey)</i>

May 12, 2018 Saturday

09:00-10:00	Panel XIV: Rational drug use	<i>Orhan Kanbak (Turkey), Tülin Gümüş (Turkey)</i>
	Why rational drug use? Rational drug use in elderly	<i>Aysun Anıay Yılbaş (Turkey) Başak Akça (Turkey)</i>
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Gülay Kip¹, *Hakan Kartal², Faruk Metin Çomu³, Yücel Polat⁴, Mustafa Arslan⁵, Ayşegül Küçük⁶

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Mustafa Said Aydoğan, Muharrem Ucar

Department of Anesthesiology and Reanimation, Faculty of Medicine,

Inonu University, Malatya 44280, Turkey

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Ankara Numune SUAM Anesthesiology and Reanimation Department

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SBU Türkiye Yüksek İhtisas Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara, TURKEY

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Mukadder Sanlı¹, Gulay Erdogan Kayhan²

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³Department of Urology, University of Health Sciences Antalya Training and Research Hospital, Antalya, Turkey

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Hacettepe University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey

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¹Department of Anaesthesiology and Reanimation, Baskent University School of Medicine, Ankara, Turkey
²Department of Obstetrics and Gynecology, Baskent University School of Medicine, Ankara, Turkey

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¹ Mugla Sıtkı Kocman University Training and Research Hospital, Anesthesiology and Reanimation Department, Mugla, Turkey	
² Mugla Sıtkı Kocman University Training and Research Hospital, Urology Department, Mugla, Turkey	

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¹ Ankara Numune Education and Research Hospital, Department of Anesthesiology and Reanimation	
² Ankara Numune Education and Research Hospital, Department of Critical Care	

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<u>Mehmet Burak Eşkin</u> ^{1a} , Mehmet Özgür Özhan ^{1b}	
¹ M.D., Specialist of Anesthesiology and Reanimation	
^a Gülhane Training and Research Hospital, Ankara	
^b Private Çankaya Hospital, Ankara	

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Nilgün Şahin¹, Cihan Döğür¹, Eyüp Sarı²
¹Anesthesiology and Reanimation, Dr. Sami Ulus Education and Research Hospital, Ankara, Turkey.
²Pediatrics, Dr. Sami Ulus Education and Research Hospital, Ankara, Turkey.
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Murat Konak¹, Bahar Oc², Oguzhan Arun², Ahmet Sert³, Hanifi Soylu⁴, Ates Duman², Mehmet Oc⁵
¹Assistant Professor of Pediatrics & Neonatologist, Department of Pediatrics, Division of Neonatology, Selcuk University, Konya, Turkey.
²Selcuk University, School of Medicine, Anesthesiology and Reanimation, Selcuklu, Konya, Turkey
³Associate Professor of Pediatrics & Pediatric Cardiologist, Department of Pediatrics, Division of Pediatric Cardiology, Selcuk University, Konya, Turkey
⁴Professor of Pediatrics & Neonatologist, Department of Pediatrics, Division of Neonatology, Selcuk University, Konya, Turkey
⁵Selcuk University, School of Medicine, Department of Cardiovascular Surgery, Selcuklu, Konya, Turkey
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¹Selcuk University, School of Medicine, Anesthesiology and Reanimation, Selcuklu, Konya, Turkey
²Assistant Professor of Pediatrics & Neonatologist, Department of Pediatrics, Division of Neonatology, Selcuk University, Konya, Turkey.
³Associate Professor of Pediatrics & Pediatric Cardiologist, Department of Pediatrics, Division of Pediatric Cardiology, Selcuk University, Konya, Turkey
⁴Professor of Pediatrics & Neonatologist, Department of Pediatrics, Division of Neonatology, Selcuk University, Konya, Turkey
⁵Selcuk University, School of Medicine, Department of Cardiovascular Surgery, Selcuklu, Konya, Turkey
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Fatma Kavak Akelma
¹Department of Anesthesiology, Health Sciences University Ankara EZH, Teaching and Research Hospital, Ankara, Turkey
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Zeynep Cura¹, Ates Duman¹, Bahar Oc¹, Oguzhan Arun¹, Mehmet Oc²
Selcuk University Faculty of Medicine, Department of ¹Anesthesiology and Reanimation, ²Cardiovascular Surgery
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SBU Turkiye Yuksek Ihtisas Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara, TURKEY
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Fethi Gül
Marmara University Pendik Education and Research Hospital,
Department of Anesthesiology and Reanimation, Istanbul, Turkey

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<u>Başak Altıparmak</u> ¹ , Hemra Çil ² , Nalan Çelebi ³	
¹ Muğla Sıtkı Koçman University Training and Research Hospital, Department of Anesthesiology and Reanimation	
² University of California, San Francisco, Department of Orthopaedic Surger/Spine Center	
³ Hacettepe University, Department of Anesthesiology and Reanimation	
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Department of Anaesthesiology and Reanimation, Isparta, Turkey	
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Dumlupınar University Medical School, Department of Anesthesiology & Pain Medicine, Kutahya, Turkey	
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Cumhuriyet University School of Medicine Department of Anesthesiology and Reanimation Sivas, Turkey	
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Cumhuriyet University School of Medicine Department of Anesthesiology and Reanimation Sivas/Turkey	
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<u>Sedat Akbas</u> ¹ , Ahmet Selim Ozkan ¹ , Mehmet Fatih Korkmaz ²	
¹ Department of Anesthesiology and Reanimation, Inonu University Faculty of Medicine, Malatya, Turkey	
² Inonu University Faculty of Medicine, Department of Orthopedics and Traumatology	
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<u>Orhan Binici</u>	
Anesthesiology and Reanimation Department, Harran University Medical Faculty	

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<u>Sedat Saylan</u>	
Karadeniz Technical University Faculty of Medicine, Department of Anesthesiology and Reanimation, Trabzon, TURKEY	
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¹ Sakarya University, Medical Faculty, Department of Anaesthesiology and Reanimation, Sakarya, Turkey	
² Sakarya University, Medical Faculty, Department of Cardiovascular Surgery, Sakarya, Turkey	
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Turkey Advanced Speciality Education and Research Hospital, Department of Intensive Care Unit	
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¹ Şanlıurfa Education and Training Hospital, Anesthesiology and Reanimation Department	
² Akdeniz University Hospital, Anesthesiology and Reanimation Department	
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Department of Cardiology, University of Gaziantep	
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SBU Yıldırım Beyazıt Education and Research Hospital Dep. of Anesthesiology and Reanimation Ankara	

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Ministry of Health Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation Department Ankara, Turkey	
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<u>Melike Korkmaz Toker</u> ¹ , Basak Altiparmak ¹ , Ayse Gul Karabay ²	
¹ Mugla Sıtkı Kocman University Training and Research hospital, Anesthesiology and Reanimation Department, Mugla, Turkey	
² OtaJineMed Private Hospital, Anesthesiology Clinic, Istanbul, Turkey	
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University of Health Sciences Diskapi Yildirim Beyazit Training and Research Hospital Department of Anesthesia and Reanimation	
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Ankara Atatürk Training and Research Hospital, Anesthesiology and Reanimation Department	
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Reyhan Arslantas ¹ , <u>Pelin Corman Dincer</u> ²	
¹ University of Health Sciences, Kartal Lütfi Kırdar Training and Research Hospital, Anesthesiology and Reanimation Clinic, Turkey	
² Marmara University Pendik Training and Research Hospital, Anesthesiology and Reanimation Department, Turkey	
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¹ Ankara Yıldırım Beyazit University Anesthesiology and Reanimation Department	
² Ankara Atatürk Training and Research Hospital Anesthesiology and Reanimation Department	
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Karadeniz Technical University, Faculty of Medicine, Department of Anesthesiology and Intensive Care, Trabzon, Turkey	
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Seher Yanatma, Reyhan Polat, Murat Sayın

University of Health Sciences, Diskapi Yildirim Beyazit Education and Research Hospital, Ankara

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Savas Altinsoy, Gozde B. Aydin, Gulden Utebey, Julide Ergil

Anesthesiology and Reanimation Clinique, University of Health Sciences Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey

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 Dr AY Ankara Oncology Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara

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 Süleyman Sari¹, Ő.Mustafa Aksoy², Abdülkadir But³
¹Yozgat City Hospital / Department of Anesthesiology and Reanimation, Yozgat, Turkey
²Atatürk Training and Research Hospital / Department of Anesthesiology and Reanimation, Ankara, Turkey
³Atatürk Training and Research Hospital / Department of Anesthesiology and Reanimation, Ankara, Turkey

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Zeliha Ayhan¹, Mahmut Alp Karahan², Evren Büyükfırat²
 Department of Anesthesiology Birecik state hospital Sanliurfa, Turkey
 Department of Anesthesiology and Reanimation, Harran University Medical Faculty, Sanliurfa, Turkey
 Department of Anesthesiology and Reanimation, Harran University Medical Faculty, Sanliurfa, Turkey

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¹ Emergency and First Aid Program, Vocational School of Health Services KTO Karatay University, Konya, Turkey.	
² Department of Thoracic Surgery, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
³ Department of Department of Anesthesiology and Reanimation, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
⁴ Department of Cardiovascular Perfusion, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
⁵ Department of Cardiovascular Surgery, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
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¹ Emergency and First Aid Program, Vocational School of Health Services KTO Karatay University, Konya, Turkey.	
² Department of Thoracic Surgery, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
³ Department of Emergency Medicine, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
⁴ Department of Anesthesiology and Reanimation, Health Sciences University, Konya Training and Research Hospital, Konya, Turkey.	
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¹ SBU Türkiye Yüksek İhtisas Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara, TURKEY	
² SBU Türkiye Yüksek İhtisas Training and Research Hospital, Department of Cardiovascular Surgery, Ankara, TURKEY	
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SBU Türkiye Yüksek İhtisas Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara, TURKEY	

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Clinic of Anesthesiology and reanimation, Clinical Centar University of Sarajevo, Bosnia and Herzegovina	
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Clinic for Anesthesiology, Reanimation and Intensive Care Unit – KARIL,	
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¹ SBU Kanuni Sultan Süleyman Education and Training Hospital, Department of Anesthesiology and Reanimation, İstanbul	
² SBU Kanuni Sultan Süleyman Education and Training Hospital, Department of Orthopedics and Traumatology, İstanbul	

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Department of Anesthesiology and Reanimation, Inonu University School of Medicine, Malatya, Turkey	
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Baskent University Istanbul Hospital, Turkey, Celal Bayar University, Manisa, Turkey	
Anesthesiology And Reanimation Department	

SUMMARIES

May 9, 2018, Wednesday

11:00-12:15 Panel I

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Preoperative risk stratification and methods to reduce risk	Meldijana Omerbegovi� (Bosnia-Herzegovina)
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PREOPERATIVE RISK STRATIFICATION AND METHODS TO REDUCE RISK

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In the era of accelerated technological and communication advancements, improved and variable public health services with ever present limitations of resources, with continuously growing population of patients of advanced age, there is a necessity of focused appropriate predicting risk factors and reducing prevalence of adverse events and effects in the perioperative period by optimization of the patient condition and the whole process of anaesthesia and surgical procedure.

Introduction

Risk stratification as a complex process of evaluation of risk factors with aim of influencing the outcome of the surgery and anesthesia by reducing risk and balancing adverse-benefit effects always in favorable manner is the first step in the preoperative assessment of the patients scheduled for surgical treatment(1). Perioperative risk comprise risks related to general condition of the patient, comorbid states and medication, risks of surgical procedure and risks related to postoperative care while the most important effects of risk stratification encompass prediction of risk, outlining patient-specific plans for the treatment tailored to their conditions and prehabilitation.

Overview of risk factors

Surgical procedure associated risks are mostly attributable to physiologic stress response to trauma with variable magnitude and duration, depending on the extensiveness and duration of surgery (2). Surgical risk factors are related to the urgency, extensiveness, type and duration of the procedure and they are divided into low-risk, intermediate-risk and high-risk according to the estimation of cardiac events in thirty days after surgery.

Patient related risks comprise patient's characteristics, comorbid states and specific medications, habits that may influence the general health conditions.

Patients of advanced age require extensive perioperative care as aging produces physiological changes in all organ systems with a decrease of functional reserve and tolerance to demands of surgical procedure.

Overview of risk stratification systems

Risk stratification systems have evolved in the last decades from the most applied simple classification of American Society of Anaesthesiologist (ASA) to various systems assessing cardiovascular status such as Revised Cardiac Risk Index (RCRI) and the National Surgical Quality Improvement Program (NSQIP) risk index (3,4,5). While ASA classification is considered inaccurate and inconsistent depending on practitioner, for both cardiac indices the main outcome assessed is the risk of major cardiac event, myocardial infarction or cardiac arrest. Among the disadvantages of cardiac risk indices for the patients scheduled for noncardiac surgery, the most important are discrepancy of the definitions of myocardial infarction, variable including of the risk of operative procedure, omitting some comorbidities and functional status as variables. Recently the Task force of the European Society of Anesthesiologists has published evidence-based clinical guidelines and recommendations for the preoperative evaluation of adult patients scheduled for non-cardiac surgery with covering a wide range of disease conditions, medication and preoperative testing (6).

Preoperative assessment of cardiac risk should include estimation of functional capacity, testing of cardiac disease, non-invasive testing of ischaemic heart disease and in rare situation invasive coronary angiography.

Besides the process of individualized cardiac risk assessment taking in account estimated risk of surgical interventions, the guidelines recommend measures and medical therapy or interventions for optimization the patient's perioperative condition. Modern assessment of cardiac risk include dynamic tests to identify patients at risk of functional heart failure and inducible myocardial ischaemia. These test could be useful in exclusion low-risk patients but disadvantage is a lack of predictive power in intermediate to high risk patients.

Cardiovascular complications account for almost half of all complications in surgical patients and lead to increased morbidity and mortality in postoperative period (7,8,9).

Identification of uncontrolled comorbid states necessitates optimization or prehabilitation which includes therapeutic measures for management and controlling of altered cardiovascular, pulmonary, hematologic and metabolic parameters.

Additionally, comorbid conditions account for increased prevalence of morbidity and mortality during perioperative period (10).

In the estimation of the risk of perioperative cerebrovascular events in multivariate analysis it has been shown that age, history of myocardial infarction, hypertension, history of cerebrovascular events, acute renal failure, chronic obstructive pulmonary disease and smoking are independent predictors of perioperative cerebrovascular ischemia (11).

In the clinical scenario when there is preexisting pulmonary disease the risk of postoperative pulmonary complications is increased, particularly if habit of smoking is positive. Chronic obstructive pulmonary disease, obesity hypoventilation syndrome and pulmonary hypertension have repercussion on cardiovascular system in terms of increasing the prevalence of morbidity and mortality (12,13).

Impaired renal function accounts for a significant part of the overall risk and it is an independent risk factor for adverse postoperative complications. Development of acute kidney injury reduces long-term survival. The most significant risk factor for postoperative renal failure is preexisting renal disease with decreased glomerular filtration rate and increased serum creatinine, while very common cause is the administration of iodinated contrast media in the perioperative period (14).

Metabolic disorders and diabetes mellitus with multiple derangements such as accelerated atherosclerosis, endothelial dysfunction, altered fibrinolysis, increased thrombocyte aggregation and numerous other changes are very important risk contributors. In the situations of decreased functional status and high risk surgery, additional evaluation is mandatory (15).

Among physiological biomarkers of organ dysfunction clinically most important are natriuretic peptides which are consistent predictors related to postoperative cardiac complications and troponins, important for postoperative surveillance of cardiac condition (16,17). Prevalence of malnutrition among elderly is high and associated with several contributing factors, such as altered metabolism, reduced appetite, use of medication, and comorbidity (18).

Risk factors specific for advanced age

Assessment of risk factors in patients of advanced age necessitates considering some specific issues related to physiologic changes specific for aging. Recently introduced Preoperative Score to Predict Postoperative Mortality (POSPOM) consisting of objective markers such as presence of dementia, diabetes, kidney failure, and heart failure is useful for assessment of perioperative and postoperative risk of mortality, but morbidity and postoperative quality of life are not described (19).

Another frequently used scale is the Charlson Comorbidity Index that takes into consideration pre-existing chronic disease for assessment of patient's 1-year mortality risk and enables discussion on the best possible approach to management of the disease (20).

Although not limited to advanced age, the prevalence of frailty as an increased susceptibility to stressors as a result of decrease in functional reserve of many organ systems is high among the elderly patients, increases with age and may increase the risk of mortality and postoperative complications. The importance of identification of frailty and improved evidence-based care has been emphasized in international consensus guidelines (21).

Therefore, adequate assessment of frailty in the preoperative assessment is of great importance for planning the operative procedure.

In the Cardiovascular Health Study (CHS) frailty phenotype has been proposed with dominant feature of sarcopenia while frailty index was described in the Canadian Study of Health and Aging (CSHA) (22,23). Although these models have been validated in large studies and research area, more suitable for routine care has been shown the comprehensive geriatric assessment (CGA)(24).

Another very important scale specific for elderly patient population is cognitive dysfunction risk score. There are many reasons for developing of cognitive dysfunction which is clinically identified by confusion, and delirium in early postoperative period in elderly patients. Long-term postoperative cognitive dysfunction is common after cardiac surgical procedures. There are numerous scales for assessment of cognitive status in the preoperative period, some of them are Mini Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), Short Blessed Test (SBT) and the Brief Cognitive Battery (BCB) (25,26). It has been documented that dementia increase risk of perioperative morbidity and mortality (27).

Risk reduction strategies

Risk reduction strategies involve pharmacological and interventional approach.

According to abundant literature on the topic of pharmacological effects on decreasing the risk factors in the perioperative period it has been recommended to consider initiation of beta-blocker regimen in patients with known ischaemic heart disease or myocardial ischaemia. Administration of beta-blocker should be determined with avoidance of bradycardia and hypotension, at least one week before the surgical procedure (6,28). Consideration of administration of statins has been recommended for patients undergoing vascular surgery, while consideration of acetylsalicylic acid discontinuation is recommended if the bleeding risks is increased (6,29). In the situations of extensive stress induced ischaemia during non-invasive stress testing individualized perioperative management is recommended with analysis of potential benefit of surgical procedure in comparison with adverse outcome and considering medical therapy with possible coronary revascularization prior the elective surgery.

Patients who could be prone to cerebrovascular ischaemia need continuation of antiplatelet/anticoagulation treatment whenever possible, prevention and treatment of atrial fibrillation, maintaining euglycaemia, maintaining blood pressure control.

In preoperative optimization of patients with obstructive pulmonary disease emphasis is on smoking cessation, education on chest physiotherapy and lung expansion manoeuvres, endurance training of skeletal muscles and nutritional support. Assessment of the risk in patients with obesity-hypoventilation syndrome

necessitates investigation for sleep disordered breathing and pulmonary hypertension along with preoperative initiation of positive airway pressure therapy and planning for postoperative positive airway management in appropriate clinical setting (6). Avoidance of elective surgical procedures in patients with uncontrolled pulmonary hypertension is recommended, since these patients should have optimized therapy before any surgical procedure. In the situation of proceeding to surgery in high risk patients continuation of specific therapy is recommended under the continuous monitoring and initiation inotropes and diuretics in appropriate dose.

It has been shown that the most effective method of decreasing risk of developing contrast induced acute kidney injury might be pre-procedural hydration with intravenous isotonic fluids, with possible consideration of N-acetyl-cysteine as a prophylactic measure, with remark on inconclusive evidence.

Numerous clinical trials have shown possibility of reversal of physical frailty by intervention of strength and balance exercise regimen, with recommendations for protein nutritional support and vitamin D supplementation (30). Experimental administration of hormones and specific medicaments that might have effect in improved structure and function of skeletal muscles still do not give evidence for possible clinical implementation.

Measures that could be considered for optimizing cognitive function include a proactive geriatric consultation, with focus on management of impairment of vision and hearing, deprivation of sleep, immobilization and dehydration.

Conclusion

Development of strategies for risk assessment and optimization for patients of advanced age scheduled for anaesthesia and surgery has been continuously improving and updating in parallel with technological, diagnostic and procedural improvements. Nevertheless, complexity of stress response to surgery could not be replicated by any single test, making the preoperative assessment a challenging process for anesthesiologist, surgeon, the whole operative team and the patient who is in the center of that possibly gratifying medical

treatment which can literally solve critical health situations or at least alleviate chronic health problems.

Although among current risk stratification systems those that assess cardiovascular risks are the most commonly used in everyday clinical practice, what is dictated by overall burden of cardiovascular diseases in the society, other various perioperative risk scores are getting attention. While the risk scores enable allocating patients to specific classes of risk, there should be meticulous evaluation of the history, physical status, risk factors with discussion of the balance between risks and benefits of surgery with the patient and optimization for surgery based on evidence for every individual patient. Although time consuming individual approach to every patient may establish patient-physician trust which is essential for the process of curing and what is in accordance with new paradigm in medical and health care named personalized medicine and value-based medicine.

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TIMING FOR SURGERY

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Advances in surgical and anesthesia techniques resulted in an increasing number of geriatric patients presented surgery. Age alone does not imply the level of function and age alone does not necessarily imply increased perioperative risk. Age has been included a minor predictor in some risk assessment indices. However, increased perioperative risk has been more closely correlated with other factors including the need for emergent surgery and most importantly coexisting disease. Identifying comorbid conditions and ensuring optimal perioperative management is basic step for successful management. Age related major problem is changes in physiology and functional organ reserve of organ systems. Assessing functional capacity can be quite challenging in some elderly patients. Some patients are sedentary and even may have very limited activity not to initiate cardiovascular symptoms. It is important to clarify the level of activity and pattern of decreasing activity or increasing frequency of symptoms while assessing aged patients. Assessing baseline level of function also provides a reference for postoperative outcome. The aim of any procedure should be to return the patient to at least their baseline activity after surgery. At the preoperative period detailed evaluation of cardiovascular system and risk assessment is recommended for patients with or without cardiovascular disease.

Nature and the extent of perioperative testing decided with the aim of proving safe and cost effective perioperative care. Greater evidence is evolving that standard laboratory testing based on patient age is not necessary for low risk procedures. Two principles are important in performing perioperative evaluation of geriatric patient. First progress of many disease is associated with age and common diseases of elderly have a major impact on anesthesia management. Cardiovascular disease, pulmonary disease, and diabestes are particularly predominant in this population. Diagnosis and optimization needs to be overemphasized. Second the degree of functional reserve of specific, pertinent organ system and the patient as a whole before the surgery should be assessed. Laboratory and diagnostic studies, history, physical examination, and determination of functional capacity should attempt to evaluate the patients physiological reserve. Laboratory testing should be guided by patient's history, physical examination, and proposed surgical procedure and should not be based on age alone. The greatest concern of elderly patient is to maintain independence. The most important outcome and overall objective of perioperative care of geriatric population is to speed up recovery and avoid decline.

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PREOPERATIVE EVALUATION: WHICH TESTS?

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Abstract

The portion of elderly in population is growing, therefore anesthetic procedures in aged patients represent a considerable part of a daily anesthesiologist's routine work.

Preoperative evaluation is the key step in the treatment of geriatric surgical patients. Traditional preoperative consultation does not capture the entire pathophysiological and functional profile of older patients. Therefore, additional comprehensive geriatric assessment and frailty assessment contribute substantially to individualization of age-related risk factors for postoperative complications, help target preoperative optimization strategies and improve outcomes.

Introduction

The portion of elderly in population is growing, therefore anesthetic procedures in aged patients represent a considerable part of a daily anesthesiologist's routine work. It has been shown that the percentage of patients aged 65 or more in the surgical population ranges from 40-50% (1). Geriatric population has higher prevalence of comorbidities (even multi-morbidity), which further decreases tolerance to surgical stress and leads to higher perioperative morbidity and mortality. In comparison with younger patients, older people undergoing elective and (particularly) emergency surgery are at higher risk of adverse postoperative outcomes, resulting from combinations of age-related physiological decline, multiple co-morbidity, polypharmacy, cognitive dysfunction and geriatric syndromes, including frailty.

With increasing knowledge and complexity of geriatric medicine more and more geriatricians are involved in perioperative care. However, only major institutions have special geriatric teams, whereas in all other hospitals there is a strong need for geriatric competencies among anesthesiologists.

With age many organ functions become deficient, physiology is altered, which leads to a higher rate of complications, morbidity and cognitive deficits after anesthesia. Therefore, the goal of preoperative anesthesia assessment is to reduce the risk of postoperative

morbidity and eventual persistent need of care. It enables us to inform patients and their relatives about the risks and benefits of having/not having surgery as well as identification and optimization of modifiable risk factors. It includes the definition of the entity of the surgical risk, the anticipation of possible complications and at the same time optimization and planning of preventive strategies.

In recent years a few guidelines have been issued that refer to preoperative evaluation of geriatric patients. (2-4) Some elements were recommended as an essential part of preoperative assessment: cognitive function and mental capacity in decision making, depression, risk of postoperative delirium (POD), alcohol or other substance abuse, cardiac evaluation, risk of postoperative respiratory complications with preventive measures, functional status and risk of fall, frailty, nutritional status with correction of nutritional deficits, chronic medication (potentially inappropriate drugs, polypharmacy), surgical treatment goals (patient's expectations), availability of family and social support. The majority of above mentioned preoperative assessment elements are included in Comprehensive Geriatric Assessment (CGA). With the addition of frailty evaluation they are of extreme usefulness in surgical risk evaluation in older patients and in the decision about surgery. All these data should be used for planning of perioperative course (pre-habilitation or preoperative optimization, effective intraoperative strategies, complications prevention and care after discharge). Thus, preoperative evaluation is a crucial step in decision-making for surgery.

Preoperative geriatric assessment

Perioperative risk defines the likelihood of an adverse outcome resulting from surgery and/or anaesthesia and represents the sum of risk related to both the surgical procedure and the patient's pre-morbid age and pathophysiological condition.

As a result of the combination of aging processes, associated conditions (illness, cognitive decline, frailty and polypharmacy) and genetic factors, functional reserves in elderly are reduced. The entity of this reduction is better depicted by biological age, it expresses the level of fitness and the capability to cope with external stressors.

Widely used American Society of Anesthesiologists (ASA) Physical Status Classification System represents the connection between comorbidities and postoperative complications. However, in the elderly, the impact of comorbidity is being dramatically augmented by the underlying aging processes, additional age-related risk factors and the consequent extreme vulnerability to surgical stress. This means that traditional preoperative evaluation, based on clinical history alone, does not provide sufficient elements to assess surgical risk in these patients' group and more comprehensive tools are needed. In geriatric patients functional, cognitive and sensorial status and frailty should also be part of preoperative evaluation.

In addition to conducting a complete history and physical examination of the patient, the following assessments are strongly recommended:

1. Cognitive ability and capacity to understand the anticipated surgery

The incidence of dementia increases with age, particularly among those over 85 years. Preoperative cognitive status is very important prognostic factor for perioperative morbidity as elderly are particularly vulnerable towards cognitive postoperative complications. Therefore, even for patients without a known history of cognitive impairment or dementia, obtaining a detailed history and performing a cognitive assessment, such as the Mini-Cog is strongly recommended. If the patient has evidence of cognitive impairment based on the

Mini-Cog, consider referring the patient to a primary care physician, geriatrician, or mental health specialist for further evaluation.

Patient has to be able to provide informed surgical consent – he/she has to be able to describe in his/her own words the important features of the discussion, including his or her medical condition and the indications, benefits, risks, and alternatives to surgery.

2. Depression

All geriatric patients should be tested for preoperative depression, as it has been associated with increased mortality, longer postoperative length of stay, higher pain perception and increased postoperative analgesic use. Risk factors for depression among geriatric patients include female sex, disability, sleep disturbance and earlier depression, poor health status, living alone, cognitive impairment and new medical illness (4).

3. Postoperative delirium

Postoperative delirium (POD) is a common complication in elderly patients. For patients at risk for POD, administration of benzodiazepines and antihistamines should be avoided. There are many risk factors for POD with the strongest predisposing factor being preexisting cognitive impairment and dementia. Postoperative delirium is associated with higher mortality and complications, rates of institutionalization, greater costs and use of hospital resources, longer lengths of stay, and compromised functional recovery.

4. Alcohol and other substance abuse/dependence

For the screening of patients for alcohol and substance abuse/dependence the modified CAGE (Cut down, Annoyed, Guilty, Eye-opener) questionnaire can be used. In patients suspicious for any substance abuse perioperative prophylaxis for withdrawal syndromes should be considered. Preoperative alcohol abuse/dependence is associated with increased rates of postoperative mortality and complications, including pneumonia, sepsis and wound infection.

5. Preoperative cardiac evaluation should be performed according to the algorithm for patients undergoing noncardiac surgery.

6. Risk factors for **postoperative pulmonary complications** should be assessed and appropriate strategies for prevention undertaken. In elderly the incidence of postoperative pulmonary complications is about 15%. The consequence of pulmonary complications is longer hospital stay and also higher predicted long-term mortality.

7. Functional status and history of falls

All patients should be assessed for their ability to perform daily activities (functional status) and asked the history about falls. Daily activities include basic (bathing, dressing, toileting, maintaining continence, feeding, transferring), instrumental or intermediate (ability to maintain an independent household: shopping, driving/using public transport, using telephone, doing housework, home repair, laundry, preparing meals, taking medications) and advanced activities of daily living (the ability to fulfill societal, community, and family roles as well as participate in recreational or occupational tasks). Besides this, gait speed should be measured. Any functional limitations should be documented and may prompt perioperative interventions (referral to occupational and/or physical therapy). Also, the history about falls should be documented as approximately one-third of community-dwelling persons over 65 years and one-half of those over 80 years of age fall each year.

8. Frailty score

Frailty as a term exists in medical literature for quite some years, however its popularity has risen only recently. Frailty is a geriatric syndrome of decreased physiologic reserve and resistance to stressors, which leaves patients more vulnerable to poor health outcomes,

including falls, worsening mobility and lower ability of advanced daily living activities, longer hospitalizations, and even death (5). It is a clinically distinct entity from comorbidity and disability. Frailty has been shown to independently predict higher rates of postoperative adverse events, increased length of stay, higher likelihood of discharge to a skilled or assisted-living facility in elderly surgical patients, they are also prone to lower quality of life (6-8).

Frailty has been assessed by different scoring systems (Clinical Frailty Scale, Fried Score or Edmonton Frail Scale), which incorporate indicators such as the number of medications being taken, comorbid conditions, medical interventions, psychosocial issues, cognitive impairment, weight loss, low physical activity, slow gait, weakness, and fatigue. It allows us to identify the underlying causes and plan preoperative corrective actions. A systematic evaluation of biological markers of frailty (hypoalbuminemia, hypocholesterolemia and inflammatory markers such as IL-6, PCR) is also recommendable in preoperative assessment in older patients.

9. Nutritional status

Patient's body height and weight should be documented and body mass index (BMI) calculated, in addition, unintentional weight loss in the last year should be inquired about. Also, baseline serum albumin levels should be measured. Patients with severe nutritional risk are: BMI < 18.5 kg/m², serum albumin < 3.0g/dL (with no evidence of hepatic or renal dysfunction), unintentional weight loss > 10% to 15% within 6 months.

Poor nutritional status is associated with increased risk of postoperative adverse events, mostly infectious complications (surgical site infections, pneumonia, urinary tract infections) and wound complications (dehiscence and anastomotic leaks), and increased length of stay for patients undergoing elective gastrointestinal surgery.

10. Medication history

Patient's complete medication list, including the use of nonprescription agents (over-the-counter medicines, nonsteroidal anti-inflammatory drugs, vitamins, eye drops, topical agents) and herbal products should be documented. Special attention should be put on minimizing the risk for adverse drug reactions by identifying medications that should be discontinued before surgery.

Geriatric patients are more sensitive to the psychoactive effects of medications, including those commonly used in the perioperative period, such as narcotics, benzodiazepines, and antihistamines. Caution must be exercised to minimize the risk of postoperative delirium: consider reducing benzodiazepines when possible, avoid using meperidine for treatment of pain, however pain should be adequately controlled.

Compared with younger adults, elderly individuals are more likely to have impaired renal function and chronic kidney disease. Because many medications are renally cleared, it is critical to adjust dosages to prevent adverse reactions, which should be adjusted based on glomerular filtration rate, not on serum creatinine alone.

With a greater burden of illnesses and diseases, older patients are more likely to regularly take multiple medications. Polypharmacy has been associated with increased risk of cognitive impairment, morbidity, and mortality, increased risk for drug-drug interactions, as well as compromised medication compliance. When possible, nonessential medications should be discontinued perioperatively and the addition of new medications should be kept to a minimum.

11. Treatment goals and expectations

Older adult patients have limited potential to return to fully healthy and independent lives. Hence, choices must be made about what outcomes are most important for them and their families. Frequently, social (living at home, maintaining social activities) and functional goals assume priority over health-related goals (survival) (9).

In the absence of documented preferences, physicians often rely on health care proxies to make decisions for patients (especially end-of-life decisions). Family members, surrogates, and physicians frequently fail to accurately predict patients' treatment preferences. (10) Few patients had ever discussed their preferences with their family members and their physicians. (11) Patients' expectations influence their treatment preferences.

Therefore, treatment goals and plans should be discussed with the patient respecting the patient's preferences and expectations. Also, preferences for specific treatments (resuscitation, treatment withdrawal) should be asked while the patient still has the cognitive capacity to make these decisions. Discussions of the patient's preferences and expectations and ensuing changes should be documented in the medical records. Expected postoperative course and possible complications should be discussed and if relevant, also possible functional decline and need for rehabilitation or nursing home care should be presented.

12. Patient's family and social support system.

Social history should be taken with the emphasis on who will be available to help the elder after the procedure.

13. Appropriate preoperative diagnostic tests focused on elderly patients.

Routine sets of preoperative screening tests are not recommended, except for hemoglobin, renal function tests (BUN and creatinine), and albumin, which are indicated for all geriatric surgical patients. (11) Other diagnostic tests should be performed selectively and limited to higher risk patients who can be identified based on history and physical examination, known comorbidities, and the type of procedure to be performed (12). Minimum criteria for preoperative geriatric assessment according to 2014 AAGBI Guidelines are listed in Table 1. (3) Routine screening tests namely produce low rates of abnormal values in asymptomatic patients and are unlikely to change clinical management for the patient with abnormal values, they also do not strongly predict good or adverse outcomes. (12).

Normal laboratory values obtained up to 4 months before surgery can be used safely as preoperative tests as long as no substantial change in the patient's clinical status has occurred (13).

Table 1. Minimum criteria for adequate pre-operative geriatric assessment specific to anaesthesia according to 2014 AAGBI Guidelines for Peri-operative Care of the Elderly.

Domain	Items to be assessed	Appropriate assessment tools
Medical	Co-morbidity/severity: <ul style="list-style-type: none"> • Cardiovascular • Respiratory • Haematological • Renal • Nutritional • Musculoskeletal Previous anaesthesia Anaesthesia-specific	Vital signs, ECG, CPET SpO ₂ , (pulmonary function tests) Full blood count Urea, electrolytes, estimated glomerular filtration rate Weight, body mass index, albumin, (liver function tests) Assessment of potential nerve block insertion sites

	Alcohol intake (Pain intensity) Presenting pathology	Enquiry after (age-related) problems Airway assessment, dentition CAGE questionnaire for alcoholism (Visual analogue pain score) Radiological
Medication	Medication review Anticoagulant therapy Relevant allergies	NSQIP pre-operative assessment Coagulation screen
Cognitive	Mental capacity Decision-making capacity Communication Risk factors for postoperative delirium	Ask "Have you or (your carer) noticed a change in your memory?" Abbreviated mental test score Vision, hearing, speech NSQIP pre-operative assessment
Functional capacity	Gait and balance Mobility	6-metre walk Walks unaided/with stick/with frame/does not walk Housebound? (yes/no)
Use of functional aids	Visual Hearing Mobility Dentures	Glasses Hearing aids Walking stick, frame, wheelchair
Risk score	Pathology-specific Frailty	e.g. Nottingham Hip Fracture Score NSQIP pre-operative assessment

CPET: Cardiopulmonary exercise test; NSQIP: National Surgical Quality Improvement Program

Comprehensive geriatric assessment

Comprehensive geriatric assessment (CGA) is an intensive multidisciplinary program for identification of medical, psychosocial and functional capabilities of an older adult with the goal of development of coordinated plan to maximize individual's overall health. It identifies individuals with geriatric syndrome - health conditions in older adults that do not fit into distinct organ-based disease categories and often have multifactorial causes (cognitive impairment, delirium, incontinence, malnutrition, falls, gait disorders, pressure ulcers, sleep disorders, sensory deficits, fatigue, dizziness).

Comprehensive geriatric assessment includes above listed elements of perioperative patient assessment with the addition of urinary continence, sexual function, living situation and spirituality. It leads to improved detection of geriatric problems (14). The patients who were treated according to CGA plan, were less likely to be admitted to a nursing home after hospital admission (15). Besides, CGA improved the return of function and mortality with reduced cost or improved utility, which rendered CGA the most cost-effective care model for geriatric patients (16). In comparison to clinical history alone, which only partially represents vulnerability to stress, CGA offers a broader picture of the individual physiologic fitness and functional reserves. It helps in recognition of many age-related risk factors for adverse surgical outcome.

Recently, a few studies investigating the usefulness of CGA in predicting surgical risk in the elderly have been published, which reported a positive impact of CGA on postoperative outcomes (length of stay) and confirmed its helpfulness in stratifying risk and planning

preoperative optimization strategies in geriatric surgical patients (15). Many of its components (functional status, nutrition, assessment of associated conditions and medication, cognitive, sensorial and emotional status) contribute also in exploring predisposing factors for POD (17).

Implementing CGA and frailty assessment in preoperative evaluation and using those results in planning the perioperative course is considered as a time-consuming, complicated task (6, 18). Although many perioperative physicians are taking frailty into account, it is not yet a routine screen before surgical procedures.

Conclusions

Elderly represent growing and for anesthesiologist very demanding population of patients. With multiple comorbidities the risk for perioperative complications in elderly is increased. To reduce the risk and perioperative morbidity preoperative evaluation is the key factor. Traditional preoperative assessment does not capture the entire pathophysiological and functional profile of older patients. Additional comprehensive geriatric assessment and frailty assessment contribute to identification of age-related risk factors for postoperative complications, help target preoperative optimization strategies and improve outcomes.

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11:00-12:15 Panel I

Challenges in the preoperative care in the geriatric patient	Andrijan Kartalov (Macedonia), Anış Arıboğan (Turkey)
Preoperative risk stratification and methods to reduce risk	Meldijana Omerbegovic (Bosnia-Herzegovina)
Timing of surgery	Nurdan Bedirli (Turkey)
Preoperative evaluation: Which tests?	Peter Poredos (Slovenia)
Preoperative journey through the organs: The effect of aging	Namık Özcan (Turkey)

**PREOPERATIVE JOURNEY THROUGH THE ORGANS:
THE EFFECT OF AGING**

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Understanding anesthetic care for older patients needs description of fundamental alterations in physiology and changes in the pharmacokinetics and pharmacodynamics of anesthetic medications, these issues are starting points for perioperative care of this heterogeneous population.

Two important principles must be kept in mind when discussing the physiology of aging. First, aging is associated with a progressive loss of functional reserve in all organ systems. Second, the extent and onset of these changes vary from person to person. In most older patients, physiologic compensation for age-related changes is adequate, but the resultant limitation in physiologic reserve may become evident only during times of physiologic stress, including exercise, illness, and surgery. Anticipating the interaction of underlying disease, limited end-organ reserve, and the stress of the perioperative period should aid the perioperative physician in providing the best care possible.

Aging is a universal and progressive physiologic process characterized by declining end-organ reserve, decreased functional capacity, increasing imbalance of homeostatic mechanisms, and an increasing incidence of pathologic processes (1). Aging is now viewed as an extremely complex multifactorial process with inter- action of various pathways to differing degrees and effect (2).

Nervous System

With aging, several important processes occur that are of interest to the anesthesiologist (3). These changes may be modified further by other underlying pathologic or age-related processes (4). Memory decline occurs in greater than 40% of individuals older than age 60 years (5). Age related memory decline is important because it can dramatically affect performance of the activities of daily living (ADL).

Structurally, cerebral atrophy occurs with aging in a selective and differential manner. There is a decrease in the volume of gray and white matter (6). The decrease in gray matter volume is thought to be secondary to neuronal shrinkage as opposed to neuronal loss. More recent studies focusing on the effects of normal aging on the human cerebral cortex suggest

that there is a small overall loss of neurons from the neocortex (7). This decrease in neuron number is nowhere near as massive as older studies had indicated. Some neocortical areas do not lose any neurons with aging. There may be 15% loss, however, of white matter with aging (7). Such loss results in gyral atrophy and increased ventricular size. Shrinkage in the subcortical white matter and the hippocampus may be accelerated by hypertension and vascular disease.

It is controversial whether the aging process alters the number of synapses present in the cortex. Data from nonhuman primates suggest significant regional reductions in the neurotransmitters dopamine, acetylcholine, norepinephrine, and serotonin with aging (7). Levels of glutamate, the primary neurotransmitter in cortex, do not seem to be affected. Coupling of cerebral electric activity, cerebral metabolic rate, and cerebral blood flow remains intact in elderly individuals.

Although biochemical and anatomic changes have been described in the aging brain, the exact mechanisms causing changes in functional reserve are unclear. Decreases in brain reserve are manifested by decreases in functional ADL, increased sensitivity to anesthetic medications, increased risk for perioperative delirium, and increased risk for postoperative cognitive dysfunction.

Neuraxial changes include a reduction of the area of the epidural space, increased permeability of the dura, and decreased volume of cerebrospinal fluid. The diameter and number of myelinated fibers in the dorsal and ventral nerve roots are decreased in elderly individuals. In peripheral nerves, inter-Schwann cell distance is decreased, as is conduction velocity. These changes tend to make elderly individuals more sensitive to neuraxial and peripheral nerve block (8).

Cardiovascular System

The aging process is associated with primary and secondary changes in the heart, primary changes in the blood vessels, and alterations in autonomic control. Myocyte number decreases, left ventricular wall thickening occurs, and conduction fiber density and sinus node cell number decrease. Functionally, these changes translate to decreased contractility, increased myocardial stiffness and ventricular filling pressures, and decreased β -adrenergic sensitivity (9). Vascular stiffness increases with advancing age related to breakdown of elastin and collagen. Alterations in nitric oxide-induced vasodilation also contribute (10). Functionally, these changes are readily observed in terms of an elevated mean arterial pressure and increased pulse pressure (11). Alterations in left ventricular afterload can lead to left ventricular wall thickening, hypertrophy, and impaired diastolic filling (12).

Hypertrophy is not necessary for alterations in ventricular stiffness to occur (13). Decreased ventricular compliance and increased afterload combine to cause a compensatory prolongation of myocardial contraction. This occurs at the expense of a decreased early diastolic filling time. Under these conditions, the contribution of atrial contraction to late ventricular filling becomes more important and explains why cardiac rhythm other than sinus is often poorly tolerated in elderly individuals.

Changes in the autonomic system with aging include a decrease in response to β -receptor stimulation and an increase in sympathetic nervous system activity (14). Decreased β -receptor responsiveness is secondary to decreased receptor affinity and alterations in signal transduction (15). Decreased β -receptor responsiveness assumes functional importance when increased flow demands are placed on the heart. Normally, β -receptor-mediated mechanisms act to increase heart rate, venous return, and systolic arterial pressure, while

preserving preload reserve. In contrast, the attenuated β -receptor response in elderly individuals during exercise or stress is associated with decreased maximal heart rate and decreased peak ejection fraction. This response causes the increased peripheral flow demand to be met primarily by preload reserve, making the heart more susceptible to cardiac failure (9).

It is well known that sympathetic nervous system activity increases with aging. Although changes in β -receptor responsiveness are well defined, it is controversial whether the aging process alters the α -receptor response. Clinically, these autonomic changes lead to a greater likelihood of intraoperative hemodynamic lability and decreased ability to meet the metabolic demands of surgery.

Although the age-related changes in cardiovascular physiology are generally well tolerated, several pathophysiologic states warrant mention. Impairment of diastolic relaxation leads to diastolic dysfunction in the aging heart. In its severest form, diastolic dysfunction may manifest as diastolic heart failure. Predisposing disease states for this condition include hypertension with left ventricular hypertrophy, ischemic heart disease, hypertrophic cardiomyopathies, and valvular heart disease. More recent population-based studies suggest that diastolic dysfunction is common and associated with an increase in all-cause mortality (16). In patients with clinically evident heart failure, ejection fraction is preserved in more than half, with 40% manifesting overt diastolic failure. Mortality in the cohort with preserved ejection fraction is similar to patients with impaired ejection fraction (17).

Clinically, diastolic failure occurs when decreased left ventricular compliance results in greatly increased left ventricular diastolic pressure. If this pressure is conducted retrograde to the pulmonary circulation, it results in pulmonary venous congestion and pulmonary edema. Diastolic dysfunction or failure is often related to systemic blood pressure and does not imply volume overload. Diagnosis can be difficult because the clinical picture appears identical to left ventricular systolic failure. Making the correct diagnosis is important because interventions commonly employed in systolic failure, such as diuretics and inotropes, may exacerbate diastolic dysfunction. Echocardiography is the diagnostic modality of choice (18). Classically, echocardiography shows preserved or hyperdynamic left ventricular systolic function and characteristic changes of flow velocity at the mitral valve.

Respiratory System

Alterations in control of respiration, lung structure, mechanics, and pulmonary blood flow place elderly patients at increased risk for perioperative pulmonary complications. Ventilatory responses to hypoxia, hypercapnia, and mechanical stress are impaired secondary to reduced central nervous system activity (19). In addition, the respiratory depressant effects of benzodiazepines, opioids, and volatile anesthetics are exaggerated (19), (20). These changes compromise the usual protective responses against hypoxemia after anesthesia.

Structural changes in the lung with aging include the loss of elastic recoil after reorganization of collagen and elastin in lung parenchyma. This loss of elastic recoil combined with altered surfactant production leads to an increase in lung compliance. Increased compliance leads to limited maximal expiratory flow and a decreased ventilatory response to exercise (21). Loss of elastic elements within the lung is associated with enlargement of the respiratory bronchioles and alveolar ducts, and a tendency for early collapse of the small airways on exhalation. The functional results of these pulmonary changes are increased anatomic dead

space, decreased diffusing capacity, and increased closing capacity all leading to impaired gas exchange.

Although there are alterations in lung volumes with aging, total lung capacity is relatively unchanged. Residual volume increases by 5% to 10% per decade. Vital capacity decreases. Closing capacity increases with age. Change in the relationship between functional residual capacity and closing capacity cause an increased ventilation-perfusion mismatch and represent the most important mechanism for the increase in alveolar-arterial gradient for oxygen observed in aging. In younger individuals, closing capacity is below functional residual capacity. At 44 years of age, closing capacity equals functional residual capacity in the supine position, and at 66 years of age, closing capacity equals functional residual capacity in the upright position (22). When functional residual capacity is below closing capacity, shunt increases, and arterial oxygenation decreases.

Increases in pulmonary vascular resistance and pulmonary arterial pressure occur with age and may be secondary to decreases in cross-sectional area of the pulmonary capillary bed (23). Hypoxic pulmonary vasoconstriction is blunted in elderly individuals and may cause difficulty with one-lung ventilation.

Kidneys and Volume Regulation

Renal mass may decrease 30% by age 80 years (24). Loss of mass is most prominent in the renal cortex. This loss correlates with a decrease in the number of functioning glomeruli. Number of loss is accelerated with hypertension (25). Renal blood flow seems to decrease about 10% per decade. There is a progressive decline in creatinine clearance with age, yet with normal aging, serum creatinine remains relatively unchanged. This occurs because muscle mass also decreases with aging. Serum creatinine is a poor predictor of renal function in elderly patients. This concept is important in proper dosage adjustment for medications that are excreted by the kidneys.

Functional changes in the kidneys with aging include alterations in electrolyte handling and the ability to concentrate and dilute urine. Renal capacity to conserve sodium is decreased. Overall, older patients have a tendency to lose sodium in the setting of inadequate salt intake. This tendency, paired with a decreased thirst response, may place an elderly patient at risk for dehydration and sodium depletion. The elderly patient also has a diminished ability to handle a salt load, as evidenced by increased sodium retention and expansion of the extracellular volume during the perioperative period (26). These changes assume particular importance under conditions of limited fluid intake.

Liver

Liver volume decreases approximately 20% to 40% with aging. Hepatic blood flow decreases about 10% per decade (27). There also is a variable decrease in the liver's intrinsic capacity to metabolize drugs. Effects on phase I reactions predominate. Decreases in hepatic blood flow may decrease maintenance dose requirements in drugs that are rapidly metabolized. The pharmacokinetics of drugs that are slowly metabolized are more affected by innate liver capacity than by blood flow (28).

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13:15-14:15 Panel II

Optimal perioperative assessment of the geriatric patient	Maja Sostaric (Slovenia), Suna Gören (Turkey)
From anesthesiologist's perspective	Dusanka Janjevic (Serbia)
From surgeon's perspective	Gökhan Demirkıran (Turkey)
From geriatrician's perspective	Zeynel Abidin Öztürk (Turkey)

**OPTIMAL PERIOPERATIVE ASSESSMENT OF GERIATRIC PATIENT
FROM ANESTHESIOLOGIST'S PERSPECTIVE**

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Background. Elderly individuals represent the fastest growing part of population in many parts of the world. Improvement in anaesthesia and surgical techniques have reduced surgical mortality in general population but anaesthesia related mortality in older patients is still high; perioperative morbidity becomes more frequent with steep increases after the age of 75. Especially postoperative cognitive decline is much more common in the elderly and has been associated with higher morbidity and mortality among elderly. It is imperative that knowledge on this important topic is disseminated for health care system to understand why elderly are different and how anaesthetic/surgical management needs to be modified to improve outcome.

Age-related anatomical/physiological changes. Aging is a physiological process and brings a number of physiologic changes that affect respiratory and cardiovascular, renal, gastrointestinal function. The functional capacity of organs declines and co-existing disease further contribute to this decline including atherosclerosis, heart failure, diabetes, COPD, emphysema, lung cancer, kidney impairment, sleep apnea, dementia. Polypharmacy can be associated with increase risk of adverse drug reactions, interactions, medication errors.

Anesthetic management. In the elderly common diseases have a significant impact on anesthesia and require special care. It is more important to estimate the physiologic reserve in the preoperative evaluation and determine the presence of co-existing disease. The risk from anaesthesia is more related with the co-existing disease which can be optimized before surgery than the age of the patient. Elderly are at higher risks for complications postoperatively.

Determination of the cognitive status of an elderly patient is important. Postoperative cognitive impairment can potentially affect patients all ages, but is predominantly seen in the elderly.

Elderly patients require lower doses of premedication, they are generally more sensitive to analgesics and sedative. Anticholinergics are not required since salivary gland atrophy is usually present; H2 antagonists are useful, to reduce the risk of aspiration.

The importance of evaluating the difficulty in airway management before anesthesia in the elderly has been increasing. Failed endotracheal intubation can cause fatal consequences due to limited organ reserve and comorbid conditions with aging.

Age related changes in anatomy and the implication of difficult airways include: age changed in teeth, age changed in oral mucosa, age changes in bones and joints, age changing in the neck.

The changes of the relationships of the larynx to the pharynx in the elderly may influence the laryngeal exposure during endotracheal intubation, which is dominant factor of difficult intubation and difficult supra-glottic device.

No evidence supports the choice of one anaesthetic over another or anaesthetic technique over another. Some aspects of regional anaesthesia may provide benefit for the patients. The hemodynamic effects of regional anesthesia may be associated with reduced blood loss in pelvic and lower extremity operations.

Postoperative cognitive complications such as postoperative delirium (POD) and postoperative cognitive dysfunction (POCD) can be associated with devastating outcomes in elderly patients. No single cause has been found to be responsible for triggering delirium or POCD. Common causes of postoperative morbidity in elderly are: atelectasis, pneumonia, myocardial infraction, heart failure, delirium.

Conclusion. During the perioperative period, beside the adequate to compensation for age-related changes in elderly the limitation of physiological reserve is evident.

The optimal physiological management is required to produce the best surgical outcome.

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13:15-14:15 Panel II

Optimal perioperative assessment of the geriatric patient	Maja Sostaric (Slovenia), Suna Gören (Turkey)
From anesthesiologist's perspective	Dusanka Janjevic (Serbia)
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From geriatrician's perspective	Zeynel Abidin Öztürk (Turkey)

**OPTIMAL PERIOPERATIVE ASSESSMENT OF THE GERIATRIC PATIENT
FROM GERIATRICIAN'S PERSPECTIVE**

*Assoc. Prof. Zeynel Abidin Öztürk , MD
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Adults age 65 and older are the fastest growing segment of the population all over the world, and their number is expected to double between 2010 and 2050. Based on these evolving demographics, it is expected that there will be a concurrent rise in the demand for a variety of surgical operations.

Older adult surgical patients often require a different level of care than younger patients during the perioperative period. They are prone to developing postoperative complications, functional decline, loss of independence, and other untoward outcomes. In order to provide optimal care for the older surgical patient, a thorough assessment of the individual's health status is essential. Though the goal should be a tailored, comprehensive geriatric evaluation at a designated preoperative appointment, this goal may not always be possible in the context of a busy surgical practice.

This presentation defines nine assessment categories corresponding to cognitive/behavioral disorders, cardiac evaluation, pulmonary evaluation, functional/performance status, frailty, nutritional status, medication management, patient counseling, and preoperative testing.

This presentation provides guidance on managing the older adult in the perioperative period. It is organized into sections corresponding to the immediate preoperative period, the intraoperative period, and the postoperative period.

Sections will be discussed in order as shown below;

1. Age-related physiologic changes on anesthetic care (Nervous system, cardiovascular system, respiratory system, hepatic system, renal system)
2. Preoperative Management
3. Intraoperative Management
4. Postoperative Management

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14:15-15:15 Panel III

Geriatric trauma patient	Vojislava Neskovic (Serbia), Fatma Sarıcaoğlu (Turkey)
Intraoperative problems and management in the geriatric patient	Iztoc Potocnik (Slovenia)
Joint replacement and fractures	Vladimir Vrsajkov (Serbia)
Anticoagulated geriatric trauma patient	K. Sanem Çakar Turhan (Turkey)

**INTRAOPERATIVE PROBLEMS AND MANAGEMENT IN
THE GERIATRIC PATIENT**

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Modern society is characterized as having an ever-enlarging population of older adults. There are more elderly patients, and the average age of this group is increasing. The anesthetic management of surgery for the elderly trauma victim is more complicated than in younger adults. Evaluation of the physiologic status of the geriatric patient should take into account the variability of the changes associated with advancing age. Care of the injured elderly patient requires thorough preoperative assessment and planning and the involvement of a multidisciplinary clinical team knowledgeable about and interested in the management of the elderly surgical patient.

INTRODUCTION

Traumatic injury is the four most cause of mortality in elderly patients. At the end of the last century 20% of injuries occurred in the elderly population. These patients respond differently to trauma, recover more slowly and have higher morbidity and mortality. It is not clear if these differences are due to increased comorbidity or decreased physiologic reserve (1,2).

After traumatic injury, it is important that all interventions be evidence based. There are few prospected randomized trials that focus on elderly issues.

DEFINITION

There is no uniform definition of the term »elderly«. Historically, the term »elderly« was applied to individuals over 65 years of age. However, aging is now viewed as a physiologic continuum rather than chronologic age. Nowadays we divide geriatric population into »young old« - 65-80 years and »oldest old«- over 80 years (1).

AGING

Aging is a universal and progressive physiologic phenomenon characterized by degenerative changes in both the structure and the functional reserve of organs and tissues. Aging is a consequence of free radicals damage within mitochondrial DNA (oxidative stress) (3). Elderly patients (arbitrarily defined as being over 65 years of age) are vulnerable to the adverse effects of anaesthesia. With advancing age, the autonomic nervous system, heart and blood

vessels become less capable of maintaining haemodynamic stability. Increased arterial rigidity and increased sympathetic nervous system activity contribute to the increase in systemic vascular resistance. Increased stiffness of the hypertrophied elderly cardiac ventricle leads to increased end-diastolic pressure with severe diastolic dysfunction. With advancing age, parasympathetic activity decreases while sympathetic neural activity increases. Elderly subjects manifest a reduced responsiveness to beta-adrenergic stimulation and reduced baroreceptor reflex (4). Changes in the respiratory system with age comprise: decline in compliance of bony thorax, loss of respiratory muscle mass, decrease in alveolar gas exchange surface and decrease in central system responsiveness. Aged lungs have some features of chronic obstructive lung disease, increased residual volume, reduced vital capacity and FEV₁ (5).

The target organ for all anaesthetic agents is the central nervous system. Aging produces a decrease neural density and loss of 30% brain mass at the age of 80 years (mostly grey matter). Signs of peripheral nervous system aging are marked by a loss of motor, sensory and autonomic fibers and decrease in conduction velocity. Aging decreases functional capacity of other organ system such as hepatic, renal and endocrine system. Administration of drug in the elderly compared to young subjects results in higher blood levels, due to a smaller volume of distribution and due to a slower drug metabolism. The brain is more sensitive to the drug in the elderly and all these effects conspire to increase the length of time that drug is active in the elderly patient (5).

FUNCTIONAL RESERVE

A decline in the functional reserve may in the elderly patient participate a serious decline in performance when the elderly patient is exposed to stress and increases the risk of age-related disease. The older patient is less able to preserve homeostasis in face of such a physical insult. The variability of this decline is rooted within lifestyle, environmental factors, genetics, and presence of age related disease. Older trauma patients do not cope as well as younger adults. Elderly patients are less able to preserve sufficient perfusion of vital organs. After injury, they are more likely to arrive in the emergency department in hypotensive shock and to be hypothermic. The decreased functional reserve contributes to the higher percentage of the geriatric trauma victims that appear in the early trauma mortality statistics. Limited physiologic reserve means that the prognosis of the elderly injured patient is much better when the patient is rapidly transported to a trauma center (1).

In geriatric patients there is reduction of cardiovascular, respiratory, renal and liver functions. There is very little functional reserve (difference between the basal and maximal function of organs) which is safety margin available to the patient during anaesthesia and the postoperative period (5). Trauma, surgery and administration of anaesthetic drugs often affect cardiovascular physiology to great degree. Randomized studies and a meta-analysis of several randomized clinical trials in non-cardiac surgery patients, comparing outcome with regional and general anaesthetic techniques have shown little evidence of improved outcome and reduced post-operative morbidity and mortality (6). The importance of management in keeping adequate organ perfusion pressure is often underlined.

INTRAOPERATIVE ANAESTHETIC MANAGEMENT

Anaesthesia should be safe with smooth induction, maintenance and quick reversal without producing any cardiovascular, respiratory and nervous complications (5). To avoid hypotension in the elderly trauma patient, the dose of etomidate, propofol, barbiturates and benzodiazepines need to be reduced. A reduction in the dosage of morphine and other

opioids is recommended (1). Clinically, the doses of neuromuscular blockers are usually unchanged. Aspiration is more common (1). Multiple retrospective and prospective studies have arrived at the same conclusion. No significant difference in outcome can be attributed solely or predominantly to the use of any specific agent, and no clear and objective benefit can be demonstrated for using regional rather than general anaesthesia (5). Choice of anaesthesia depends on the patient's general condition, nature of surgical procedure and the experience of the anaesthesiologist. Psychological preparation, appropriate premedication and patient prewarmed is important. Airway maintenance may be more difficult because of osteoporotic mandibles, temporo-mandibular joint stiffness, loose teeth, and cervical spondylosis. Maintenance of normothermia is essential because older patients have an impaired ability to sense a colder temperature, less subcutaneous fat, reduced heat generation, reduced ability to vasoconstrict and shiver.

A low threshold for early invasive monitoring initiation is used in elderly patients. This is important for the optimization of O₂ delivery (1).

It is also important to recognize early patients in whom aggressive additional resuscitation is necessary. There is evidence of the predictive value of the Revised Trauma score, Injury Severity Score (ISS) and Geriatric Trauma Survival Score. The adequacy of resuscitation may be estimated using arterial base deficit (1).

The primary survey in the geriatric patient is no different from that in the younger adult.

NEUROAXIAL ANAESTHETIC TECHNIQUES

Neuraxial anaesthetic techniques include (spinal and epidural blocks) are often used in the trauma surgery. Both techniques can result in sympathetic blockade, resulting in decreases in both preload and afterload and ultimately reducing cardiac output. The decision to use neuraxial anesthesia for the high-risk cardiac patient may be influenced by the dermatomal level of the surgical procedure. Older age is associated with a higher upper level of anaesthesia after epidural administration of local anaesthetic. Higher levels of anaesthesia were attributed to reduced leakage of local anaesthetic because of progressive sclerotic closure of the intervertebral foramina (5). Epidural blockade that is restricted to the level of the low thoracic and lumbar region (T₅-L₄) results in a peripheral sympathetic blockade with vascular dilatation in the pelvis and lower limbs and decrease in mean arterial pressure. This decrease is compensated with a reflex increase in efferent sympathetic vasoconstriction above the level of the block, by release of catecholamines from the adrenal medulla (5). This increased activity may result in increased cardiac contractility and increased heart rate. Reduction in mean arterial pressure during lumbar epidural anaesthesia may increase myocardial ischemia in some patients with coronary artery disease. Activation of the sympathetic nervous system may result in myocardial ischemia and infarction (5). Atrial fibrillation and tachycardia are common after cardiac and thoracic surgery. Thus, sympathetically mediated decreases in myocardial oxygen supply may be a major factor of postoperative cardiac morbidity (5).

A very useful technique is also thoracic paravertebral blockade (TPB). There is also a potential advantage of avoiding central neuraxial hematoma with this technique. It was presented that TPB can resolve ST segment depression during general anaesthesia and thus is useful in treatment of angina pectoris (7).

The studies which compared TPB with TEA found no difference in analgesia. In the study of Richardson et al. was found that TPB (bupivacaine) was superior in terms of analgesia,

pulmonary functions, neuroendocrine stress responses, side effects and postoperative respiratory morbidity compared to TEA (bupivacaine) (8).

PERIPHERAL NERVE BLOCKS

Peripheral nerve blocks are used frequently in elderly patients. Sensory and motor blocks last longer in elderly than in younger patients (approximately 2.5 times longer). These alterations are attributed to a decrease in the conduction velocity of the peripheral nerves and to a gradual degeneration of the peripheral nervous system. By the age of 90 years, one third of the myelinated fibers have disappeared from peripheral nerves (9).

SUMMARY

Modern society is characterized as having a never enlarging population of older adults. There are more elderly patients, and the average age of this group is increasing. The anaesthetic management of surgery for the elderly trauma victim is more complicated than in younger adults. Several factors are essential for obtaining the best outcomes: careful preoperative evaluation and optimization, minimization of perioperative stress, perioperative attention to avoid clinical complications from fluid and electrolyte balance and impaired cardiovascular and respiratory function.

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14:15-15:15 Panel III

Geriatric trauma patient	Vojislava Neskovic (Serbia), Fatma Sarıcaoğlu (Turkey)
Intraoperative problems and management in the geriatric patient	Iztoc Potocnik (Slovenia)
Joint replacement and fractures	Vladimir Vrsajkov (Serbia)
Anticoagulated geriatric trauma patient	K. Sanem Çakar Turhan (Turkey)

JOINT REPLACEMENT AND FRACTURES

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Introduction

We have now growing number of patients older than 65 yr in developed countries. Perioperative morbidity becomes more frequent after the age of 75. Risk is present due to age-related diseases and not the age itself (ie a healthy 70 year old may be at lower risk than a 55 year old with multiple comorbidities). Trauma is major health problem accounting for 30% of all life years lost in the USA. Among geriatric orthopedic trauma patients exists well documented increase number of comorbidities and ICU days, but age alone is a weak predictor for mortality.

Methods

In management of trauma patient we start with resuscitation and treatment of life-threatening injuries combining measures against trauma coagulopathy. Pain therapy is often left for later. Orthopedic injuries are among most painful. Opioids have too many possible interactions and adverse effects. Can regional anesthesia be a solution? Potential advantages over systemic analgesia: Decreased adverse effects compared to some conscious sedation techniques (hypoxia, agitation, nausea/vomiting). Decreased need for sedatives leading improved neurologic assessment. Reduction in opioid requirement. Reduction in length of stay in ED or ICU. Improved comfort and safety for transport. Decreased need for monitoring and staffing. Decreased stress response to injury. Decreased cost comparing conscious sedation. We can start regional analgesia and anesthesia outside the operating room. Completing diagnostics and the first treatment. Significant reduction of pain and length of stay in ED. When our geriatric trauma patient needs operation we will have always a dilemma. General or regional anesthesia. Advantages of regional versus general anesthesia in orthopedic trauma: Improved postoperative analgesia, decreased incidence of nausea and vomiting, less respiratory and cardiac depression, improved perfusion because of sympathetic nervous system block, decreased intraoperative blood loss, decreased blood pressure, blood flow redistribution to large caliber vessels, locally decreased venous pressure, less frequent postoperative cognitive disorder.

Results

Study of literature have shown that any strong recommendation is not possible. As one solution we evaluated peripheral nerve blocks and multimodal anesthesia. We can use peripheral nerve blocks as preoperative analgesia – ED or perioperative analgesia + light general anesthesia or postoperative analgesia – Chronic pain. For lower extremity we have used n.Femoralis block, Facia iliaca block , Quadratus lumborum block and n. sciatus block. A Cochrane review from 2017 showed clear benefits: reduces pain, decreased risk of pneumonia, reduced time to first mobilization, reduced cost of analgesic regimen (single-shot blocks). For fractures of the upper extremity we can use block of plexus brachialis. For peripheral nerve blocks in trauma we choose ultrasound. Prevention of chronic postsurgical pain is closely connected with regional anesthesia for orthopedic trauma patients. To support this conclusions we obtained our study in the period between november 2016 and oktober 2017 with 150 patients who had fracture of head or diaphysis femoris. We had 3 equal groups (General anesthesia, spinal anesthesia and peripheral nerve blocks with propofol). Patients with PNB had less frequent perioperative hipotension, smaller values of postoperative pain on the Numeric rating scale and after 4 months. This patients had no need for postoperative opioid use.

Conclusion

Peripheral nerve blocks can be very usefull in the treatment of geriatric ortopedic patients in numerous reasons like less intensive perioperative pain, reduction of opioids consumption, less intensive perioperative reduction of cardiovascular, respiratory and renal function, early mobilization and rehabilitation and lower frequency of postoperative cognitive deficit. We should never forget that geriatric ortopedic trauma patients are freaquent and allways challenging. When we are planning therapeutic measures we should never underestimate pain and its influence on final outcome.

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ANTICOAGULATED GERIATRIC TRAUMA PATIENT

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The elderly population constitutes a significant and rapidly increasing portion of the trauma patients. Currently elderly population is 14.2% of the population and it is estimated that 25% of the world's population will be aged above 65 years by 2060, with the most of the increase in developing countries. At the present time, elderly patients constitute 28% of traumatic deaths and 75% of fall-related deaths (1).

Traumatic injury in elderly has higher mortality and complication rates compared with the younger patients because more than 80% of geriatric trauma patients have at least one preexisting condition and about 50% have two preexisting conditions. The necessity of specific care protocols in elderly becomes more important because of decreased physical reserve, presence of various comorbidities and increased risk of elderly-specific complications such as delirium in geriatric age group. So policies to improve risk assessment, and to reduce mortality and morbidity must be developed (2).

During initial evaluation of the geriatric trauma patient, medications such as coumadin, clopidogrel, other anticoagulants, ASA, beta-blockers and ACE inhibitors should be determined; common, acute, nontraumatic events such as acute coronary syndrome, hypovolemia/dehydration, urinary tract infections, pneumonia, cerebrovascular events, syncope should be considered, detailed laboratory assessment should be performed, all CT scans to rule out injury in appropriate regions at risk should be done (2).

Atrial fibrillation is common cardiac arrhythmia and it is seen in approximately 5% of people aged above 65. Both the risk of stroke and risk of mortality and functional deficits is increased in patients with atrial fibrillation aged above 80. Therefore, anticoagulation therapy to prevent thromboembolic stroke is of great importance. There is frequent use of warfarin, antiplatelet agents (for example clopidogrel, aspirin), direct thrombin inhibitors (for example dabigatran) and direct factor Xa inhibitors (for example rivoroxaban) in geriatric patients which in turn puts them at higher risk of significant bleeding events even during minor injury. Furthermore; anticoagulation therapy before injury was found to be an independent predictor of mortality (3).

The head injury is the fifth leading cause of death in the elderly, the increasing prevalence of oral anticoagulant therapy may play a significant role in the outcome of geriatric patients with head injuries. The mortality in traumatic falls in patients aged above 65 years is about

50%. The main causes of morbidity and mortality are intracranial haemorrhage (ICH), skeletal fractures, and thoracic or intraabdominal visceral injury. Intracranial hemorrhage has been found to be an independent predictor of 30-day mortality following traumatic fall in elderly patients on anticoagulation. Elderly patients on antiplatelet agents including aspirin or clopidogrel have also increased risk of all-cause mortality. Both being on anticoagulation therapy and decompensated heart failure which is frequent in elderly have great contribution to the mortality (3).

Elderly patients who are on anticoagulation should be appropriately assessed for coagulation status as early as possible following admission. International normalized ratio (INR) parallels the anticoagulant effect of warfarin, however except warfarin, assessment of anticoagulation is not possible with routine laboratory examinations. INR value of the patients receiving warfarin should be corrected to normal range within 2 hours of admission if they have intracranial hemorrhage. All elderly patients on anticoagulation who have suspected head injury should be evaluated with cranial tomography. Both being on anticoagulation therapy and trauma-induced coagulopathy following severe injury increase the bleeding-related mortality in geriatric age group (4).

In conclusion; elderly patients on anticoagulation who are at increased risk of mortality and morbidity should be carefully evaluated in terms of comorbidities and medications and necessary precautions to reduce thrombosis and bleeding risk should be taken without much delay in surgical procedure.

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15:45-17:00 Panel IV

Important points in elderly patient	Hektor Sula (Albania), Ömer Kurtipek (Turkey)
The physiology of the aging process	Rudin Domi (Albania)
Frailty: Physiology, diagnosis	Tuğhan Utku (Turkey)
Polipharmacy in the elderly	Ayşe Karcı (Turkey)
Comorbidity and Multimorbidity in the elderly	Mukadder Orhan Sungur (Turkey)

THE PHYSIOLOGY OF THE AGING PROCESS

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Introduction

The increasing number of aging people undergoing to surgery, presents a challenge to anesthesiologist in his daily practice. The mean age is prolonged, and the safety of surgery and anesthesia, can offer to elderly the possibilities that older patients can be scheduled for complex procedures. It is imperative that anesthesiologist be prepared and have enough knowledges of the physiology of elderly patients to modify the anesthetic approach. The main problem of elderly is a markedly reduction in homeostasis capacity in several important systems and organs.

Cardiovascular system

Several important features can be present in hemodynamic status of the older patients. The large vessels can lose elasticity inducing the increased peripheral vascular resistance. To counteract this increased resistance, the left ventricle must work hard and become hypertrophic. This hypertrophy can result in possible myocardial ischemia or further deterioration of preexisting conditions. Impaired ventricular filling increases end-diastolic pressure and can be associated with pulmonary congestion. Diastolic dysfunction, tachycardia, non-sinus rhythm, can be further deteriorate by anesthesia and surgery in the perioperative period. The veins also are stiffed as well, decreasing the impact of veins in the maintenance of hemodynamic parameters and volume status. The sympathetic system is lazy and generally the responsiveness to beta-adrenergic drugs is diminished. The beta-blocking agents preserve their action and efficacy, but alpha-adrenergic agonists are not effectually as in younger patients. Physiologically the elderly patient is less tachycardic to stressful situations and cardiac output depends more in stroke volume than in heart rate. The reduced cardiac capacity to maintain the stability of hemodynamic status, predispose these patients for perioperative complications during perioperative period such as severe hypotension, less tachycardia by bleeding, increased metabolic demand and oxygen consumption during shivering, exaggerated rise in blood pressure responding to normal stresses. Baroreceptors present a reduced activity with impairment of baroreflex responsiveness, inducing possible orthostatic hypotension.

Respiratory system

Several features are faced in elderly respiratory system. The muscle mass is often reduced predisposing these patients to reduced capacities and volumes due to increased stiffness of chest wall. The cough reflex is impaired and the protection of upper respiratory and larynx from aspiration is not effective. Age-related loss of this elastic recoil results in early collapse of poorly supported peripheral airways, predisposing to pulmonary complications. The pulmonary compliance is reduced, air trapping is presented, the closing capacity is increased, and may be gas exchange problems. The diaphragm is weak and can predispose for a longer ventilatory support, mechanical ventilation, and a difficult weaning process. The decline of diffuse capacity results from decreased surface area, destruction of alveoli, increased alveolar wall thickness, and small-airways closure. These changes also exacerbate ventilation-perfusion mismatching. This ventilation/perfusion imbalance accounts for most of the reduction in PaO₂. The ventilatory response to hypercapnia and hypoxia is blunted in the elderly patient so the use of sedatives, hypnotics, and premedication's techniques are of great risk and unpredictable response to apnea. These reductions can predispose exacerbation or deterioration of pulmonary diseases as COPD, OSA, and pneumonia.

Renal system

Microscopically the functional glomeruli are diminished, and renal mass is reduced. This reduction is more prominent in cortex due to reduced renal blood flow after the age 30. As a result, the glomerular filtration rate is reduced especially after the age 40. This can be associated with impaired renal capacity of drug excretion. The sodium homeostasis may be problematic in severe dysfunction-reduction manifested by alteration in decreased ability for preserving sodium.

Cerebral age-related changes

This is verified a cerebral mass reduction due to decreased in neuronal number. Also, the activity of neurotransmitters is reduced in quality and quantity. The significant changes are confirmed in serotonin, dopamine, and acetylcholine receptors. As a conclusion the likelihood of dementia, Alzheimer, and Parkinson disease is of great incidence.

Temperature homeostasis

The temperature regulation does not function as the younger patient. The threshold of temperature control in case of hypothermia are activated in a lower body temperature so the elderly is prone to hypothermia. The elder patients have reduced capacity of vasoconstriction and shivering in hypothermia episodes.

Metabolic changes

It is being recently reported that total body water is decreased, and the fat can be generally increased. These changes can lead to deposition of lipid-soluble drugs inducing delayed elimination of these drugs.

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FRAILITY: PHYSIOLOGY, DIAGNOSIS

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Frailty is an important but incompletely understood clinical concept in every related discipline of medicine. As a word frailty etymologically comes from Latin word *fragilita* means brittleness. The concept of clinical frailty describes a state or syndrome of reduced physical, physiologic, and cognitive reserve (1). Frail patients are characterized by a heterogeneous combination of decreased mobility, weakness, reduced muscle mass, poor nutritional status, and diminished cognitive function; all of these render frail individuals more susceptible to extrinsic stressors(2). Frailty and aging are not synonymous. Frail individuals are more likely to require assisted living, be more susceptible to adverse events, and are more likely to die when compared to age-matched non-frail individuals. Frailty has characteristic molecular and physiologic features including increases in inflammatory markers and epigenetic changes.

Frailty is increasingly recognized as a risk factor for poor outcomes across many disease states and healthcare interventions. In a similar fashion, there is emerging evidence that frailty status has important implications for individuals developing critical illness.

Age-related changes to multiple physiological systems are fundamental to the development of frailty, particularly the neuromuscular, neuroendocrine and immunological systems. These changes interact cumulatively and detrimentally, resulting in a decline in functionality of organism. The loss of functional homeostatic reserve at the level of individual physiological systems can ultimately adversely affect the whole person.

There is no internationally agreed definition, but a consensus view is emerging in phenotype concept of frailty. On the basis of the resulting frailty phenotype, it is possible to identify older people who are frail. The phenotype includes: sarcopenia (loss of muscle mass and strength), anorexia, osteoporosis, fatigue, risk of falls poor physical health.

Frailty syndrome can be viewed as a clinical syndrome (phenotype) or deficits accumulation. Frailty syndrome which consists of physical, psychological, and social domain, should be considered as a continuum spectrum of a dynamic process. It is hypothesized that decreases in metabolic rate, muscle strength and VO₂ maximal due to sarcopenia contribute to the manifestation of physical frailty that eventually lead to disability and dependency. This pathophysiologic approach measures clinical manifestation of frailty syndrome regardless of

the etiology (3). The ideal scoring system to define frailty should be able to assess all domains of frailty syndrome and its severity, as well as easy to be conducted in daily clinical practice and able to measure the changes over time or after intervention(s). There are many scoring systems to define frailty state. They mostly are developed from phenotype concept, like how it is described by Fried et al. The phenotypic concept mainly focus on physical domain of frailty syndrome, while the index method usually tries to evaluate all three domains of frailty syndrome.

The key interacting processes that promote the development of frailty, result in a self-perpetuating frailty 'cycle' or 'spiral'(4) whereby increasing frailty gives rise to increased risk of further decline towards disability and greater frailty (Figure 1).

In The Fried frailty model(5) operationalised the core components of the frailty cycle to describe a clinically recognisable phenotype. When the identified five key components (and their operationalised indicators) are present in combination they have the potential to interact and cause a 'critical mass' that comprises the frailty syndrome (Table 1).

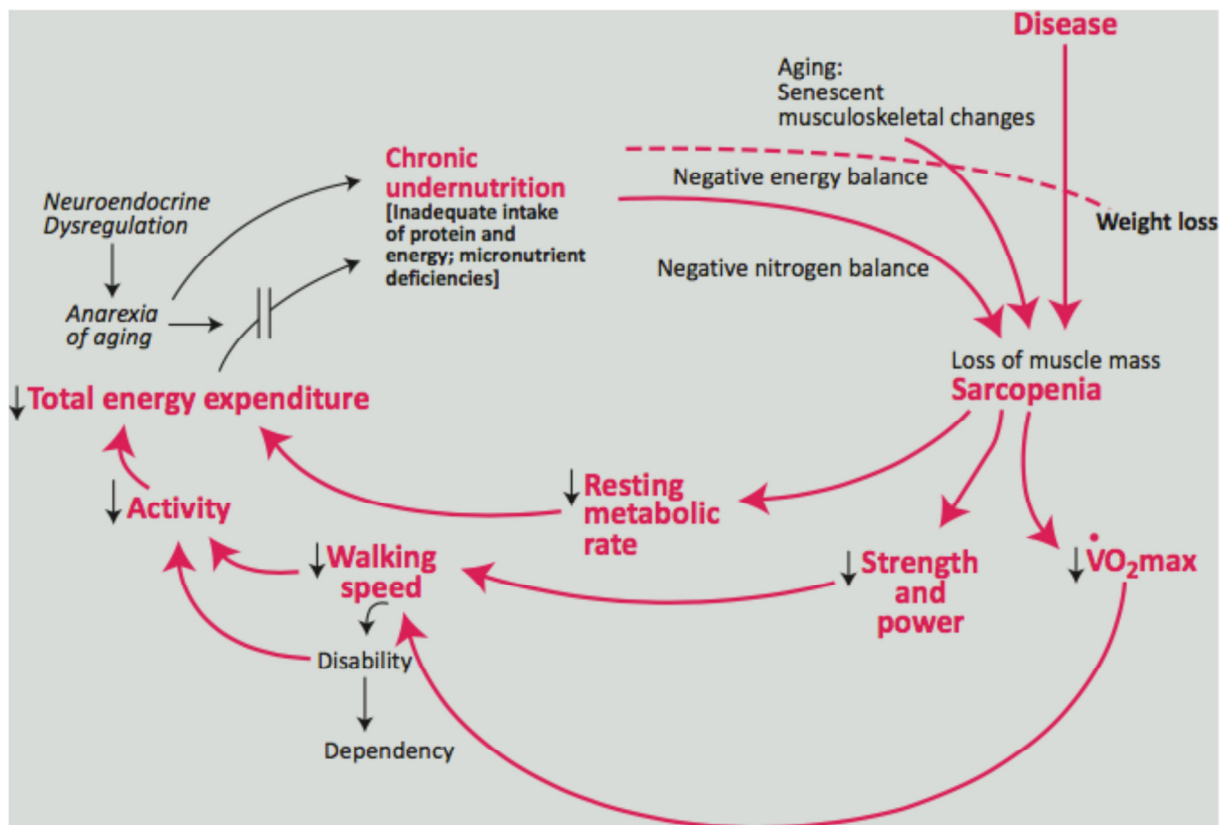


Figure 1 - The frailty cycle

Frailty indicator	Measure
Weight loss	Self-reported weight loss >4.5 kg or recorded weight loss \geq 5% per annum
Exhaustion	Self-reported exhaustion on CES-D scale (3-4 days per week or most of the time)
Low energy expenditure	Energy expenditure <383 Kcal/week (males) or <270 Kcal/week (females)
Slowness	Standardised cut-off times to walk 15 feet, stratified for sex and height
Weakness	Grip strength, stratified by sex and BMI

BMI = body mass index; CES-D = Center for Epidemiological Studies Depression.

Table 1- The five Fried model indicators of frailty and their associated measures.

The Frailty Index, a detailed 70-item inventory of clinical deficits, is also broadly used in studies of frailty. A more generic, less detailed but no less clinically valid impression of patient frailty has also been developed by Rockwood and colleagues(6). They developed and validated a judgment-based seven-point Clinical Frailty Scale (CFS) to measure frailty (Table 2).

Score	Frailty grade	Description
1	Very fit	People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.
2	Well	People who have no active disease symptoms but are less fit than those of category 1. Often, they exercise or are very active occasionally (that is, seasonally).
3	Managing well	People whose medical problems are well controlled, but are not regularly active beyond routinely walking.
4	Vulnerable	While not dependent on other for daily help, symptoms often limit activities. A common complaint is being slowed up, and/or being tired during the day.
5	Mildly frail	These people often have more evident slowing, and need help in high-order independent activities of daily living (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.
6	Moderately frail	People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.
7	Severely frail	Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months)
8	Very severely frail	Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.
9	Terminally ill	Approaching the end of life. This category applied to people with a life expectancy <6 months, who are not otherwise evidently frail.

Table 2- Clinical Frailty Score

Conclusion

Given the complex nature of this geriatric syndrome, any single agent or approach targeted to one single organ system may not achieve optimal results. Multimodality strategies intervening in potential biological, socio-behavioral, and environmental stressors should be considered for the frail elderly. Moreover, frailty is common in geriatric populations and has shown clear association with risk of death and institutionalization. The burden and potential modifying impact of frailty on the course and outcomes in critically ill patients is unknown. Although not yet clearly established in the ICU population, we believe that frailty has clinical relevance and may predict both short-term and long-term outcomes. The validation of available frailty instruments in critical care settings would be an important first step.

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POLYPHARMACY IN THE ELDERLY

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The increasing number of geriatric patients with comorbidities and greater life expectancy, surgery on this group requires careful tailoring of the anesthesia technique. The decline in physiological reserve, may be compounded by cognitive decline, frailty and polypharmacy. The physiological and anatomical changes within the major organ systems of the body have a significant impact on perioperative outcomes. The anaesthetic proficiency depends initially on the detailed knowledge of the drugs used during anaesthesia, and understanding of how the changes physiology with ageing affects both kinetic and dynamic facets of pharmacology. The very diversity of the elderly population makes their precise response to drugs unpredictable. Therefore it is essential that the anesthesiologist be aware of the alterations associated with aging, coexisting diseases, and patient medications in order to provide an effective perioperative treatment for the elderly.

The assumption that general anesthesia in the elderly is challenging does not mean surgery performed using regional or peripheral blocks will provide an uncomplicated postoperative recovery.

Comorbidity and Multimorbidity in the elderly

Comorbidity is in essence coexistence of another medical condition at the time of diagnosis of an index disease, yet it is not a direct consequence of the stated index disease. Aging is closely related with the prevalence of comorbidity as age itself is a risk factor for many comorbidities such as cardiovascular heart diseases. Aging process can also directly contribute to the development of comorbidities (e.g. stiffening of arterial wall resulting in systolic hypertension and stroke), or can be associated with other risk factors (e.g. sarcopenia or overnutrition associated with older age is another risk factor for cardiovascular disease). Prevalence of comorbidities listed in older age in perioperative context varies significantly with sex, admission reason (elective versus unplanned surgery) or diagnostic criteria, yet the most frequent diseases are stated as hypertension, dyslipidemia, coronary artery disease (CAD), arthritis, and diabetes.

Multimorbidity is described as presence of two or more long term health pathologies (hence the term “polyopathy” is used as synonym) that can be cured acutely but may be controlled

with treatment. Yet, multimorbidity also encompasses ongoing conditions such as learning disability, symptom complexes such as frailty and chronic pain, sensory impairments and substance abuses. Multimorbidity has a negative impact on quality of life, mortality, polypharmacy, rate of adverse drug events, use of unplanned health care and postoperative complications. It affects all stages of surgical pathway and increases surgical risk. Scores such as Charlson Index, the Geriatric Index of Comorbidity, the Index of CoExistent Diseases or the Cumulative Illness Rating Scale are used in research setting to scale multimorbidities. Yet, their contribution to assesment of perioperative risk is unknown. Although the effects of single comorbidities such as diabetes, CAD or chronic obstructive pulmonary disease (COPD) on surgical risk are well documented, studies of multimorbidity are lacking which results in uncertainty about the balance of benefit and harm in the treatment of these patients. Furthermore guidelines derived from single comorbidity treatments can be contradicting, misleading or inadequate in the context of multimorbidity.

Recent National Institute for Health and Care Excellence (NICE) guideline in addition to American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity have underlined that health care should be tailored according to a “person’s” personal goals and priorities (hence person-centered care). This is valuable oppurtunity for anesthesiologists in re-designing the pathway to surgery for better care through comorbidity management together with shared decision-making and collaborative behavioural changes.

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3. Grocott et al. Re-designing the pathway to surgery: better care and added value. *Perioperative Medicine* 2017; 6:9.

May 9, 2018, Wednesday

15:45-17:00 Panel IV

Important points in elderly patient	Hektor Sula (Albania), Ömer Kurtipek (Turkey)
The physiology of the aging process	Rudin Domi (Albania)
Frailty: Physiology, diagnosis	Tuğhan Utku (Turkey)
Polypharmacy in the elderly	Ayşe Karcı (Turkey)
Comorbidity and Multimorbidity in the elderly	Mukadder Orhan Sungur (Turkey)

COMORBIDITY AND MULTIMORBIDITY IN THE ELDERLY

Mukadder Orhan Sungur
Istanbul University, Istanbul Medical Faculty,
Anesthesiology and Reanimation Department

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3. Grocott et al. Re-designing the pathway to surgery: better care and added value. *Perioperative Medicine* 2017; 6:9.

May 10, 2018 Thursday

08:30-09:30 Panel V

Anaesthesia in the geriatric outpatient	Dusanka Janjevic (Serbia), Kamil Toker (Turkey)
When should the elderly patient not be ambulatory?	Igli Zhilla (Albania)
Regional anaesthesia in the geriatric outpatient	Atanas Sivevski (Macedonia)
General anaesthesia in the geriatric outpatient	Gözde Bumin Aydın (Turkey)

WHY SHOULD ELDERLY PATIENT COULD NOT BE AMBULATORY?

*Igli Zhilla, MD, PhD,
Luis Medical Center,
Tirana, Albania*

The elderly population is the fastest growing segment of ambulatory surgical patients.

World population aged over 60 yr will increase from 11% in 2010 to 21.8% in 2050 and aged over 80 yr will increase from 1.5% in 2010 to 4.3% in 2050.

Age is an important factor when assessing patients for surgery in general and, is important in patients scheduled for day case procedures. Improvements in anesthetic and surgical techniques allow patients to return to their regular environment and lifestyle with minimal disruption.

Patient assessment for day surgery falls into three main categories

1- Social factors

- The patient must understand the procedure and consent to day surgery
- A responsible adult should escort the patient home and provide support for the first 24 h
- The patient's domestic circumstances should be appropriate for postoperative care

2- Medical factors

Patient's health at pre-operative assessment is important (ASA status, age or BMI is less important) - Patients with stable chronic disease (diabetes, asthma etc) are often better managed as day cases because of minimal disruption to their daily routine

Obesity is not a contraindication to day surgery. Obese patients benefit from the short-duration anaesthetic techniques and early mobilisation associated with day surgery

3- Surgical factors

No risk of serious complications (haemorrhage, cardiovascular instability)

Postoperative symptoms must be controllable

The procedure should not prohibit the patient from resuming oral intake within a few hour

Patients should usually be able to mobilize before discharge

Ambulatory surgery in the elderly is both challenging and beneficial.

Due to lack of specific studies in the elderly undergoing amb surg, the nonhom pop, and the difficulty to categorised patients, specific evidence-based does not exist.

Due to economic pressures and improvements in perioperative care, outpatient surgical procedures have become common.

The risk of perioperative major complications and mortality is low in elective surgery. Elderly patients have an increased risk of cardiovascular and respiratory events, more serious complications and increased peri operative mortality.

However, risk factors for outpatient surgical morbidity and mortality remain unclear. There are no multicenter clinical data guiding patient selection for outpatient surgery.

Evidence evaluating the influence of age on perioperative outcome has been contradictory. A prospective cohort of approximately 250,000 patients undergoing ambulatory surgery found that age did not predict unanticipated admission. In this study authors found

Early periop morbidity & mortality ► 1:1,000 in ambulatory surgery

They showed COPD, history of TIA, etc as predictors of morbidity & mortality.

It is widely accepted in the anesthesia community that poor baseline functional status increase the risk of adverse outcome after ambulatory surgery in the elderly.

Therefore there is general agreement that patients undergoing ambulatory surgery should be reasonably fit.

Considering an elderly patient as a possible candidate for day surgery may be challenging for any anesthesiologist, surgeons and nurses. Healthcare systems and social services will also be involved in this challenge.

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May 10, 2018 Thursday

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REGIONAL ANAESTHESIA IN THE GERIATRIC OUTPATIENT

*Atanas Sivevski, MD PhD,
University Clinic for Gyn &Ob, Dept of Anaesthesia, Reanimation &IC,
Clinical Center Mother Teresa, Skopje, R. Macedonia*

The percentage of 30% of people over the age of 65 in Europe in the next years –is an indicator that patient population will also consist of older individuals, many of which will require surgery. The decrease of hospitalization in elderly patients undergoing surgery plays an important role because it results in lower incidence of adverse events in the postoperative period: reduction of both respiratory events and nosocomial infections, as well as less postoperative cognitive dysfunction (POCD) at 1 week.

There is no ideal anaesthetic for geriatric patients. However, the process of adequate pre-operative assessment with correction of physiological parameters, planning and appropriate monitoring are more essential than the choice of anaesthetic technique itself which helps to optimize the positive patient outcome.

Most controlled trials have failed to demonstrate that either regional or general anaesthesia is clearly superior in terms of outcome in elderly patients, but neuraxial regional anaesthesia (RA) remains a well-accepted option to: minimize the surgical stress (tachycardia and hypertension), reduce the pulmonary compromise (atelectasis, pneumonia, prolonged mechanical ventilation), thus showing superior postoperative pain control and reduction of perioperative opioids consumption, hence minimizing opioid side effects. RA results in better peripheral vascular circulation and reduces total blood loss, as well as POCD. In addition, RA favors early ambulation and provides for venous thrombosis prevention. A Cochrane review of hip surgery looked at 17 trials (2567 patients) comparing GA to RA and concluded that RA might reduce mortality at 1 month, but the long-term mortality was unchanged (1).

Recently, the focus has shifted from the conventional approach to RA (spinal anaesthesia, SA) thus decreasing the dosage of local anaesthetics (LA) to low dosage concept with concomitant use of lipophilic opioids. The antinociceptive synergism between LA and intrathecal (IT) opioids is an established fact. This concept can provide effective and superior analgesia, may prolong the duration and effectiveness of postoperative analgesia without associated motor blockade (2,3). Most importantly, this concept shows a minimal effect on the degree and level of LA-induced sympathetic block thus minimizing the spinal

hypotension in elderly (2). Carpenter reported the incidence of: high levels of sensory anaesthesia and increasing age appeared to be the two main risk factors for the development of spinal hypotension, which may be especially harmful to the elderly where the problem of limited cardiac reserve frequently occurs (4).

Fentanyl is the most frequently used intrathecal lipophilic opioid and when administered in single doses of 10-30 µg, it has a rapid onset (10-20 min) and short duration of action (4-6 h) with minimal cephalad spread, making it the least likely of all the IT opioids to cause delayed respiratory depression. After single administration, it can be used in day case surgery, where it enhances analgesia without prolonging hospital stay.

Morphine is unsuitable for day case surgery because of its slow onset time (30-60 min), dose-related duration of analgesia (13-33 h) and side-effect profile, particularly delayed onset respiratory depression. It has been reported that the IT administration of up to 200 µg (with an LA for peripheral vascular surgery) in older patients (average age of 68) can be safely performed and with minimal adverse respiratory risk. Other researchers concluded that 100 µg of morphine added to the spinal anesthetic (hip surgery) provided the most optimal balance between analgesia, pain relief and pruritus with negligible respiratory risk (5).

For those reasons, we consider that risk of respiratory depression with 100 µg of IT morphine added to low-dose mixture of LA plus fentanyl is negligible and patients can leave the hospital the next day. Furthermore, the given dose of 100 µg provides excellent overnight post-operative analgesia for the first 24 hours, which is superposed to the short-term fentanyl-analgesia in the immediate post-operative period.

Having in mind the previous statements, we have done a prospective clinical study in 42 geriatric outpatients (over 69 years of age, who leave the hospital the day after surgery) undergoing gynecological-vaginal procedures. This study was conducted to assess the effect of low-dose hyperbaric bupivacaine and opioids (fentanyl plus morphine) given IT in causing minimal hypotension after SA in elderly patients undergoing gynecological surgeries. For that manner, we used the mixture consisting of 0,5% heavy bupivacaine 5-7,5 mg, fentanyl 20 µg and morphine 100 µg. The overall incidence of hypotension was significantly higher in the conventional doses (38%) as compared to low-dosage (8%), with a consequent higher use of vasopressors in the conventional dosage group ($p < 0,05$). The post-operative pain was also at a satisfactory low level, while the percentage of side-effects minimal. Similar observations were found in other studies in the geriatric population (6,7,8).

In conclusion, we can say that SA with low-dose mixture of LA plus opioids (fentanyl and morphine) in the geriatric out-population can be added to the perioperative plan as a way to improve perioperative pain control, avoid GA and parenteral opioids usage. Generally speaking, it is a simple and practical technique, can avoid spinal hypotension, and improve patient satisfaction and outcome.

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GENERAL ANESTHESIA IN THE GERIATRIC OUTPATIENT

Assoc. Prof. Gözde Bumin Aydın, MD
SBU Yıldırım Beyazıt Education and Research Hospital,
Department of Anesthesiology and Reanimation
Ankara, Turkey

Introduction

Population ageing is a worldwide phenomenon especially in Europe, where persons over 65 years are projected to represent in 2050, 30% of the population. This will have a major impact on the demand of healthcare services and treatments, especially surgery. It has been estimated that elderly people require surgery four times more often than the rest of the population, and that this number will increase by 25% by 2020. As this will happen in a context of limited resources and growing costs, it is foreseeable that there will be an increasing demand for outpatient treatments and an increasing pressure on surgeons and anaesthetists to operate in ambulatory settings.

Day surgery procedures for elderly patients

Day surgery procedures that can be indicated in the elderly are numerous: not only 'basic day surgery' (with cataract and groin hernia repair as the most common routine examples), but also general, gynaecological, urological and orthopaedic surgery. Scheduling these patients for elective day surgery instead of emergency surgery has proven to be safer. Urological procedures and especially transurethral resection of bladder tumour (TURBT) are associated with increased risk of unplanned overnight admission or readmission after discharge. Most of these procedures can be performed with minimally invasive surgery and minimally invasive anaesthesia, and are safely manageable in ambulatory settings. Moreover, the majority of these surgeries not only offer an effective solution for many problems associated with sensorial/motor impairments (impaired vision, difficulties in ambulating, incontinence, etc.), but may produce a consistent increase in quality of life. In other words, geriatric day surgery may have a relevant social value, improving motion, functional autonomy and continence and reducing costs related to disability support.

Informed consent

Informed consent should always be obtained in the preoperative consultation but at times it can be challenging with elderly patients. With advancing age comes an increased risk of dementia, but other concerns such as hearing impairment can pose an equal challenge to

communication. It should always be determined if the patient is able to comprehend, retain and process the information presented before giving consent and the physician should ensure that any sensory deficit the patient might have is corrected prior to the consultation. In cases of significant dementia, a family member or another representative should be consulted regarding decision making/regarding treatment.

Preoperative assessment and evaluation

A full history and thorough clinical assessment is required, especially in older and more compromised patients. Patients over 70 years suffer from at least one associated condition and in 30% of them comorbidities are two or more. Polimedication is common and may increase the risk for drug interaction. Compliance toward medications may be insufficient. Analgesics and drugs acting on central nervous system (CNS) may increase the risk of falls. As the risk of thromboembolic complication is increased, a proper preventive treatment should be prescribed. As a principle, not compensated, poorly stabilized patients should be treated as inpatient, as they are at high risk of perioperative complications. Many studies indicate that the risk of perioperative complications after day surgery increases in the presence of pre existing conditions, especially cardiovascular and respiratory, but little evidence supports correlation between outcome and coexisting disease.

The beneficial effects of a routine use of premedication in the elderly are not evident, and a conservative approach is most likely preferable but due to the side effects of drugs and potential interactions.

Other preoperative risk assessments

Older people have diminished neck mobility, and advancing age is an independent predictor of experiencing a difficult intubation in patients with a cervical spine motion limitation. Predicting a difficult laryngoscopy and challenging tracheal intubation is optimal based on several variables, including previous difficulties in airway management, mouth opening, Mallampati classification and obviously neck mobility. Elderly patients have vulnerable teeth and dental injuries seem to be more common in the older age groups. Removable dental prostheses should be taken out to provide optimal conditions for intubation but it may be an advantage to leave them insitu during induction in order to improve mask ventilation.

General anaesthesia

Depletion in neurotransmitters, reduced neuronal density and reduced innervation of skeletal muscles are induced by ageing and may cause reduction in anaesthetic drug consumption. Both reduced cardiac index and reduced baroreflex response increase the risk for intravenous anaesthetics overdosing. Discrepancies between end-tidal and plasma concentration, which are due to reduced alveolar exchanges, may allow overdosing of inhaled anaesthetics.

Changes in pharmacokinetics (reduced hepatic and renal flow, reduction in total body water) and pharmacodynamics (increased sensitivity to CNS depressant agents, reduction in minimum alveolar concentration with age by 4–5% per decade after 40 years) which can be observed in the elderly are related to ageing processes. These changes interfere substantially with the final action of anaesthetic drugs and increase their side-effects. Combining all these metabolic changes together with fast track anaesthesia and day surgery may be challenging.

Reducing dosage and carefully titrating drugs is essential.

Postoperative pain management

It has been demonstrated that postoperative pain after day surgery may last more than 3 days and affect quality of life for more than 7 days. Organizational aspects such as clear instructions at discharge, availability of analgesic drugs and follow-up are key factors, especially in geriatric day surgery. Pain perception does not decrease with age. Fear of addiction or cognitive impairment may restrain patients in reporting postoperative pain. Dementia or aphasia may make it difficult to assess. Easy and simple pain scales should be preferred.

Multimodality combines different drugs with the aim of reducing doses and minimizing side-effects of analgesics. Local anaesthetics play a vital role both alone and/or as a part of the anaesthesia plan. NSAIDs are effective as single drugs only in the case of light-to-moderate pain. In the elderly, an increased risk of severe gastric complications in comparison to younger patients has been reported. Hypovolaemia and dehydration, which are common in the elderly, may aggravate the risk of acute renal insufficiency following their use, especially in association with angiotensin-converting enzyme (ACE) inhibitors and in a dose-dependent way. Acetaminophen has few peripheral effects and no anti-inflammatory action, and is widely used due to its high safety profile. At the recommended doses of 4 g a day is usually excellently tolerated. Associations of acetaminophen and minor opioids have shown to be well tolerated in postoperative pain in the elderly. Opioids are often indispensable in case of major day surgery. Tramadol is well tolerated and effective and is indicated in the case of moderate-to-severe pain. Slowly titrating the dose is effective in reducing emesis.

Complications**Postoperative Nausea and Vomiting**

PONV and post-discharge nausea and vomiting (PDNV) are common and distressing complications following surgery and anesthesia, and may result in dehydration, electrolyte imbalance, wound dehiscence, pulmonary aspiration, and delayed hospital discharge. A wide variety of antiemetic drugs and non-pharmacologic techniques (e.g., acupressure, acupuncture, and transcutaneous electrical stimulation) are available for the treatment and prevention of PONV. 5-HT₃ receptor antagonists are recommended as the first-line regimen for PONV prophylaxis. Dexamethasone, a corticosteroid, has been shown to be effective administered at a dose of 4-12 mg IV. NK-1 receptor antagonists with a long elimination half-life were effective for the prophylaxis and treatment of PONV. The NK-1 receptor antagonist aprepitant appears to be more effective in decreasing the incidence of PONV as compared with ondansetron; however, it is very costly. Droperidol remains the most cost-effective antiemetic therapy despite concerns regarding extrapyramidal side effects and the potential for prolonging the electrocardiographic QT interval when large doses (1.25 mg) of the drug are administered. Metoclopramide is probably the most commonly used antiemetic for treatment of PONV, in particular when the 5-HT₃ compounds and/or droperidol prophylaxis has failed. It is reported that droperidol, dexamethasone, and ondansetron possess similar antiemetic efficacy when administered for antiemetic prophylaxis.

Postoperative Delirium and Cognitive Dysfunction

Elderly patients undergoing surgical intervention often have postoperative delirium (POD) and cognitive dysfunction (POCD). POCD is associated with prolonged hospitalization, delayed recovery, and an increased risk of disability and mortality. Age has been increasingly reported as a significant and independent risk factor for POCD. POD is an acute temporary change in orientation and cognition, whereas POCD is a more subtle and

persistent impairment in intellectual/cognitive performance. POD occurs in 5-15% of elderly patients undergoing noncardiac surgery and POCD occurs in 10-13% at 3 months, and can have significant socioeconomic and medical implications. Healthcare professionals caring for surgical patients should perform an assessment of delirium risk factors, including age [65 years, chronic cognitive decline or dementia, poor vision or hearing, severe illness (e.g., ICU admission), and presence of infection. Healthcare providers should evaluate elderly outpatients who develop POD and POCD for possible precipitating conditions (e.g., uncontrolled pain, hypoxia, pneumonia, infections, electrolyte abnormalities, urinary retention, fecal impaction, hypoglycemia). Although elderly patients may have a higher incidence of transient (early) cognitive dysfunction after general anesthesia in comparison with local/regional techniques, there appears to be no causative relationship between general anesthesia and long-term POCD. Several nonpharmacologic and pharmacologic interventions (e.g. reorientation, environmental modifications, antipsychotic agents) are commonly used when delirium occurs and are associated with varying levels of success.

Conclusion

The number of elderly patients undergoing day surgery will increase in the near future, due to clinical, epidemiological, social and economic reasons. This will bring new challenges for anaesthetists, surgeons and nurses operating in day surgery centres. Healthcare systems and social services will also be involved in the challenge. In the field of anaesthesia, the demand for advanced skills on perioperative management of elderly patients will make specific educational programmes mandatory. Future research should focus on development of specific selection criteria, minimally invasive surgical techniques and effective and well tolerated postoperative pain treatment.

May 10, 2018 Thursday**09:30-10:15 Pro/Con**

Advanced age and ICU admission	Necmettin Ünal (Turkey), Fatma Aşkar (Turkey)
Advanced age is an indication for ICU admission	Birgül Büyükkıdan Yelken (Turkey)
Advanced age is not an indication for ICU admission	Dilek Memiş (Turkey)

ADVANCED AGE IS AN INDICATION FOR ICU ADMISSION

*Prof. Birgül Büyükkıdan Yelken, MD
Eskişehir Osmangazi University,
Faculty of Medicine, Department of Anesthesiology and Reanimation*

In the everyday practice of intensive care unit (ICU), physicians should decide to admission of a patient to the ICU. In most situations, there are well establish criteria and ICU physician use these criteria for decision about admission. The patient is therefore admitted to the ICU with maximum therapeutic engagement but some patients may be admitted to the ICU in a palliative context. It is difficult to dissociate “admission” from “non- admission”.

Older patients represent an increasing group within the population of ICU admissions. Improvements in medical, surgical and intensive cares, with a resulting increased survival to severe illnesses, has contributed to the decision to accept patients of advanced age to intensive treatment thought previously to be too aggressive for them. Many of such diseases and injuries occur in older patients, for whom treatment restrictions are less strict than they were in prior decades. Some surgical procedures are currently carried out in patients with advanced age, some of them with more serious co-morbidities.

Advanced age is associated with a worse physiological status and results in a greater demand of health care resources. Traditionally, the mortality of elderly patients admitted to the ICU has been compared with much younger subjects who have a significantly less fragile underlying health status; in past years, critically ill patients are being progressively older in age. Nowadays, the mean age of patients in the ICU is 60-70 years old and is increasing progressively. The question remains if there is an age limit beyond which a patient would not benefit from admission to the ICU, regarding life-expectancy.

Interestingly, age per se has not been judged to be a factor leading to refusing ICU admission when triage decisions are evaluated. The debate about the benefit and safety of intensive care treatment for the elderly has been faced by the fact that there are significant ethical limitations for performing widespread and well- designed studies.

Advancements in intensive care management and in medical and surgical procedures, decision about admitting elderly patients to the ICU cannot be made considering age alone but taking into account individualized factors such as the reason for hospital admission. The decision to admit an elderly patient to an ICU should be based on the patient’s comorbidities, acuity of illness, and prehospital functional status, which includes quality of life and whether the patient was living independently or was admitted from a subacute/long-term health care facility.

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May 10, 2018 Thursday

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	Advanced age is not an indication for ICU admission	Dilek Memiş (Turkey)

AGE IS NOT AN INDICATION FOR ICU ADMISSION?

*Prof. Dilek Memiş, MD
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Department of Anaesthesiology and Reanimation*

The world population is aging rapidly, entering the age group of over 80 years old (1). The fastest growing age is over 80 years old, increasing by 3.8% per year, and by 2050 it is estimated that all elderly individuals will make up a job. Bagshaw et al. (1) found that, in Austria and New Zealand, 57% of intensive care units (ICU) and 12,00000 patients had a 6-year retrospective analysis and that very old patients in the ICU constituted 13% of total inpatient. They also found that elderly patients had a higher chance of getting from chronic care facilities and comorbid diseases (diabetes, heart failure, stroke, etc.).

Old age is associated with increased prevalence of chronic disease and work disorder (2,3). As a result, the proportion of elderly mental disorders will increase (4). Similarly, the provision of priority health care and priority to admission to ICU is envisaged (5). There are conflicting brands in the intensive care unit for short-term and long-term survival (6,7). These inequalities are related to the severity and type of illness, the duration of follow-up, and the elderly and elderly rates for old age (8,9). Garrouste-Orgeas et al. Found that 73% of them were not admitted to ICU at very early ages (10).

The impact on survival after intensive care has long been known. Both APACHE and SAPS mortality prediction scores bear significant weight in advanced age. The results show that the mortality rate of the ICU patients in elderly patients is very high. In these studies, case differences have a major impact on outcomes, and ICU mortality increases from 14% to 46% and hospital mortality from 28% to 48% (11). The high mortality seen after discharge from the hospital is also worrying (12).

It is not right to link mortalitenes only with age. When 5132 very elderly ICU patients from 21 European countries were examined, it was found that fracture was related to 30-day mortality independently (11). Fragility is defined as the clinical state of decreased defensiveness due to age-related decline in physiological reserves and is assessed in various physiological systems (Table 1) (13). This notion of fragility shows a relationship with negative consequences such as reduced functional performance and mortality. In a study using a fragility index, a strong association was found between increased fragility and mortality (13). As the fragility increases, the mortality also increases.

Table 1. Clinical Fragility Score

- 1-Very good: active, energetic, good motive and fit; often do regular sports
- 2-Good: No active patient, but 1st gracer is lower
- 3-Well-treated prosperous patient
- 4-Apparently defenseless: there is disease even though it does not seem obvious
- 5-Slightly fragile: Limit dependent on daily activities in heavy activities
- 6-Medium fragile: dependent on daily life, need help
- 7-Severely fragile: completely dependent on others or terminal period

The number of elderly patients is increasing in ICU. When the ICU is > 80 years old, the patient's additional diseases, seriousness of the disease, pre-hospital functional status are assessed, chronic age is not evaluated (14). > 80 years of age patients benefit from ICU, it is important to note that fragility is important. Elderly patients 'aged acute care units' can be done.

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**GERIATRIC ANESTHESIOLOGY:
WHERE HAVE WE BEEN AND WHERE ARE WE GOING?**

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An increasing number of geriatric populations which is over 65 years old, more frequently encountered by anesthetists every day, so has become a special group of patients where basic and clinical sciences and anesthetic art are combined by anesthesiologist. However, the perioperative period of the geriatric patient requires a multidisciplinary team consisting of department such as geriatrists, surgeons, anesthesiologists and support units (physiotherapist, nutritionist, audiologist). It has also been shown that mortality and morbidity decrease with geriatric patient counseling teams already established (1).

In the United States, in 1900s 5% were over 65 years of age, but in 2000 this rate has reached 13%. In addition in the year 2030, it is predicted that the US geriatric population will account for 20% of the total population (2). The expected lifetime for 2017 in the US is 82.5 years, while it is expected to rise to 86.6 years in 2050. Also, 2015 life expectancy in Turkey 78 years and the elderly population increased by 17.1% over the last 5 years (3). 8.7% of the world population constituted the elderly population in 2016 (3). By 2050, it is estimated that the population over the age of 65 will constitute at least 20 percent of the population of 100 countries.

Geriatric patients are not only due to advanced age-related physiological changes (hearing loss, loss of vision, mental changes); it is also a difficult group of patients with one or more chronic illnesses at the same time (4). 46.3% of the elderly who died in 2015 in Turkey is due to circulatory system diseases (3). In the United States, 96 per 1,000 people are affected by cardiovascular diseases (4). The geriatric population also had metabolic diseases such as diabetes and osteoporosis (4). Half of those diagnosed with cancer are 65 years of age or older (4,5). Cognitive impairments were also reported in 23 of 1000 people over age 70 (4). After all, all these reasons; the elderly population had a higher rate of surgery than young people (58%), and in the future it would predict that geriatric surgeries will increase from 14% to 47% (6).

The concept of 'geriatric anesthesia' started to appear in the literature for the first time in the 1940's (7,8) and ASA established the geriatric anesthesia committee in 1991. In 2002, ASA published the first curriculum on geriatric anesthesia (9) and then continued with training programs and documentation and training activities (10,11). In the late 1990s, the Society for Advancement of Geriatric Anesthesia (SAGA), a more active group, was established in 2000 to increase the interest and sharing of geriatric anesthesia. The American Geriatrics Society (AGS), which established later, caused rapid progress in geriatric anesthesia with SAGA and ASA.

The choice of method to be applied due to age heterogeneity and personalized physiological aging speed prevents the decision of which technique is right for geriatric anesthesia. However, since the morbidity, mortality and recovery times of elderly patients are longer after the operation (5,12-15); ambulatory surgery was performed and the concepts of "routine" preoperative evaluation guides (16,17), intraoperative quality indicators (18), "Optimal Perioperative Geriatric Hospital Management: Best Practices Guide" (19), "frailty" and "prehabilitation" were developed and trying to prevent these negative results.

As a result, it is unavoidable for all anesthetists to take care of geriatric anesthesia; there is a long way to go to determine the best methods and techniques to be applied. For this reason, especially anesthetists should pay more attention to research and education on this subject.

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CHECKLISTS FOR PERIOPERATIVE MANAGEMENT

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The older adult population (>65 years) is growing at a rapid rate and the number of older adults requiring surgical interventions has substantially increased and will continue to escalate as the population ages. This population has a unique set of needs owing to the effects of aging, some of which make them particularly prone to postoperative complications and a prolonged recovery. Given the paucity of evidence-based guidelines for this patient population, it is vital to understand the pathophysiologic changes that occur in the older patient in order to reduce their perioperative risk.

Advancing age is associated with a reduction in physiologic reserve of all organ systems, even in the absence of any underlying pathology, and these changes predispose to the development of perioperative adverse events. In addition, older patients often have multiple comorbidities requiring complex medical regimens that may further complicate perioperative management.

Older adult surgical patients often require a different level of care than younger patients during the perioperative period. They are prone to developing postoperative complications, functional decline, loss of independence, and other untoward outcomes. In order to provide optimal care for the older surgical patient, a thorough assessment of the individual's health status is essential. Though the goal should be a tailored, comprehensive geriatric evaluation at a designated preoperative appointment, this goal may not always be possible in the context of a busy surgical practice.

Immediate Preoperative Management

The health care team, patient, and his or her family/caregivers should ensure that patient goals and treatment preferences are understood before deciding on a treatment plan. Ideally, this step occurs at a preoperative clinic appointment.

In the immediate preoperative period the patient's goals and treatment preferences should be confirmed and documented. Also during this time, fasting recommendations should be

followed, appropriate prophylactic medications should be given, and medications lists should be reviewed for nonessential and inappropriate medications.

Intraoperative Management

Most intraoperative changes in physiologic parameters have minimal impact on long-term outcomes, though they have potential to result in harm for certain patients or in certain contexts.

In addition, many intraoperative considerations that are important for any patient population are particularly important in the elderly, owing to their decreased ability to compensate for physiologic stress.

Postoperative Management

Several postoperative complications have particularly common in geriatric patients, including delirium, pulmonary complications, falls, undernutrition, urinary tract infection (UTI), pressure ulcers, and functional decline.

As a result, older patients are often more sensitive to anesthetic and analgesic agents administered during the perioperative period.

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PERIOPERATIVE MANAGEMENT TO REDUCE POSTOPERATIVE COMPLICATIONS

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According to the guideline produced by expert members of a Working Party established by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) (1):

Older people should expect the same level of dignity and anaesthesia care as younger adult patients. Additional time may be required to allow older people to prepare themselves for surgery. Functional aids (glasses, hearing aids, dentures) should remain in place until just before the induction of anaesthesia.

Temperature control

The importance of body temperature is often underestimated in the elderly. Elderly patients are at increased risk of hypothermia in the peri-operative period, and are more difficult to rewarm once hypothermic. Therefore, measures to maintain temperature, including regular assessment (tympanic pre- and postoperatively, tympanic/pharyngeal/oesophageal intra-operatively) and treatment (forced air warming, fluid warming) should be available peri-operatively, including during transport to and from theatres, and in the postoperative recovery area.

Monitoring

The Working Party recommends that anaesthetists routinely consider use of the following monitoring devices for the elderly, particularly during major or emergency surgery:

Intra-arterial blood pressure monitoring:

Ideally, intra-arterial cannulation and transduction should commence before induction of anaesthesia, to diagnose, treat and therefore prevent the significant hypotension that can occur at this time in elderly patients. Beat-to-beat monitoring also reduces the incidence of hypotensive episodes occurring between non-invasive blood pressure measurements, and facilitates near-patient testing (haemoglobin concentration, blood glucose, arterial blood gases).

Central venous pressure: There is a poor relationship between central venous pressure and blood volume, as well as poor correlation in response to a fluid challenge, particularly in elderly patients with poorly compliant ventricles and vasculature, potentially resulting in fluid overload. Central venous catheterisation may provide an additional route of venous access after complex surgery when vasoactive drug support or parenteral nutrition is necessary, but must be balanced against the complications of such access, including insertion trauma and infection;

Cardiac output monitoring: Although NICE guidelines recommend that oesophageal Doppler monitoring 'should be considered for use in patients undergoing major or high-risk surgery', there is limited evidence in the elderly and, especially, in emergency surgery. Use of other cardiac output monitoring technologies may also be problematic; therefore, intra-arterial blood pressure monitoring should be considered earlier in elderly unwell patients. Regardless of monitoring used, fluid therapy should be administered with great care and in divided boluses to allow assessment of response;

Bispectral Index Monitors (BIS) or entropy monitors should be used to guide depth of anaesthesia and sedation. The doses of anaesthetic agents required to induce and maintain general anaesthesia and sedation decrease with increasing age, and failure to adjust doses (which is common) can result in relative overdose and prolonged, significant hypotension

Depth of anaesthesia monitors are recommended as an option by NICE "during any type of general anaesthesia in patients at higher risk of adverse outcomes. This includes "patients at higher risk of excessively deep anaesthesia". Age-adjustment algorithms are built into the software of most new generation anaesthetic machines, and are routinely used for TIVA. A 'triple low' of low BIS and hypotension despite low inspired inhalational agent concentration is associated with higher mortality and prolonged inpatient stay. **Peripheral nerve stimulation:** Pharmacokinetic and pharmacodynamic changes in the elderly can result in unpredictably prolonged neuromuscular blockade, suggesting that neuromuscular function monitoring should be used routinely for patients administered neuromuscular blocking agents.

Fluid and electrolyte management Fluid and electrolyte therapy is challenging in older surgical patients. Pathophysiological changes in elderly patients reduce homeostatic compensation for blood/fluid loss, but also for boluses of administered intravenous fluids. Prolonged pre-operative fasting should be avoided, with clear fluids normally allowed up to 2 h before surgery to avoid dehydration.

Blood transfusion

Pre-operative and postoperative anaemia are common in the older surgical patient, and are associated with myocardial ischaemia, falls, poor wound healing and rehabilitation. However, there is a lack of evidence specific to the elderly surgical population about when and how much to transfuse to optimise haemoglobin concentration without incurring transfusion-related complications. Observational data suggest that patients aged > 65 years have higher mortality after major noncardiac surgery if there is 'substantial' operative blood loss or they have a pre-operative haematocrit < 24%, but lower mortality if pre-operative haematocrit is 30-36%, and operative blood loss is < 500 ml.

Positioning

Positioning of the patient on the operating table must be sympathetic to his/her musculoskeletal condition, and take into account, for example, kyphoscoliosis, arthritic joints and fixed flexion deformities. Functional splints should not be removed, if practicable.

The Working Party recommends that probable sites of nerve injury are comprehensively padded before the start of surgery, and assessed routinely every 30 min throughout surgery.

Elderly skin can be friable. Care should be taken when transferring the patient between his/her bed and the operating table, and when removing adherent items from the patient, for example, diathermy pads, tape holding the eyelids closed and surgical dressings. Similarly, friable skin is more prone to thermal damage, hence care should be taken with contact warming devices.

Positioning, together with appropriate fluid therapy and antithrombotic measures, reduces the risk of peri-operative thrombo-embolism in the elderly.

Type of anaesthesia

The choice of anaesthesia – regional or general – appears to be of less importance than how sympathetically it is administered with regard to the patient's pathophysiological status. Observational studies and meta-analyses do not reliably show any significant difference in outcome between regional and general anaesthesia, but this may be because the outcomes measured are not specifically related to anaesthesia (e.g. 30-day mortality, length of stay) or because regional anaesthesia is seldom administered without sedation. The choice of technique, therefore, should be made according to the individual patient. Intuitively, sympathetically administered regional anaesthesia, particularly with minimal/no sedation, would appear to offer some benefit in terms of avoiding short-term morbidities, including hypotension, delirium, cardiorespiratory complications and the need for opioid analgesia. However, patients with cognitive dysfunction may not be able to comply with regional anaesthesia without heavy sedation, negating the benefits of avoiding the postoperative cognitive effects of general anaesthesia. Age-related alterations in the pharmacokinetic and pharmacodynamic profiles of all anaesthetic agents render the older patient sensitive to relative overdose, resulting in myocardial depression, reduced blood pressure homeostasis and delayed recovery. Particular care should be taken with hypnotic agents: the dose required to induce anaesthesia is lower, and the onset time longer. Depth of anaesthesia monitoring is recommended.

Peri-operative pain is common, but underappreciated, in elderly surgical patients, particularly if they are cognitively impaired. Anaesthetists should administer opioid-sparing analgesia where possible, and follow published guidance on the management of pain in older people.

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BLOOD AND FLUID MANAGEMENT IN THE GERIATRIC PATIENT

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INTRODUCTION

The older adult population (>65 years) is growing at a rapid rate, and a significant percentage of older adults undergo surgical procedures. This population has a unique set of needs owing to the effects of aging, some of which make them particularly prone to postoperative complications and a prolonged recovery.

Ageing is associated with impaired physiological reserve and a reduced ability to compensate for fluctuations in environmental conditions. These changes include reduced cardiac and renal reserve, making the elderly more vulnerable to changes in water and electrolyte gain or loss with a resulting increase in morbidity and mortality.¹ Age-related changes and chronic diseases, such as cardiac or renal disease, impair fluid and electrolyte homeostasis in elderly patients and variations in factors such as body mass index may lead to substantial variation in daily fluid requirements between patients.² These factors act in concert to increase the susceptibility of elderly patients to the complications of inappropriate intravenous fluid administration.³ These can be divided into complications of fluid overload, such as cardiac failure and oedematous states, complications of inadequate fluid replacement such as pre-renal renal failure and inadequate perfusion of other end organs such as the skin, the gut and eventually the brain, and thirdly, complications of electrolyte imbalance, with subsequent cardiac and central nervous system consequences such as arrhythmias and delirium.⁴

FUNCTIONAL AND ANATOMIC CHANGES IN THE KIDNEYS

As with other organ systems, there is a progressive decrease in the baseline function of the kidney after young adulthood. Longitudinal studies have shown significant variation in the rates of change in renal function among otherwise similar individuals, so it remains uncertain whether these common changes reflect subclinical disease or normal aging. In most individuals between the ages of 30 and 85 years, there is a 20% to 25% loss of renal mass,

most of which is cortex. The aging kidney also exhibits hyalinization of blood vessel walls and a decrease in the number of glomeruli. This process progresses to hyalinizing arteriosclerosis and scattered arteriolar obliteration with a resultant loss of nephrons secondary to ischemia.⁵

Functional changes parallel anatomic changes in the kidney. The kidneys exhibit an impaired concentrating capacity over time and a 10% decline in renal blood flow per decade after young adulthood. Functionally, the most studied change in the aged kidney is the decline in the GFR.⁶

FLUIDS IN ELDERLY

Total body water decreases with age. In a younger man near his ideal body weight, total body water composes 60% to 65% of his body mass. By age 80 years, this contribution is reduced to 50%. Less arterial distensibility, decreased baroreceptor reflexes, and sluggish homeostatic mechanisms result in increased susceptibility to hemodynamic changes in the elderly. After ingestion of water (via enteral or parenteral routes), the body fluid compartments are diluted. With less than a 1% decrease in osmolality, the hypothalamus–posterior pituitary axis responds by inhibiting ADH release. In the absence of ADH, the kidney excretes a dilute urine, hence the efficacious excretion of the water load. Even with GFR rates as low as 30 to 50 mL/min, typical water loads can be excreted effectively. However, in the presence of inappropriately elevated ADH levels or significant extracellular volume depletion, a relative water excess can result in hyponatremia.⁶

FLUID MANAGEMENT IN ELDERLY

Fluid management is never routine in elderly. Inappropriate intravenous fluid therapy is a significant cause of patient morbidity and mortality and may result from either incorrect volume (too much or too little) or incorrect type of fluid. Fluid overload has no precise definition, but complications usually arise in the context of pre-existing cardiorespiratory disease and severe acute illness. Insufficient fluid administration is readily identified by signs and symptoms of inadequate circulation and decreased organ perfusion. Administration of the wrong type of fluid results in derangement of serum sodium concentration, which, if severe enough, leads to changes in cell volume and function, and may result in serious neurological injury. Fluid therapy is important for maintaining perioperative hemodynamic stability and sufficient tissue perfusion. But for elderly patients with hypertension and other underlying disease or organ dysfunctions, fluid therapy may cause the risk of insufficient or excessive circulation volume due to poor tolerance to anesthesia and surgery, which further induces hemodynamic disorders and tissue hypoperfusion.⁸

With the aging of the population, more and more patients are in need of large-scale noncardiac surgery. Elderly hypertensive patients with hypovolemia and hypoxia are often unable to tolerate such surgery due to postoperative complications. The traditional methods normally introduce more liquid, but easily lead to tissue edema and postoperative low blood pressure. Aggressive fluid resuscitation, which normally would be used in younger trauma patients, potentially could do serious harm to an elder patient. These methods also slow tissue healing and increase the incidence of complications such as pulmonary infection. Furthermore, rapid rehydration loading within a short time can easily lead to acute pulmonary edema and heart failure, which is often life threatening. Also, chronic diuretic therapy can cause chronically contracted vascular volume and low serum potassium. Rapid crystalloid infusion in this population can potentially cause electrolyte imbalances. Normally, fluid resuscitation prompts potassium to shift out of the cells to maintain a normal serum

potassium. Elders with chronically low potassium levels may not have intracellular reserves to maintain normal serum levels, causing hypokalemia and lethal complications.^{9,10,11}

From the other point of view, hypoperfusion can result in decreased oxygen transport and organ damage. So, not addressing hypotension can also be fatal. Fluid resuscitation has to be goal-directed to prevent over-resuscitation in the elderly population. Markers of resuscitation, such as lactate and/or tissue oxygenation, can be used to help direct efforts to avoid heart failure. Elevated levels of lactate are related to tissue hypo perfusion that might be the result of under resuscitation. Normalizing lactate levels early, within the first 24 hours, has shown to be beneficial.

Since there are no instruments that can accurately assess blood volume or tissue perfusion, or accurately predict liquid overload, most studies have focused on the selection of types of blood for the perioperative treatment. Clinically, the decision regarding the amount of liquid to use during the surgery still depends on the anesthesiologist's experience and patient's tolerance.¹²

Body fluid management is particularly important in elderly patients under general anesthesia. Traditional body fluid management is targeted liquid management under the guidance of CVP, and it is necessary to preset the liquid dosage. But this cannot meet the individual needs, causing insufficient tissue perfusion, organ dysfunction and other adverse events. The traditional capacity assessment methods include straight leg raising test, clinical experience, CVP measurement, etc. However, these methods have disadvantages, such as deviation from experience, limited patients and insufficient fluid. Therefore, there is a need for clinicians to find more secure and feasible assessment methods. Ultrasonography-guided goal directed fluid management is a new approach to capacity assessment. According to the patient's perioperative systemic capacity and detailed hemodynamic parameters, real-time adjustment is available for implementation of effective individualized fluid replacement program. It can maintain the stability of hemodynamics indicators to ensure smooth surgery. There is a certain correlation between blood volume and CVP. When CVP is below 7 mmHg, an inferior vena cava collapse index >40% can ensure better response to liquid therapy. When the index is <40%, it turns out to be poor response to liquid treatment.¹³

BLOOD MANAGEMENT IN ELDERLY

Anaemia is common in the elderly surgical population. The causes of anaemia in older surgical patients are varied and relate to physiological ageing, the effect of co-morbidities and the surgical procedure itself. Ageing is associated with dysregulation of proinflammatory cytokines, which negatively influence haemopoiesis either through the inhibition of erythropoietin production or impaired erythropoietin receptor function. The commonest causes of anaemia in older people are iron deficiency anaemia and anaemia of chronic disease or inflammation. One-third of older anaemic patients have 'unexplained' anaemia. Anaemia is an independent risk factor for mortality, postoperative complication rates, length of hospital stay and poor functional outcomes in various elective and emergency surgical populations.¹⁴

Postoperative anaemia has multiple causes. It can result from pre-existing preoperative anaemia or occur secondary to traumatic or operative blood loss often worsened by haemodilution. Inflammatory cytokine release (IL-1, interferon- γ , TNF- α) after surgery can cause reduced gastrointestinal iron uptake, iron sequestration in macrophages, decreased erythroid response to erythropoietin and diminished erythropoietin production. This results

in less available iron for erythropoiesis despite normal iron stores in the bone marrow macrophages. All these factors can exacerbate postoperative anaemia.¹⁵

Anaemia has a negative impact on medical postoperative outcomes, functional status and quality of life in both elective and emergency surgical populations. Within elective cardiac and non-cardiac surgical populations preoperative anaemia is associated with increased risk of perioperative cardiac events, infective complications, respiratory failure, and renal and central nervous system adverse outcomes. Furthermore, and particularly relevant to older surgical patients, a postoperative haematocrit of <30% in patients aged over 50 undergoing major elective non-cardiac surgery is an independent predictor of postoperative delirium. This is important as delirium itself carries a risk of increased mortality, morbidity, longer length of hospital stay and higher chance of institutionalization.¹⁶ In emergency patients following hip fracture, anaemia on admission confers a negative impact on postoperative functional recovery, length of hospital stay and readmission rate. In the first three days following hip fracture surgery, a significant linear association is shown between higher haemoglobin level and improved functional status.¹⁷

Preoperative anaemia in surgical patients increases the chance of requiring allogenic red cell transfusion which is itself associated with adverse effects. In contrast, two large retrospective studies report that while transfusion is associated with increased mortality if the preoperative haematocrit is between 30% and 35.9% with less than 500 mL blood loss, conversely in patients with over 500 mL blood loss or a preoperative haematocrit of less than 24%, transfusion may actually reduce mortality risk.¹⁸

More recently, the same group concluded that, at an institutional level, hospitals with higher transfusion rates for significant perioperative blood loss (more than 500 mL) report reduced 30-day mortality rates.¹⁹

Within the elective anaemic surgical population, prompt assessment for underlying cause, timely investigations and optimization using intravenous iron, nutritional supplementation, erythropoiesis stimulating therapy and transfusion where necessary should be employed. Correction of iron-deficiency anemia can be easily done by supplementing iron in oral or intravenous form. Oral iron is generally well tolerated, but some patients have significant gastrointestinal symptoms and require intravenous iron supplementation. Maximum increase in Hgb levels in the treatment of iron-deficiency anemia with intravenous iron can take up to 2 weeks. Vitamin B12 and folate deficiency can easily be corrected by supplements.²⁰ The availability of recombinant human erythropoietin (rHuEpo) for the treatment of anemia in selected patients offers an option to reduce or eliminate the need for RBC transfusion. Several studies have documented that the use of rHuEpo preoperatively is associated with a significant reduction in the number of blood transfusions in the perioperative period.²¹

The indications for perioperative blood transfusion are controversial because there is only one randomized clinical trial in adults that has evaluated restrictive versus liberal transfusion practice. Patients in ICU randomized to restrictive transfusion group (transfused when Hgb concentration < 7 g/dL) had similar mortality as patients in the liberal transfusion group (transfused for Hgb concentration < 10 g/dL). Conservative or restrictive transfusion triggers are now recommended with evidence suggesting that such practice does not affect mortality or functional status postoperatively.²²

CONCLUSION

Age-related pathophysiological changes in the handling of fluid and electrolytes make older adults undergoing surgery a high-risk group and an understanding of these changes will enable better management of fluid and electrolyte therapy in the older adult. Current trends in goal-directed therapy demonstrate favorable postoperative outcomes; however, little is known as to the best application of fluid management in the elderly. Perioperative fluid management of elderly surgical patients must be considered in the context of the reduced organ-specific functional reserve associated with normal aging. Considering the blood management, patient age, ASA grade, preoperative Hb are reliable predictors for perioperative blood transfusion in elderly patients.

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Is advanced age too old	Ülkü Aypar (Turkey), Ljubica Pejakov (Montenegro)
Old organs for transplantation	Jasna Uranjek (Slovenia)
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Superelderly: outcome and perioperative management	Filiz Üzümcügil (Turkey)

OLD ORGANS FOR TRANSPLANTATION

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A severe shortage of human organs for transplantation motivated different considerations which new strategies and technologies could be used to replace or improve the function of failing organs (1). Strategies like extended criteria donor (ECD) (2), donation after circulatory death (DCD) with/without extracorporeal membrane oxygenation (ECMO) (3, 4), living donation for some organs (5), early identification of potential donors in emergency departments (ED) (6) and new technologies like cloning, genetic engineering, tissue engineering and cellular transplantation have emerged (1).

Age, especially old age is one of the criteria in the ECD criteria list, although it is different for every solid organ. Unfortunately, there is still frequent erroneous assumptions among medical staff that advanced donor age per se is a contraindication for donation. Through years, because the size of all recipient waiting lists and the number of waiting lists deaths have increased, older donors and ECD have to be and are being used more and more frequently (2, 7).

The average age of donor organs is so increasing, but the impact of older donor age on transplantation varies by organ (8).

Kidney

Kidney transplant is one of the most cost-effective surgical interventions and, by far, the most common type of transplant procedure performed, because successful kidney transplantation improves long-term survival and quality of life for most end-stage renal disease patients (9). All donors over age 60 and donors aged 50-59 with at least two of three medical criteria – cerebrovascular accident as a cause of death, history of hypertension and creatinine > 1,5mg/dL are considered ECD for kidneys (7, 10, 11). Allografts from older donors have a higher rate of delayed graft function, more acute rejection episodes, and decreased long-term graft function. Factors like prolonged cold ischemia time, increased immunogenicity, impaired ability to repair tissue, and impaired function with decreased nephron contribute to this (12). A kidney biopsy provides exact information considering donor's kidney patho-morphological status. Thus, biopsy-based allocation algorithms can provide satisfactory results with donors aged ≥ 65 years, without increasing the risk of

premature graft failure which was confirmed in many different studies (7, 13, 14, 15, 16 , 17, 18, 19).

Similar results were achieved with older living kidney donors (20).

Liver

Liver transplantation (LT) is an accepted procedure for patients who suffer life-threatening chronic and acute liver disease, hepatocarcinoma and several metabolic diseases (9, 21). Unlike for kidney transplantation, a uniform, worldwide-accepted definition of an extended-criteria deceased liver donor does not yet exist (22). A donor risk index (DRI) based on age, race, cause of death, donation after cardiac death, type of graft, height, duration of cold ischemia, and type of sharing was developed and later modified to quantify graft quality (23, 24), where donor age and duration of cold ischemia are essential in the assessment of graft quality (25). Proposed criteria for ECD include donors > 60 years, donors with a history of malignancies, with hypernatremia, prolonged intensive care unit (ICU) stay, vasoactive drug requirements, steatosis, positive serology for hepatitis C or B virus, livers with a cold ischemia time > 12 h, donation after circulatory death, and grafts from split-liver and living related donations (26). With LT, recipient characteristics like the model for end-stage liver disease (MELD) score, ethiology of liver disease, recipient age and a history of previous LT are at least as important as donor factors when predicting LT outcome (25).

There is growing evidence that advanced age is not a contraindication for liver donation and that outcomes in graft and patients' survivals are comparable using older donors (60 years or more), regardless of recipient age (27, 28, 29, 30, 31, 32, 33).

On the other hand, with older living liver donors, extending the limits of surgery comes at the price of more complications in the donors. Therefore, procedures like right hepatectomy with middle hepatic vein harvesting and any procedure causing a remnant liver volume less than 35% should be avoided in donors who are 50 years old or older (5).

Lung

Lung transplantation (LuT) is an effective treatment modality for selected patients suffering from any form of end-stage pulmonary disease (34). When adhering to standard donor criteria for LuT, only 15% of the multiple organ donors have lungs, suitable for transplantation (35). Age < 55 years is one of the traditional lung transplant donor selection criteria (36). As with other organs, a shortage of donors has compelled the use of extended-criteria donor organs in LuT, meaning ECD for LuT are donors with age > 55 years, PaO₂ at FiO₂/PEEP 5 < 300mmHg, tobacco history >20 pack years, inhalative drug abuse, presence of infiltration on chest X-ray or purulent secretions at bronchoscopy (37).

Several reports show comparable early and long term outcomes with older lung donors (38, 39, 40, 41, 42, 43, 44) with some concerns about recipients with pulmonary hypertension or prolonged cardio-pulmonary bypass (38), recipients with special conditions or co-morbidities (39, 40, 44) and concerns about the need for the transplanted organ (43).

Some remarks have been raised about reduced graft longevity with older donors, showing a higher incidence of bronchiolitis obliterans syndrome (36) and lower levels of anti-inflammatory interleukin-10 in the lungs of older donors which has been shown to correlate in turn with primary graft dysfunction and may be a plausible biological mechanism for the reduced resilience of older donor lungs to the effects of ischaemia-reperfusion injury (45).

Heart

Heart transplantation (HT) has become a therapeutic option for patients suffering from end-

stage heart failure. Traditional criteria for HT were < 40 years of age and negative medical history (47). Considering age, this criterion was even more strict than with other organs.

But the increasing demand for cardiac allografts and experience in the field of transplantation have led to a shift toward ECD even for the HT. Different transplant centres have developed formal extended criteria for HT, proposing advanced donor age (>40 years for men and > 50 years for women), concomitant non-obstructive coronary artery disease or inability to obtain a cardiac catheterization, mild left ventricular hypertrophy, prolonged ischemic time or positive donor serology for hepatitis C (47, 48, 49). Considering age, upper limit has been increasing year after year (50).

There is a lot of papers showing promising results using ECD for HT, all emphasizing the need for profound donor assessment and recipient evaluation with its co-morbidities and risk of death on waiting list estimation (46, 50, 51, 52).

Pancreas

Pancreas transplantation (PT) is a treatment for advanced type 1 diabetes and offers significant improvement in quality of life (53). Papers on PT, regarding age, are not consistent. Some authors have managed to prove that age is not a factor, determining the PT success (54), while the others have not (53). But there is also inconsistency in determination of the old age, which contributes to the interpretation of the results and to appropriate comparison (55).

Conclusion

There is enough evidence in all fields of transplant medicine that old organs can be successfully used for treatment with transplantation with clearly defined necessary precautions and considerations for specific organ and recipient condition.

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Superelderly: outcome and perioperative management	Filiz Üzümcügil (Turkey)

AGED ANESTHESIOLOGISTS

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In relation with the aging general population, we also observe an increase in the number of elderly physicians including anesthesiologists. Financial need and inadequate retirement planning are the main reasons for such an increase. Aging and experience come together and this makes these physicians a necessary resource for the adequate provision of health care in some specialties.¹ The chronological and biological aging differs among individuals, and it may be difficult to differentiate between the normal physiological aging process and changes secondary to disease, such as dementia, which has an incidence of 3-11% in those over 65 yr.¹ Social stressors, illness, fatigue, and substance abuse (with an incidence as high as 15% in anesthesiologists)² may also have variable effects on competence and become more common with aging.

In medicine, less job satisfaction, burnout, anxiety, depression, and fatigue are more common in older physicians.^{3,4} Besides, fear of failure and challenges to self-esteem may be seen in these physicians. Getting up earlier in the morning makes older people and physicians more suitable to work more efficiently in the morning (described as “morningness”).⁵ There is a declining ability to cope with on-call stress and sleep disruption along with an increasing vulnerability to fatigue and decreased vigilance. Night on-call work is a commonly cited reason for anesthesiologists to retire early.⁶ It takes up twice as long to process information as they are getting aged from their 20s through to their 70s.⁷ Although experience increases analytical processing declines. Flexibility and the ability to cope with environmental changes reduce.⁸

Trunkey reviewed existing data on neurocognitive changes with aging.² Aspects of the Wechsler Adult Intelligence Scale (WAIS) decline with advancing age from a score of 100 at age 20-24 yr to a score of 75 at age 70-74 yr. The MicroCog™ Assessment of Cognitive Functioning in the WAIS is designed to assess reactivity, attention, numeric recall, verbal memory, visuospatial facility, reasoning, and mental calculation.

Especially in anesthesiologists and surgeons, manual dexterity and visual acuity⁵ reduce, and physical and mental health problems become more common. Arthritis and decreased psychomotor agility may impede the physician’s ability to perform technical procedures. Years of repetitive performance may partly compensate, but to a degree which has been

poorly documented. Visual impairments, such as cataracts and glaucoma, may lead to serious handicaps if not remedied. Hearing impairment may begin at approximately age 40 yr.⁹ Common hearing problems in anesthesiologists include presbycusis (hearing impairment in the high frequency range), abnormal loudness perception, tinnitus, and difficulty with sound localization. Why do anesthesiologists 65 yr of age and older have a greater incidence of medicolegal actions against them than younger colleagues? Speculative explanations include easier fatigue, less vigilance, deviations from standard practice, and potentially less participation in continuing professional development (CPD).¹⁰

How to get rid of aging concerns of the anesthesiologist?

In order for being helpful for the newcomers with the experience acquired, leaving the business is not the solution. Reducing night calls, shortening schedules, and working hours and making financial plans for retirement^{10,11} may help to reduce the problems of aging in anesthesiologist. Having less night shifts, administrative responsibilities and dealing with less number of patient may also be helpful. High-acuity cases that require rapid cognitive processing can be best avoided together with other aspects of anesthesia practice that have a higher frequency of sudden and challenging cardiovascular and respiratory emergencies. In addition, for the higher acuity cases, more time should be scheduled for the assessment of patients with complex medical problems. Finally, additional assistance team for older anesthesiologists should be provided.

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Superelderly: outcome and perioperative management	Filiz Üzümcügil (Turkey)

OLDER MOTHER GIVING BIRTH

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Pregnancy in older age, over 50, in the past few decades become possible for many women due to big advances in assisted reproductive technology, particularly in eggs donation.

Biologically, fecundity in women ends with menopause, a time when menstrual period stops permanently and women are not able to get pregnant. Before menopause, women go through perimenopause that is characterized by with irregular menstrual cycle, lower egg quality and difficulty to conceive. Not only in women, but also in men fertility declines in a very gradual and later process. Contrary to men, in women fertility declines rapidly after the age of 38. As older the parents are, there are greater risk for genetic defects, incidence of different illness and high level of miscarriage in older mothers.

According to the statistics there are more babies born to mother at the age of 50 through in-vitro fertilization, with the use of donor oocytes.

Pregnancy in older mother is a subject of many debates and controversies. Some are against motherhood in advanced age due to high risk to health of mother and baby. Risks associated with childbearing at older age include an increased incidence of hypertension, gestational diabetes, delivery by caesarean section, preeclampsia, eclampsia, HELLP syndrome. When compared to mothers at the age of 20, mothers over the age of 50 are at two to three times the risk of premature birth low birth weight, premature birth and fetal mortality.

Since older mother are at higher risk for delivery of caesarian section there are higher application of different anesthetics' techniques.

In conclusion, pregnancy in older age are increasing, but are very of the associated by higher incidence of complications in mother and child.

May 10, 2018 Thursday

13:00-14:15 Panel VII

Is advanced age too old	Ülkü Aypar (Turkey), Ljubica Pejakov (Montenegro)
Old organs for transplantation	Jasna Uranjek (Slovenia)
Aged anaesthesiologists	Canan Atalay (Turkey)
Older mother giving birth	Vlatka Sotosek Tokmazic (Croatia)
Superelderly: outcome and perioperative management	Filiz Üzümcügil (Turkey)

SUPERELDERLY: OUTCOME AND PERIOPERATIVE MANAGEMENT

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Department of Anaesthesiology and Reanimation*

The patients at ≥ 80 years of age are actually defined as 'super-elderly'. Although the number of patients that belong to that group is clearly rising, it is not sufficient to address these patients in randomized controlled trials. Another reason that we cannot obtain data from RCTs is that these patients are most commonly heterogeneous in terms of their organ reserves and functional capacities. The data that we currently have depend on case reports and small trials addressing specific surgical procedures. The data is actually not surprising; the preoperative cardiovascular and respiratory problems, and postoperative adverse events are more common in the super-elderly group, when compared to the elderly (1,2). The postoperative complications especially pulmonary complications are reported to be higher and the hospital-stay to be longer in these patients (3). The procedures are tended to be performed less invasively to decrease the length of the operation and the rate of intraoperative hemorrhage, in order to lower the rate of postoperative complications and the length of hospital-stay (3). The length of hospital-stay is also important that it may influence the development of delirium, which is a major postoperative concern in these patients. The super-elderly patients should be optimized in terms of functional reserve of organs, systemic diseases and psychological state before surgical operations in order to minimize major intraoperative and postoperative adverse events.

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May 10, 2018 Thursday

14:45-15:45 Panel VIII

Geriatric anesthesia for nonoperating room procedures	Ludmilla Nazirova (Uzbekistan), Mustafa Aksoy (Turkey)
Sedation and monitored anesthetic care in the elderly	Nesil Coşkunfirat (Turkey)
Cardiovascular interventions (TAVR, TEVAR, EVAR)	Seyhan Yağar (Turkey)
Neurovascular intervention (CAS, Cerebral aneurysm)	A. Gülsün Pamuk (Turkey)

**SEDATION AND MONITORIZED ANESTHETIC CARE
IN THE ELDERLY**

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INTRODUCTION

The number of elderly patients is continuously increasing with an increasing demand for diagnostic and therapeutic interventions. Not only the number but also the complexity of these geriatric cases are increasing over time. As a result, anesthesiologists are increasingly providing sedation or complete integrated anesthetic care outside operating room in different and new locations for the elderly.

Monitored anesthesia care (MAC) is a specific anesthesia service given by an anesthesiologist during surgery or a procedure and consists of monitoring with or without sedation. Patient's status and the procedure performed are the most important two factors to determine which level of sedation (Minimal: Moderate: Deep) and analgesia or anesthesia (local, regional or general) will be applied. MAC for elderly has specific problems beyond typical anesthetic safety concerns. All aspects of anesthesia care including a pre-procedure visit, intra-procedural care, and post-procedure anesthesia management must be applied. MAC requires specific knowledge and skills and the provider must be prepared and qualified to convert to general anesthesia when necessary. No matter how simple the procedure or surgery performed by MAC is, each patient should be prepared for general anesthesia.

Why should we consider MAC for the elderly?

Regarding the normal decline in functional reserve, especially over 70 yr of age, it is important to consider anesthetic options that minimize physiological stress in the elderly patients. MAC is a good alternative to general or regional anesthesia for specific common procedures.

Procedures

MAC is required for diagnostic imaging, invasive radiological procedures, neuroradiology, cardiac catheterization, gastrointestinal endoscopy procedures, and various surgical procedures.

Factors that increase risk with MAC?

MAC outside operating room (OR) carries an injury and mortality rate as high as traditional operating room anesthesia and risk is mostly associated with extreme ages. There is an additional risk for complications with abnormalities of major organ systems; the presence of severe comorbidity, morbid obesity, documented snoring, stridor, or sleep apnea, spasticity or movement disorder complicating the procedure. History or anticipated intolerance to standard sedatives, current medications, the potential for drug interactions, drug allergies, prior adverse reaction to sedatives or anesthetics are some other factors that increase the risk. Chronic opioid use, chronic benzodiazepine use, active medical problems related to drug, tobacco or alcohol, abuse, anatomic variation in the airway, neck abnormalities, jaw abnormalities may also possess risk.

Staff

MAC can be provided by a qualified, preferably senior, anesthesiologist who has enough experience in patient assessment, continuous evaluation, and monitoring. Lack of adequately trained staff to assist in the treatment of any complication and assist in immediate cardiopulmonary resuscitation increase the risk. Although most of the anesthesiology training takes place in classic OR, it is strongly advised that all anesthesiologists are educated on at different environments and must gain experience at different locations and conditions. In most of the closed claims related to sedation, care was provided by non-anesthesiologist and events were possibly avoidable, reflecting the importance of specific sedation training and management of adverse events during MAC by trained anesthesiologists. Anesthesiologists are aware of potential risks and are prepared for all contingencies, while physicians who are unfamiliar with MAC usually underestimate the fact that procedures and therapeutic interventions also have serious risks and adverse outcomes. Team communication and adequate prior discussion with the proceduralist is also essential to collect all the information about the procedure, including the need for special position, duration and how painful the procedure will be.

Environment, organization, equipment

Non-operating rooms that are retrofitted for anesthesia care usually have inadequate physical conditions and available equipment is often fewer than standards. The anesthetist often has to deal with an outdated/malfunctioning/unfamiliar anesthesia machine, equipment and monitors. Anesthesia provider is, unfortunately, the one who is responsible for all equipment used with sometimes no information before entering the procedure room. In case of inadequate standards like unavailability of suction and oxygen, emergency airway equipment and emergency medications the anesthesiologist has the right to refuse to perform anesthesia or sedation. High level of noise, heating due to machines, suboptimal light especially during procedures that need to dim the lights are environmental problems usually faced. Physical access to the patient may be very limited due to crowding of bulky imaging machines, insufficient/absent alternative power supplies, being remote from pharmacy and supply rooms are other problems that put patients at risks.

Patients

The patients are sometimes very specific with comorbidities unique to the particular specialty or are too ill to be considered for surgery. Some patients may be using chronic painkillers for cancer but still may have pain that has to be managed even to give the patient the proper position. These patients may need excessive amounts of opioids, higher than anesthetic doses. During some procedures the anesthesiologist has to compete for access to

the airway and unsecure airway is a big problem. Avoidance of deep sedation is crucial under such circumstances to avoid hypoxemia and airway obstruction. Patient comfort is another issue, positioning especially when prolonged can be a problem both for the patient and for the anesthetist. For some diagnostic procedures and treatments patients should be screened for the presence of ferromagnetic materials, foreign materials (eyeliner tattoos, metallic intraocular fragments, piercings), or implanted items like pacemakers, cardioversion defibrillators, or nerve stimulators aneurysm clips, prosthetic heart valves, or coronary stents.

Pre-procedure assessment

Currently, guidelines for preoperative patient preparation are similar, whether the procedure is performed under MAC, regional or general anesthesia. Although preoperative assessment is a routine, the scheduling outside OR may not be regular, and this results in hurried and inefficient patient preparation. Staff outside the OR may not be aware or be willing to follow routine pre-procedure processes. For risk stratification, history and physical examination should be more focused on sedation-oriented issues and to specific procedure planned. Good communication is essential for MAC, and preoperative visits are helpful in building communication and may be used as a tool for determination of baseline level of consciousness for comparing the consciousness during or after infusion of sedatives. Preoperative evaluation for assessing whether patients can cooperate without movement during the procedure will be very helpful. Although there are no usual exclusion criteria for MAC for the elderly, patients with a persistent cough or movement are not proper candidates for some procedures, and general anesthesia can be preferred. The patients who cannot cooperate because of claustrophobia, anxiety or impaired mental status may also limit the use of MAC. On the other hand, for elderly patients, a high perioperative risk is not a contraindication and MAC may be preferred for patients with cardiovascular and respiratory instability. Assessment of co-morbidity, history, drug reactions, and prior postoperative anesthetic complications are required during the preoperative visit.

If the elderly patient lacks the mental capacity to make decisions, their attendant should be sought to determine what treatment is best for the patient. Written instructions on preoperative fasting, medications, anesthesia and postoperative care should be provided for the patient and their attendants.

Preoperative Testing

Current recommendations for preoperative laboratory tests are same regardless of the type of anesthesia for elderly patients. Patients should be routinely tested for hemoglobin and hematocrit, glucose, blood urea nitrogen and creatinin, 12-lead ECG and chest radiograph. Some special tests can be performed as indicated by history and physical examination and focused on the specific intervention planned.

Preoperative Fasting

The ASA guidelines state that fasting period for clear liquids is 2 hours and 6 hours for light meals before the administration of sedation. If gastric emptying is impaired or the case is emergency, there is a need to focus on the level of sedation and to decide whether the procedure should be delayed, or whether the airway must be protected by endotracheal intubation, according to the potential for pulmonary aspiration of gastric contents.

Specific recommendations for safe performance of MAC in the elderly population

Integrated pathways including algorithms/protocols/checklists are effective for achieving a safe MAC, but must be reproducible to suit each patient. Senior anesthetists are strongly recommended to prevent adverse incidents in peri-operative care for the elderly.

Due to the associated functional decrease in all organ systems, even healthy elderly are more sensitive to anesthetic agents than younger individuals. Changes in body composition with age, affect drug volume of distribution and peak concentration. Increases in fatty stores and decreases in lean body mass and total body water content in the central compartment, as well as relative changes in protein constituents, affect drug pharmacokinetics. Delivery of medication and its arrival at effect site is often delayed and so a delay in time to peak effect should be anticipated. On the other hand, peak concentration after a bolus dose might be higher than expected. As a result, less medication is required to achieve the desired clinical effect, and drug effect is often prolonged. Medications must, therefore, be given in small doses and titrated to effect. Infusion rates should also be reduced to maintain the desired peak concentration. Delay in the offset of infusions also should be anticipated because of reduced clearance. As elderly patients are extremely sensitive to the respiratory and cardiovascular effects of sedatives, small intravenous repetitive doses are best to minimize deep/prolonged sedation. Boluses must be reduced by half and infusions reduced by as much as two-thirds. Administration of sedatives may result in apnea or insufficient breathing more frequently because of blunted response to hypoxemia and hypercarbia. If oxygen is not specifically contraindicated for any particular patient or procedure, oxygen supplementation is essential for moderate and deep sedation. Most intravenous anesthetics (except remifentanyl) are metabolized primarily by the liver. Decreased hepatic mass, hepatic blood flow, and microsomal demethylation pathway activity will result in greater bioavailability of agents with high hepatic clearance. Caution is essential if hepatic blood flow is further compromised by blood pressure falls, or by significant blood loss. Patients who are volume depleted, have cardiomyopathy, renovascular disease and who are aged >75 years, cannot make compensation in renal blood flow necessary to maintain GFR. Reduction in creatinine clearance also delays the offset of certain medications and their active metabolites.

Monitoring

Basic monitoring for non-operating room procedures should adhere to the ASA guideline "Standards for Basic Anesthesia Monitoring" and include ECG, BP, respiratory rate and pulse oximetry. The presence of a qualified anesthesiologist is essential throughout the conduct of MAC and patient's oxygenation, ventilation, circulation and temperature and the surgical field should be continually evaluated. The ASA practice guidelines for sedation and analgesia by non-anesthesiologists further recommends following the patient's response to verbal contact. The extent of monitoring should not be modified because the patient is 'awake' and must be adequate to for patients' condition and for the invasiveness of the procedure. In the closed claims cases it has been noticed that nearly half of the complications could have been prevented with additional or better monitoring. Although oximetry is relatively insensitive to the earliest signs of hypoventilation and, significant changes in arterial partial pressure for oxygen may occur before alteration of oxygen saturation, pulse oximetry must be used during all procedures. Capnography more readily detects hypoventilation and is integrated into patient monitoring protocols. Currently, ASA recommends capnography with this statement: "capnography should be considered for all patients receiving deep sedation

and for patients whose ventilation cannot be observed directly during moderate sedation.” BIS monitoring can be used according to the preference of the anesthesiologist for sedation titration. Bispectral (BIS) index monitoring for the level of sedation has a significant lag time compared with the clinical assessment.

Specific Agents, Doses and Related Risks for Medications Used for Monitored Anaesthesia Care (MAC)

The medications used during MAC includes sedative/hypnotic/anxiolytic/analgesic drugs. Drugs with amnesic properties to reduce recall of intra-operative events should be preferred. *Benzodiazepines* are commonly employed because of their anxiolytic and amnesic effects. Midazolam is the drug of choice, because of its short half-life and because it has water-soluble property it causes no pain on injection. *Propofol* (2,6-diisopropyl phenol) is classified as an ultrashort-acting hypnotic agent that provides sedative, amnesic, and hypnotic effects. Additional anesthetic agents that have been used for MAC include *ketamine*, *dexmedetomidine*, and *inhalational agents*. In the elderly, opioids might produce more respiratory depression and a longer time-to-home readiness. Time to reach the peak concentration of *Remifentanyl* after an initial bolus is slightly longer than young individuals because of slower equilibration between blood and effect-site concentrations. Clearance of remifentanyl in the elderly is also slower than younger people. Sensitivity of the elderly, to the drug is increased and only half the usual adult bolus dose and about one-third the rate of maintenance infusions should be given. *Fentanyl* is the most commonly employed opioid for MAC. Although there are no consistent changes in the pharmacokinetics of fentanyl with age, because of the increased sensitivity to sedation, there is an increased incidence of respiratory depression even in very small doses, especially when combined with other sedatives. *Tramadol* is a centrally acting analgesic and patients aged >75 years should not receive more than 300 mg/day. *NSAIDs and Cyclo-Oxygenase-2 Inhibitors* NSAIDs non-selectively inhibit COX-1, leading to gastrointestinal and renal toxicity, and COX-2, leading to anti-inflammatory effects. COX-2 inhibitors may be safer than non-selective NSAIDs for elderly patients, as they have anti-inflammatory and analgesic properties similar to those of conventional, non-selective NSAIDs, but cause less gastrointestinal toxicity. *Multimodal Analgesic Regimens* Use of multimodal analgesic regimens, based on an adding a non-opioid with to opioids has opioid-sparing effects and reduces nausea, vomiting, constipation, urinary retention, respiratory depression, sedation with better postoperative pain relief.

Assessment of the Level of Sedation

Sedation is currently assessed several scoring systems:

1. The Ramsay scale (RSS) was introduced in 1974 and is based on the clinical assessment of the level of sedation evaluating response to sound, verbal commands or tactile (a light glabellar tap) stimulation by the anesthetist. Scores 1–3 apply to arousable patients: 1 = anxious, agitated restless; 2 = awake, but cooperative, tranquil, orientated; 3 = responds to verbal commands only. Scores 4–6 apply to sleeping patients and are graded according to the response to a loud noise or a glabellar tap: 4 = brisk response; 5 = sluggish response; 6 = no response.
2. The sedation visual analog scale (VAS) is a simple method of in which patient is asked how sedated he/she feels on a scale from 1 to 10.
3. The Observer Assessment of Alertness/Sedation Scale (OAA/S scale) scale was developed in 1990 to measure the level of consciousness: score of a moderate level of sedation-analgesia is 3–4, and a score of 1–2 represents unconsciousness.

Potential complications

Respiratory depression is more frequent during sedation or anesthesia outside the OR. Hypothermia frequently occurs especially due to excessive air-conditioning to avoid equipment overheating. Aspiration hypovolemia, postoperative nausea and vomiting (PONV) are other frequent complications.

Post-anesthesia care

Availability of a special location for post-anesthesia monitoring/care is important. Unless the patient is taken directly to an intensive care unit or post-sedation care is similar to that of after general anesthesia.

Discharge criteria

The patient should have stable vital signs for at least 1 hour and return to their preoperative physiological state without postoperative nausea or vomiting and excessive pain or bleeding. Patients should have the approval for discharge from both the anesthetist and the proceduralist. The patient must be strictly advised to have a responsible adult caring for him/her for the first 24 hours after the procedure.

CONCLUSION

The severity of the complications of sedation and MAC should not be underestimated as MAC has a patient injury and a liability profile as high as general anesthesia. A well-trained and vigilant anesthesiologist not only has the knowledge and skills but, most importantly, also has the awareness about the aspects that should be considered while performing MAC and about the precautions to decrease complications associated with MAC. Better monitoring is the key to preventing most of the complications. However, because each procedure is different, additional standards and guidelines for safe practice of MAC according to specific procedures are being published.

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May 10, 2018 Thursday

14:45-15:45 Panel VIII

Geriatric anesthesia for nonoperating room procedures	Ludmilla Nazirova (Uzbekistan), Mustafa Aksoy (Turkey)
Sedation and monitorized anesthetic care in the elderly	Nesil Coşkunfirat (Turkey)
Cardiovascular interventions (TAVR, TEVAR, EVAR)	Seyhan Yağar (Turkey)
Neurovascular intervention (CAS, Cerebral aneurysm)	A. Gülsün Pamuk (Turkey)

CARDIOVASCULAR INTERVENTIONS: TAVR, TEVAR, EVAR

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Cardiovascular diseases are one of the leading causes of morbidity and mortality around the world and they generally seem in geriatric age groups. In recent years percutaneous interventions invented as alternative to surgery for heart valve and vascular diseases.

Transcatheter Aortic Valve Implantation (TAVR)

Transcatheter aortic valve implantation (TAVR) is considered the standard of care for inoperable patients with symptomatic severe aortic stenosis and an acceptable alternative to surgical aortic valve replacement (AVR) in those presumed high risk for surgery. Anesthetic strategies vary in different centers. Local anesthesia or general anesthesia are both valid alternatives and can be applied according to the patient's characteristics and procedural instances. General anesthesia offers many advantages, mainly regarding the possibility of an early diagnosis and treatment of possible complications through the use of transesophageal echocardiography. However, after the initial experiences, many groups began to employ, routinely, sedation plus local anesthesia for TAVR, and their procedural and periprocedural success demonstrates that it is feasible. TAVR is burdened with potential important complications: vascular injuries, arrhythmias, renal impairment, neurological complications, cardiac tamponade, prosthesis malpositioning and embolization and left main coronary artery occlusion. Careful anesthetic management along with meticulous perioperative care should facilitate improvements in outcome. Anesthesiologists must be aware of current technology, playing a participative role in developing standards of care for these high-risk patients and supporting the continuous refinement toward a more minimally invasive approach.

Endovascular Aneurysm Repair (EVAR)

Endovascular aneurysm repair (EVAR) has become a standard approach to treatment for thoracic and abdominal aortic aneurysms. Since EVAR does not require intrathoracic or intraabdominal exposure of the aorta, or aortic cross-clamping, perioperative morbidity and mortality are reduced compared with open repair. Also, EVAR has made treatment possible for some patients with comorbidities who might not otherwise be candidates for aortic repair.

Many patients presenting for aortic aneurysm repair have multiple comorbidities, including heart disease, diabetes mellitus, hypertension, lung disease, and renal dysfunction. Preoperative identification and optimization of these conditions is imperative as it minimizes complications. Endovascular procedures can be carried out with the patient under general, regional anesthesia or conscious sedation with local anesthesia. Local anesthesia has the advantage of requiring less fluid and vasopressor support, although the same degree of pulmonary and cardiac complications occur when compared with general anesthesia. In general anesthesia intravenous induction agent should be chosen based on cardiovascular function. Most often a balanced anesthetic technique with oxygen, air, volatile anesthetic and opioids are used. Blood pressure and heart rate control are imperative to avoid myocardial ischemia. In addition to standard basic monitors, an arterial catheter should be placed in the right radial artery for EVAR. The left upper extremity must remain available for the surgeon to access the left brachial artery. A central venous catheter is helpful for monitoring central venous pressure and administering vasoactive drugs.

Thoracic Endovascular Aneurysm Repair (TEVAR)

During the last years TEVAR became the gold standard in treatment of aneurysms, dissections and posttraumatic rupture in descending thoracic aorta. Endovascular repair lowered the mortality and postoperative morbidity (paraplegia, respiratory and circulation insufficiency, renal failure). TEVAR is generally a less invasive procedure possible to perform in local anesthesia, associated with shorter hospital stay, however general anesthesia is valid alternative. The most devastating complication of TEVAR is spinal cord injury (SCI) leading to infarction. The risk of spinal cord SCI due to decreased cord perfusion following thoracic/thoracoabdominal aneurysm surgery (T/TL-AAA) and thoracic endovascular aneurysm repair (TEVAR) ranges up to 20%. For decades, therefore, many clinics have utilized cerebrospinal fluid drainage (CSFD) to decrease intraspinal pressure and increase blood flow to the spinal cord, thus reducing the risk of SCI.

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May 10, 2018 Thursday

14:45-15:45 Panel VIII

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NEUROVASCULAR INTERVENTION (CAS, CEREBRAL ANEURYSM)

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By the year 2040 30% of the population of Europe are expected to be 65 years old or older. As all surgical procedures shift to older age groups, accompanying problems and diseases also cause doctors to search for less invasive alternatives for surgery.

Elderly people have decreased ability to increase heart rate in response to hypovolemia and hypotension, their lung compliance is decreased as well as their arterial oxygen tension, they cannot cough strongly to clear secretions.

In the last few decades interventional radiology has been used in many procedures to shorten operation times, minimize tissue trauma and postoperative pain and diminish blood loss. These procedures are better for the elderly because of all the aforementioned problems.

There are also some disadvantages of interventional procedures. One problem is the room temperature limits. Fluoroscopy machines heat up and room temperatures are kept low while heating blankets usually cannot be used due to logistic problems. Geriatric patients have increased susceptibility to hypothermia and need to be actively warmed up during procedures. Since huge incisions aren't made, blood loss is minimal and procedure times short hypothermia usually does not present a problem.

Another potential problem is decreased tubular function of geriatric patients. All angioscopic procedures necessitate the use of contrast agents. Contrast nephrotoxicity is a potential problem in all age groups but special care is needed in the geriatric age group, patients must be evaluated constantly and all prophylactic measures must be taken.

Most common central vascular procedures that need angiographic intervention in the geriatric age group are stroke, carotid artery and cerebral artery stenting and aneurysm embolisations. Other lesions like arteriovenous fistulas, carotidocavernous fistulas, various trauma related shunts are less common.

Stroke:

Acute stroke patients may need angiographic thrombolysis. Two primary techniques are mechanical thrombectomy and vessel-selective pharmacologic thrombolysis. Some

interventionalists would like to have the patient conscious and have serial neurologic exams during the procedure. Dexmedetomidine sedation may be a useful technique to use with this subgroup. On the other hand a stroking patient may lose coherence, consciousness and even stop breathing as the stroke progresses. Most anesthesiologists would like to intubate the patient and control all movement as well as use brain protection techniques. It would be prudent to decide on the technique according to the timing of stroke, technique used, the vessel affected etc.

Stroke intervention is an emergency, so it is not possible to do any preoperative testing, wait for fasting periods or ask for consultations. All stroke patients should be considered coronary lesion patients, hypertensive and at risk for cerebral thrombosis as well as bleeding. They tend to have many comorbidities like diabetes mellitus, renal problems, smoking related lung problems.

These patients should be extubated at emergence and neurologically tested as soon as possible. The only exception to this rule is advancing stroke due to inability to treat the lesion coupled with comorbidities like intracranial bleeding.

Carotid Artery Stenting

Patients who have serious arterial flow abnormalities endangering cerebral blood flow may undergo open endarterectomy procedures or stenting. Older patients with multiple comorbidities who are also not expected to have repeat interventions are the best candidates for stenting. As this is an extracranial intervention which can be performed within a very short time period and the most frightening side effect being microemboli during the stenting procedure most interventionalists prefer the patients to be lightly sedated and cooperative. Severe instantaneous bradycardia may be seen when the lesion is around the carotid sinus but the most common problem is hypotension lasting up to three days. Although rare, hypoperfusion syndrome is the most serious complication.

These patients usually have disseminated vessel problems, coronary syndromes, sometimes renal artery or iliac artery thrombosis. Different sites of thrombosis may necessitate changes in puncture sites. Patients must be closely observed for cardiac, renal or cerebral problems.

Cerebral Artery Stenting

The patients who require cerebral artery stenting are usually also treated for additional problems, either intracerebral aneurysms or carotid artery stenting. Because the lesion is intracerebral they may require immobilization and hence general anesthesia. Although stent deployment is usually fast, sometimes accessing the injured vessel may be problematic requiring repeated trials. These patients should be prepared and treated as needed, depending on the site and extent of stenosis and additional interventions.

Cerebral Aneurysm Repair

This is an intervention requiring occlusion. If the aneurysm is situated in a more proximal artery or if there are multiple aneurysms it is usually preferable to treat them using endovascular techniques. These patients may need to be heparinized to prevent unwanted occlusion, certain techniques used to fill in aneurysms with different mediums may not be definitive and show recanalization on follow-ups. It is prudent to observe the patients in the intensive care unit even if the aneurysm in question had not bled previously and no complications occurred during the procedure. A relatively small percentage of the aneurysms treated today have already been bleeding. This subgroup has its unique set of problems including contraindication for heparin and expected hydrocephalus.

Cognitive function testing is always a priority in the geriatric patients. It is especially important in patients undergoing cerebral interventions. Other factors including volume loading and sodium load of flush solutions, inguinal hematomas causing immobilization and hence thrombotic complications, arrhythmias caused by possible hypothermia should also be treated meticulously.

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May 11, 2018 Friday

08:30-09:45 Panel IX

Problems and solutions for the elderly	Jasmina Smajic (Bosnia-Herzegovina), Zuhal Aykaç (Turkey)
Anesthesia and elderly brain	Jasmina Bozic Markovic (Slovenia)
Early postoperative delirium	Elif Ayşe Çizmeçi (Turkey)
Gerontechnology: Don't miss the train, but which is the right wagon	İsmail Cinel (Turkey)
Ethical and legal issues of geriatrics	Osman Ekinçi (Turkey)

ANAESTHESIA AND ELDERLY BRAIN

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Summary

Postoperative cognitive disturbance, including postoperative delirium (POD) and postoperative cognitive dysfunction (POCD) is a common complication of perioperative neurocognition in elderly patients undergoing surgery.

Beside physiological changes, age is associated with co morbidities, frailty, sarcopenia and poly-pharmacy. Stress response to surgery is also affected by aging.

Postoperative cognitive decline is associated with impaired performance of activities of daily living, increased long-term mortality, and premature withdrawal from the labour market and social transfer payments.

It is difficult to modify intrinsic factors before surgery, but extrinsic factors can be modified and optimised by the anaesthesiologist.

Identifying risk for neurological complications provides the framework for development of strategies to reduce their frequency. Optimal neuroprotective strategies include appropriate patient positioning, management of systemic and cerebral hemodynamic, and maintenance of fluid, electrolyte and coagulation balance, and postoperative prevention and treatment of pain and postoperative nausea and vomiting. Goal directed patient management should be employed to deliver the safest anaesthetic regimens to most vulnerable patients.

Keywords: anaesthesia, elderly, surgery, perioperative neurological complications, neuroinflammation, neuroprotection

Introduction

“Grandfather was never the same after the operation.”

The proportion of the population in developed countries that are more than 65 years of age continues to rise. This aged population is expected to increase demand for surgical treatments (1). Brain function usually recovers after surgery, but recovery may be prolonged or incomplete (2). Older patients often have more neurovascular disease risk factors, more

cerebral white matter damage and less cognitive reserve which may place them at a higher risk of cognitive dysfunction after the stress of surgery, anesthesia and perioperative care. Approximately one in four elderly patients exhibits cognitive deterioration one week after non-cardiac procedures and one in ten exhibits dysfunction three months after major surgery with general anaesthesia. Rates are lower in younger patients and after minor surgery (3).

The normal aging process is characterized by a physiological reduction in organ function and altered pharmacokinetics and pharmacodynamics. The result of these changes is an increased variability in the dose-response relationship that leads to increased incidence of adverse drug reactions. Most perioperative drugs may have lingering central nerve system (CNS) effects and produce postoperative cognitive impairment in some patients. This effect is related to age-related changes in neurophysiological functional connectivity and receptor sensitivity (4). Beside physiological changes, age is associated with co morbidities, frailty, sarcopenia and poly-pharmacy.

Postoperative cognitive disturbance, including postoperative delirium (POD) and postoperative cognitive dysfunction (POCD) is a common complication of perioperative neurocognition in elderly patients undergoing surgery (4)

Most frequent perioperative neurological complications

Neurological complications are an important source of patient morbidity that increases health resource consumption, predisposes to prolonged hospitalization and discharge to a secondary care facility, impairs quality of life and threaten long-term survival (5).

Most frequent complications are stroke, seizures, POCD and POD.

Perioperative stroke is a devastating complication with an incidence of more than 1% in non-cardiac, non-vascular and non-neurological surgery and between 4-10% in cardiac, vascular and neurological surgery. Early stroke is evident immediately upon emergence from anaesthesia, while late stroke may occur several days after surgery. Many strokes are clinically undetected, but are future risk for dementia or stroke (6).

Seizures are classified as focal or generalised and they have varied manifestations from behavioural changes to altered level of consciousness or tonic/clonic motor activity. Patients with cerebral hypoperfusion are more vulnerable. Prompt detection and treatment is important, since seizures may exacerbate neuronal ischemia (6).

POCD refers to decrements from baseline in a variety of cognitive functions such as attention, concentration, and memory, executive function, verbal fluency and visual spatial performance. Its frequency depends on many factors including age, level of education, type of procedure, type and timing of testing. After non-cardiac surgery, POCD is found in approximately 26% of patients at one week and in 10-13% at 3 months following surgery and in 10-30% one month after cardiac surgery (6).

POD is an acute cognitive disorder that is prevalent after surgery. It is defined as an acute fluctuating disorder of consciousness, attention, cognition and perception not explained by pre-existing or evolving dementia and occurs in 30-60% of patients (6).

Risk factors

Risk factors for neurological complications comprise both intrinsic and extrinsic factors. Intrinsic risk factors include aging, pre-existing cognitive impairment, declined functional status, lower level of educational attainment and alcohol abuse (4).

Extrinsic risk factors include hemodynamic instability, anaesthetic neurotoxicity,

neuroinflammation, acute pain, type of surgery, duration of surgery, metabolic abnormalities, impaired cerebral oxygen supply (anaemia, hypoxemia, hypotension) (4).

It is difficult to modify intrinsic factors before surgery, but extrinsic factors can be modified and optimised by the anaesthesiologist (4).

Anaesthesia and surgery modulate complex immune responses in patients undergoing major surgery (7,8).

Cytokines are a group of important inflammatory mediators that act in cascades, inducing or inhibiting each other (9,10). They can enter the brain in many ways: they can cross the blood brain barrier (BBB) or bind to receptors associated with peripheral afferent nerves as part of the vagus nerve. They are produced in the CNS by activated microglia that have migrated as phagocytes, as well as by astrocytes and neurons and finally, cortisol passes the blood brain barrier and influences the immune system in the CNS and peripheral nervous system. The result of this cascade is neuroinflammation that causes POCD (9,10).

Despite mounting evidence for the neurotoxic effects of volatile and intravenous anesthetics in animal studies, human studies have been remarkably inconsistent in their findings. There are growing concerns for anaesthetic-induced neurotoxicity in the aged brain as well (11). Neurotoxic effects are more prominent with longer and deeper anaesthesia, intraoperative hypoxia or hypotension, in children younger than 4 years, in elderly, in patients with comorbidities and with lower cognitive function before surgery (12). Preclinical and human evidence have previously shown that anaesthetics may accelerate or initiate the development of Alzheimer's Disease (AD) by interfering with learning and memory, inducing neuroapoptosis, and accelerating the processes of amyloid- β ($A\beta$) aggregation and tau protein hyperphosphorylation. Although neurogenesis was recently shown to restore neurons overtime following early exposure to general anesthesia in young and healthy adult mice, stem cells and neurogenic activity in the hippocampus likely declines with age and in patients with AD. While it is currently unknown which elderly patients may be most vulnerable to these anaesthesia-induced effects, zinc-deficient mice exposed to isoflurane anesthesia were recently shown to exhibit significant neuroapoptosis, $A\beta$ generation, tau phosphorylation, and learning and memory impairment. Zinc deficiency is common throughout the world, and is especially prevalent in patients with AD (11).

Anticholinergic drugs (i.e. atropine, scopolamine) are classic pharmacological causes of POD. Agents that block muscarinic receptors (antihistamines, some vasoactive drugs) are also implicated as precipitating factors of POD. Elderly patients are more sensitive to CNS effects of barbiturates, inhalational anaesthetics, benzodiazepines and opioids (13). Identifying risk for neurological complications provides the framework for development of strategies to reduce their frequency.

Brain protection strategies

There are currently no widely accepted pharmacological treatments for the prevention of neurological complications (5). Numerous animal studies have reduced the amount of brain tissue damaged by hypoperfusion and hypoxemia by interventions that modify apoptosis, the release of excitatory transmitters, inflammatory mediators and other mechanisms, including scavenging free oxygen radicals. Several adjuvant therapies have been recently investigated to attenuate anesthesia-induced neurotoxicity in animal models, including dexmedetomidine, rutin, vitamin C, TNF- α , lithium, apocynin, CAPE. The application of these interventions in human trials has not been successful (2). The anaesthesiologist is compelled

to use nonpharmacological strategies by manipulating the physiological variables to protect the brain and improve the neurologic outcomes (Table 1) (14,15).

Table 1: Current status of perioperative neuroprotection

Variable	Value
Liberal normoglycaemia	7,8-10 mmol/l
Mean arterial pressure (MAP)	close to preoperative baseline or ≥ 80 mmHg
Induced hypertension in special situations (interventional neuroradiology, mass effect, neurovascular surgery, systemic hypertensive disease, traumatic brain injury)	20-40 % increase
Preoperative haemoglobin	≥ 120 g/l
Intraoperative haemoglobin	≥ 90 g/l

Optimal neuroprotective strategies include appropriate patient positioning, management of systemic and cerebral hemodynamic, and maintenance of fluid, electrolyte and coagulation balance, and postoperative prevention and treatment of pain and postoperative nausea and vomiting (14).

Strategies to reduce POD have focused on correction of metabolic abnormalities (glycemic control, electrolyte imbalance), hydration, avoidance of hypoxemia and drugs with central anticholinergic effects, benzodiazepines and optimisation of postoperative analgesia and ICU sedation. A multidisciplinary team approach with geriatric proficiency that includes cognitive stimulation, mobilisation, sleep hygiene, hearing and vision support, and nutrition has shown promising reduction in the frequency and severity of delirium (16). Cerebral autoregulation is a key defence mechanism of the brain against hypoperfusion and hyperperfusion which are both associated with POD, but they have not been shown to be predictive of early POCD (17). In elderly patients many other factors impact cerebral autoregulation: age, coexisting diseases, endothelial impairment, neurovascular uncoupling and other perioperative factors and that is why it is difficult to predict the impact of MAP on cognitive decline after the surgery (4).

Factors such as inhaled anesthetics, hypercapnia, hypocapnia, imidazole, α_2 adrenoceptor agonists, vasodilators can potentially impair cerebral autoregulation during the perioperative period; in contrast propofol and remifentanyl have a role in preserving cerebral autoregulation (18).

It has been shown that propofol has also anti-inflammatory action by inhibiting nuclear factor kappa beta (NF- κ B) and IL-6 production (19-21). Perioperative anti-inflammatory management is necessary for the prevention of POCD.

Acute pain may increase the risk of POD and POCD in patients undergoing non-cardiac surgery (22). If acute pain and chronic pain are not adequately treated, the incidence of POD in patients with pre-existing cognitive impairment increases (4), and chronic pain causes aggression in patients with dementia (4). The administration of meperidine was associated with a higher incidence POD (21-48%), whereas morphine, fentanyl, oxycodone, and codeine were not risk factors for POD. Recent studies showed contradictory results regarding superiority of multimodal analgesia to traditional postoperative analgesia in preventing POD in elderly patients. Development of standardized and individualized analgesic protocols will improve analgesic efficacy and decrease the incidence of POD (4).

Consequences of overdosing anaesthetics in elderly patients

Overdose of anaesthetic drugs causes excessive central nervous system depression and cardiovascular side effects, especially hypotension, which has been independently associated with adverse outcome in patients having both non-cardiac and cardiac surgery (23).

Furthermore “double-low” combination of low blood pressure and increased depth of anaesthesia (low BIS levels) are associated with increased perioperative risk of morbidity and mortality that increases with aging (23).

Postoperative cognitive decline is associated with impaired performance of activities of daily living, increased long-term mortality, and premature withdrawal from the labour market and social transfer payments (2).

Future research

Research should concentrate on cohorts of frail elderly patients as they have a high rate of postoperative cognitive decline, often in addition to pre-existing cognitive impairment.

Although age itself is non-modifiable, it is also frequently associated with frailty, which is at least partly modifiable. Numerous studies in recent years have focused on physical “pre-rehabilitation” to decrease post-operative complications and/or improve postoperative physical function. The plasticity of the human brain in response to both physical and cognitive exercise suggests that such interventions may help prevent and/or treat POCD. The degree to which an aging brain possesses the plasticity to benefit from such interventions is unclear, though making this is an important area for future research (24).

A fuller understanding of the pathophysiology should enable the adoption of neuroprotective strategies in connection with special types of surgical procedures, such as cardiac surgery or neurosurgery (2).

Controlled studies of anaesthetics pharmacology are required in patients more than 80 years of age (23).

Individualization of MAP with cerebral oxygenation index (Cox) (this is correlation of near-infrared spectroscopy (NIRS) derived cerebral oxygen saturation (rScO₂) as a measure of cerebral blood flow (CBF) with MAP) will be a great promise for goal directed patient management when the monitoring will be clinically available (6).

There are two ongoing studies about the value of monitoring the depth of anaesthesia:

-ENGAGE study (Electroencephalography Guidance of Anaesthesia to Alleviate Geriatric Syndromes): EEG guided protocol designed to minimize epochs of low BIS values and EEG burst suppression and its role in the prevention in postoperative delirium and falls

-All cause mortality difference within 1 year of surgery between light anaesthesia (BIS target of 50) and deep anaesthesia (BIS target of 35) in patients aged at least 60 years presenting for major surgery under general anaesthesia (23).

Conclusions

The question remains: “How should we interpret the animal studies showing brain changes after anaesthetic exposure, and how do we improve clinical care to prevent serious postoperative cognitive complications?”

Perioperative studies confront several methodological problems that probably result in the underestimation of the incidence of postoperative cognitive damage.

Currently the potential neurotoxic effects of volatile and intravenous anesthetics on human

brain are unknown. Biomarkers of neuroinflammation and apoptosis, micro RNA expression and neuroimaging modalities should be employed to better define phenotypes that reflect anesthesia-induced neurotoxicity. In this way we can tailor our management to deliver the safest anesthetic regimens to most vulnerable patients.

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08:30-09:45 Panel IX	Problems and solutions for the elderly	Jasmina Smajic (Bosnia-Herzegovina), Zuhal Aykaç (Turkey)
	Anesthesia and elderly brain	Jasmina Bozic Markovic (Slovenia)
	Early postoperative delirium	Elif Ayşe Çizmeci (Turkey)
	Gerontechnology: Don't miss the train, but which is the right wagon	İsmail Cinel (Turkey)
	Ethical and legal issues of geriatrics	Osman Ekinci (Turkey)

EARLY POSTOPERATIVE DELIRIUM

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With a postoperative incidence ranging from 5-50%, postoperative delirium can be credited as the most common postoperative complication among elderly patients. Delirium is an acute (hours to days) decline in cognition and attention, related to an acute physiological imbalance. The Diagnostic and Statistical Manual of Mental Disorders, Fifth edition (DSM-V) also requires the syndrome to be unrelated to previous cognitive dysfunction. Perioperative care teams need to be prepared to tackle this syndrome, which can be preventable in up to 40% of cases. The consequences include death, long-term cognitive dysfunction, extended hospital stay and associated increases in costs of care.

Although enough emphasis has been placed on perioperative acute failures of other organs, delirium, or “acute brain failure” according to many authors, has been neglected as a part of the perioperative spectrum of diseases. One study found a 2% increase in the risk for delirium for every year above the age of 65. With an aging population worldwide and an increased ratio of surgical procedures being performed in patients above the age of 65, the syndrome deserves more consideration in surgical and perioperative medicine teaching and application.

A successful perioperative team is competent and knowledgeable in the screening, diagnosis, risk factor assessment, and nonpharmacologic and pharmacologic prevention strategies and interventions aimed at managing delirium. Implementation of these practices should be enforced by the development of national guidelines for postoperative delirium care.

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ETHICAL AND LEGAL ISSUES IN GERIATRIC PATIENTS

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PROBLEMS FACED IN ELDERLY PATIENTS: They consist more than 70% of intensive and palliative care patients. Legally they require a power of discernment (mental competency and responsibility) decision to be taken. They frequently fail to make decisions due to cognitive disorders. They fail to assess contemporary scientific and technological situations, hence they are difficult to communicate with. Issues such as language, dialect and cultural differences may also cause communication problems. Hence, they usually prefer to communicate with their younger relatives, which in turn hinders sufficient information flow. When their medical condition does not allow communication, they usually do not have a testamentary disposition that can be resorted to. Usually, decision making problems occur among their relatives. Therefore, doctors usually have to take initiative when elderly patients are at stake. In order for the doctor to manage such situations successfully, he or she has to know and implement ethical and moral values as well as laws well.

ETHICS comprises the conceptual and theoretical aspect of moral philosophy; it is philosophical reasoning on morality. Ethics discusses issues such as how human life should be by analyzing the meaning of moral concepts like goodness and truth (1).

MORALITY involves human values and attitudes. It is a system of values which drives socially existent behaviors and beliefs. Morality implies the rules of ethics which are reflected upon daily practices. In other words, morality indicates "I", whereas ethics indicates "we" (2).

THE PURPOSE OF HUMAN BEINGS is to help solving unusual, undesired, painful problems encountered in life. This can be done by explaining what is going on, and enlightening them by offering solutions. Shaping humanity owing to ethics and morality would offer prospects for the solution of problems, providing the opportunity for an era of enlightenment to be experienced in social life. (3, 4)

ETHICS, MORALITY AND COMPETENCE TO MAKE DECISIONS: Human beings are not solely determined or distinguished by their achievements in knowing or by their technical acts of production. Being directly related with and creating values, being a bearer or embodiment of values is what makes human beings human. The philosophical discipline that deals with this

fact, which is composed of these values and ideals that we call morality has been in existence for thousands of years (the Hippocratic oath). Ethics is the investigation of morality on a philosophical plane, or it is the philosophy of being moral.

ETHICAL PRINCIPLES include Beneficence, Nonmaleficence, Autonomy and Justice.

DECISION MAKING MECHANISMS, in turn, include Emotions, Ideas, Motivations, Desires, Fears, Concerns and Personality.

Even though doctor-patient relationship is recognized as the totality of medical decisions, it actually has a broader framework than this. Despite her strict obligation to care, in a severe clinical situation that involves various decision options and various normative outcomes, the doctor may not decide what is “good” for the patient on her own. It implies the ability to behave freely and rationally without being under any external pressure or constraint. One may talk about the autonomy of a “competent” person under such conditions. In patient-doctor relationship, autonomy means pre-decision briefing and documentation of the decision made (5).

PRE-DECISION BRIEFING: Telling the truth: How much? When? How? These are personal applications. What should we tell? 1. The medical condition of the patient at the moment of encounter, and the prediction about prognosis unless treatment is administered, 2. interventions and their effect on the course of the disease: definition of the intervention, cost/benefit, prediction on the possible outcome of the intervention, 3. uncertainties, 4. alternatives, 5. individual advice based on experience and clinical judgment should be offered in terms of “multi-stage informed consent”.

INFORMED CONSENT: The patient-doctor relationship should allow to make a sound and accurate joint decision for the good of the patient within an environment of mutual trust, in an honest and understandable manner, in accordance with medicine’s level of development in that particular country and the available means of the institution where the doctor works. Types of informed consent: 1. Institutional: they are legally valid, 2. Ethically: they are beneficial for the patient and the doctor. Informed consent is a dialogue, a process experienced between the patient and the doctor, and has certain stages, which are; proper communication, good advice, partial respect and participation, and rational choice. The main goal is not to overwhelm the patient with information, but to start a dialogue.

COMMON DIFFICULTIES MET DURING INFORMED CONSENT PROCESS: The difficulty of using a language free of technical terms. Cultural differences. Unusual belief systems. The limits of information to be given. The fear of making the patient nervous/upset. Deputy decision-makers. Facts concerning the administration and organization. The failure of the patient to make a decision due to anxiety or shock. The possibility that informed consent is rejected by doctors, as they perceive it a meaningless but bureaucratically necessary ritual.

SITUATIONS AND ETHICAL PROBLEMS CONCERNING PATIENTS WHO CANNOT GIVE CONSENT:

ASSUMED WILL: The deputy who is trusted and informed by the patient herself may express the latter’s will based on a prediction that may correspond more or less to reality. The deputy is an instrument to enlighten how the patient would want herself to be treated under the given conditions. The deputy may be overanxious or have conflicts of interest regarding the condition of the patient. The deputy may, and even should, also ask for information of other relatives of the patient. However, these acts only serve to determine the patient’s will; they do not qualify as decisions on their own. Unless the patient specified a request in advance

and the patient's will can be identified by her deputies, best interest principle should be applied. The final decision shall pertain to the doctor.

SITUATIONS AND ETHICAL PROBLEMS CONCERNING INTENSIVE CARE PATIENTS: The duration of being unconscious may not be a criterion for abandoning treatment. It should be kept in mind that an elderly patient in intensive care unit is entitled to the same rights in terms of care and attention with other elderly patients receiving treatment in other services of the hospital. A deputy should be appointed for these patients. If the deputy requests to give up life-extending therapies, a court should be asked to evaluate this request. The patient's relatives should not be considered automatically as her deputies. Yet, they may be helpful in determining the patient's possible consent. Unless the patient has a testamentary disposition and deputies are helpful in identifying the patient's possible consent, the doctor should act in a manner to continue life support. The responsibility to make a decision should not be put on the patient's relatives only. The decision and the causes that lead to it should be recorded in the patient's file (6).

RECENT EXAMPLES OF AUTHORIZATION FROM THE WORLD CONCERNING PATIENTS WHO CANNOT GIVE CONSENT: 1- The Living Will Document (Luis Kutner, USA, 1967): It is signed in the presence of witness and can be amended. When a mentally competent person diagnosed with a certain disease loses her ability of making a decision due to that disease, the living will document substantiates her decision to reject life-extending therapy such as artificial nutrition, CPR, intubation, antibiotics use, etc. (7). There should be durable power of attorney in health care. Patient's relatives are not her natural deputies. Through their remarks, patient's relatives provide assistance in understanding her possible consent. When severe decisions are at stake, the attorney appointed by a court may step in. In the presence of a notary public and two witnesses. The patient's doctor shall not be an employee of the institution where the patient is treated. Situations under which deputies are not allowed to give consent: Referring to the psychiatry clinic, electroshock, psychosurgical procedures, sterilization and termination of pregnancy. In case the deputy made a decision to the detriment of the patient, the doctor has the right to file a lawsuit (8). 2- American Terri Schiavo (1990-2005): Terri Schiavo lapsed into a state similar to a vegetative state 15 years ago because of a heart attack he suffered due to eating disorder. Michael Schiavo, Terri's husband, sued the doctors who could not diagnose her eating disorder and received 1 million dollars material compensation. Based on a previous conversation they had, Michael Schiavo alleged that Terri did not want to live in such a state and he struggled at court for the removal of her feeding tube. Judge George Greer of Pasco-Pinellas County Circuit Court in Florida decided to have Terri's feeding tube to be removed on March 18. Consequently, as the Supreme Court of the United States rejected the appeal case several times, Terri was left for dead. Assoc. Prof. Dr. Arin Namal's (Istanbul University, Faculty of Medicine, Department of Medical Ethics and History) comment: "Stopping Schiavo's treatment is untenable in ethical terms. Since Schiavo did not have any will that leave no room for doubt, the protection of her life is an absolute right. Ceasing to provide minimal care such as feeding and quenching thirst, is indefensible from an ethical perspective. It is known that almost all of such patients communicate with their environment by breathing. Moreover, it is also known that many of the deficiencies that develop in these patients are caused by the lack of interest from their environment. For instance, while opening a 25-bed service for these patients, a geriatric hospital in Graz, Austria, used the slogan, 'The diagnosis of coma vigil does not express the end of life, but the beginning of a new life! 'Patients with severe brain damage like Terri Schiavo are entitled to receive treatment, care and attention."

PATIENT'S TESTAMENT: Patient's declaration for the rejection of treatment in case he/she contracts an incurable disease in the future. Controversial. Patient's testament should not eliminate the doctor's right to decide. Negative prognosis according to what and whom? Appointing a deputy seems more functional than a testamentary disposition. An example from our country: Prof. Dr. Tark Minkari: "Don't treat me if I lapse into a vegetative state (9)."

DNR (do not resuscitate) ORDER: It is valid for a terminally ill patient when death is imminent. Blue Code during admission in the hospital or the institution. The general status of the patient, her chance of pulling through the illness, and information provided by her doctor and family are taken into consideration. Unless there is clear information indicating negative prognosis, reanimation shall be initiated. Today, many people are aware of the fact that emergency intensive care precautions taken during hopeless situations serve to the extension of death rather than saving the life, yet they are reluctant to make a decision beforehand. This, in turn, is based on the fact that death is a taboo.

WITH WHOM DNR ORDER BE DISCUSSED? 1. Patients who diagnosed with an incurable disease or at terminal stage that would probably lead to death within 3 years, and capable of making their own decision, or deputies of similar patients who are not capable of making decisions, 2. all patients whose lives are under threat due to acute reasons, 3. all individuals who wish to discuss this issue. It is a part of patient's right to make a decision on her well-being. There is no such regulation in our country. In the United States, 30% of inpatients and 20% of patients in ICUs have DNR orders.

AN ETHICAL APPROACH BASED ON RESPONSIBILITY TOWARDS THE PATIENT: Empathetic, investigative and affirmative questioning approach: Since cultural and religious factors affects patient's and her family's view of disease and death, attitudes that take these differences into account should be adopted. The doctor and the team should have the knowledge of conducting empathetic, investigative and affirmative questioning on patients.

EXAMPLES OF EMPATHETIC, INVESTIGATIVE AND AFFIRMATIVE QUESTIONING:

Respectively; Empathetic situation, investigative questions, affirmative answers

1- I am aware how this situation upsets you. What would you like to say? I can understand how you feel.

2- I am aware that you don't want to hear this. Could you give me more information on this this matter I guess, everybody would react the same way.

3- I know that this is not good news for you. Can you explain what you mean? Your thoughts are absolutely right.

4- I have to say this, I am sorry. Does this situation scare you? You know that these tests are good for you.

5- This is hard for me too. Can you tell me what exactly are you worried about? You have given a thought about the issue, that's very good.

6- I was expecting a better result. You told me that you are worried about your children, anything else? Many patients had similar experiences.

RESPONSIBILITIES TOWARDS PATIENT RELATIVES AND ETHICAL APPROACH:

Requirements and management of families: The main issue patients and their families worry about is the prognosis, and providing realistic answers on this matter would foster the feeling of acceptance in time. Families should also be provided with information on the approximate length of hospital stay and the date of discharge, while factors which may affect the length of stay should also be discussed. Giving information in a clear and

personalized fashion to patient's family, friends and caregivers at the earliest stage, and seeing them through the grief and mourning period are also important factors. The support to be given to patient's family and caregivers within this period is summarized below.

Support to be given to the family: Providing assistance on dealing with emotions such as mourning, grief and forgiveness. Providing assistance in understanding the necessary interventions and decisions to be made. Teaching how they should talk to and relieve the patient. Teaching their tasks in caregiving that they share with the team. Providing assistance on the family's material and moral needs.

Ethical and legal aspects: Even though basic international principles are defined, taking sociocultural, economic, ethical and legal differences of each country into account, necessary adaptations should be made. The decisions of the patient and her relatives are important, and their informed consent must be received. The decision to terminate supportive care should be made with the family. Euthanasia and assisted death are unethical. However, deep sedation and analgesia, which do not affect the process during the terminal stage, should not be confused with euthanasia.

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09:45-10:45 Panel X

Neuropsychological dysfunction in the geriatric patient	Andrijan Kartalov (Macedonia), Ateş Duman (Turkey)
Does anesthesia/ surgery accelerate the course of dementia?	Berna Kaya Uğur (Turkey)
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DOES ANESTHESIA/SURGERY ACCELERATE THE COURSE OF DEMENTIA?

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In most countries advances in health care and increased life expectancy raised the population of older adults. Dementia has been identified as a major current health care challenge. Advancing age is the strongest risk factor for the development of this situation (1). Prevalence of dementia in 2001 was estimated at 24.3 million, and will double every 20 years to an estimated prevalence of 42.3 million in 2020, and 81.1 million in 2040 (2). The most common form of dementia among older adults is Alzheimer's disease (AD) accounts for two-thirds of all cases.

AD is a multifactorial disease. Non-modifiable risk factors include advancing age, female sex and genetic risk factors. Potentially modifiable risk factors associated with AD are vascular risk factors such as diabetes mellitus, hypertension and hypercholesterolemia (3). Possible nutritional risk factors include hyperhomocysteinemia and low levels of vitamin B12 and folate (4). Another potentially preventable risk factor for AD is head injuries. Reducing these modifiable risk factors, prior to the onset of regressing cognitive symptoms such as lifestyle changes that could delay the onset of dementia by 2 years could significantly lower AD prevalence (5).

As the population ages, surgery is being performed more frequently among elder people. According to US data, surgical procedures performed on adults older than 65 years comprises 35% (6). Increasing concern and researches grow up investigating whether cognitive sequelae such as postoperative delirium (POD) or postoperative cognitive dysfunction (POCD) are related to specific surgical and/or anesthetic factors.

Definition of POD is 'an acute change in cognitive status characterized by fluctuating attention and consciousness, which typically occurs soon after surgery'(7). And POCD is characterized by more persistent cognitive difficulties, including memory and attention problems, as well as executive dysfunction, and occurs commonly after surgery (8).

During the postoperative course of older adults, cognitive dysfunction is relatively common and it is thought that anesthetics have been possibly contributed to this. These cognitive changes can be both short and long term. Short-term cognitive dysfunction proceeding days to months includes both POD and POCD. Besides some patients may also experience longer-term cognitive changes (e.g., greater than 6 months) in the postoperative period.

Pathophysiology of dementia

According to Alzheimer's Association definition of dementia is 'the development of cognitive or neuropsychiatric symptoms that are associated with a decline in the individual's previous level of functioning, encompassing multiple cognitive domains, and that are not better explained by delirium or another major psychiatric disorder' (9). Guidelines have also incorporated biomarker evidence within these diagnostic criteria including either decreased levels of amyloid-beta ($A\beta$), together with increased total tau or phosphorylated tau in the cerebrospinal fluid (CSF) of the individual (10).

The molecular neuropathology of AD exposes two major hallmarks: Former, extracellular plaques consisting largely of $A\beta$ aggregates, and latter intracellular neurofibrillary tangles composed of hyper phosphorylated tau protein. The amyloid cascade hypothesis states that some forms of the $A\beta$ peptide are neurotoxic and cause abnormal phosphorylation of tau, resulting in mitochondrial damage, calcium dysregulation. This leads apoptosis and neurodegeneration. Studies of biomarkers show that $A\beta$ peptide concentration in CSF is inversely related to the degree of AD pathology, because of sequestration in plaque or diminished synaptic activity (11). In some older adults interestingly, both amyloid plaque and reduced CSF $A\beta$ have been described with no clinical symptoms of a cognitive impairment. Only amyloidopathy is not sufficient for the development of clinical symptoms. Although it is not specific for AD the presence of tau in CSF, indicates neuronal injury.

Furthermore neurotransmitters have also been studied in the context of AD. In the clinical symptoms of dementia, cholinergic dysfunction has been implicated and postmortem studies have identified a significant deficiency in the activity of choline acetyltransferase in the brains of individuals with dementia .

Basic science studies about pathophysiology of AD associated with surgery and anesthetic agents

Theoretically GA alters central cholinergic transmission through nicotinic and muscarinic receptors and could contribute to cognitive deficits. Some of the desired effects of GA, such as analgesia, amnesia, immobility and hypnosis are facilitated by a decrease in acetylcholine neurotransmission.

Anesthetic drugs acting via N-methyl-D-aspartate (NMDA) receptors decrease glutamate release and a subsequently excitatory activity. While exposure to NMDA antagonists such as ketamine prolongs, NMDA receptors may upregulate following sustained blockade (12). On removal of drug, causes excitotoxicity and apoptosis by an increase in calcium influx.

In vitro studies showed that the volatile anesthetics halothane and isoflurane increase oligomerization and cytotoxicity of amyloid peptides. Also sevoflurane and isoflurane can cause neuronal apoptosis by activating caspase and $A\beta$ protein aggregation in animal and in vitro studies (13). Besides after isoflurane exposure, mice displayed behavioral impairments and increased mortality. Another intravenous anesthetic, propofol also increases tau phosphorylation in the mouse hippocampus.

As a result of surgery, neuroinflammation occurs. Surgery leads to the production of tumor necrosis factor α (TNF- α) that subsequently disrupts the blood-brain barrier. This causes an infiltration of inflammatory macrophages in the brain parenchyma, specifically the hippocampus in mice. The inflammatory cytokines IL-1 β and IL-6 levels have also been shown to increase in mice that underwent surgery compared to mice that only received anesthesia (14).

However, these findings only reflect data from animal studies and it is unclear to what extent these findings extend to humans.

Cognitive changes associated with surgery and anesthesia in human populations

In elderly patients surgery and anesthesia may be associated with neurocognitive symptoms. POD and POCD are commonly seen syndromes in this population. POD occurs after surgery in older adults has an average incidence of 36.8%. Although rates as high as 73.5% have also been reported (7). There is evidence suggesting that depth of anesthesia may be related to the risk of delirium. However, in a recent meta-analysis, GA does not appear to confer higher risk to the development of POD as compared to regional anesthesia (RA) (15).

According to the results of these studies, older adults are vulnerable to POD development. There are several factors such as pre-morbid cognitive status, put them at risk. It has been reported that POD is associated with prolonged cognitive impairment in patients who have cardiac surgery. Long-term consequences of POD can be substantial. Additionally, POD was associated with an increased risk of developing dementia among older adults without dementia undergoing hip fracture surgery at 5-year follow-up (16). Risk factors associated with the development of POCD are surgical, anesthetic, and patient-related factors. Advancing age, history of cerebrovascular accident, lower education level, and POCD at discharge is the independent risk factors for POCD in postoperative 3 months.

Retrospective observational studies on the association between exposure to surgery or anesthesia and risk of dementia

Surgery could influence cognition by altering cerebral perfusion and autoregulation. Lower cerebral perfusion pressure can lead to ischemia, and higher pressures can cause cerebral edema. Certain types of surgeries, such as cardiovascular, genitourinary, abdominal, musculoskeletal, dermatological, and eye surgeries, may confer a higher risk of developing dementia in observational studies (17). It is unclear whether these specific surgery types are associated with greater alterations in cerebral perfusion and/or autoregulation, or whether the indication for surgery itself reflects the direct risk factor.

Patients who had undergone CABG and GA followed in the 5-year follow-up period, had a 1.7 times increased risk of developing AD compared to those who had had sedation and percutaneous transluminal coronary angioplasty. A retrospective cohort study of Vanderweyde et al in two groups of surgical patients undergoing either prostate or hernia surgery under either GA or regional anesthesia showed that the patients who had received GA developed dementia less frequently than those who had received regional anesthesia (18).

Prospective clinical studies on the association between exposure to surgery or anesthesia and risk of dementia

Prospective clinical studies investigating the association between GA and AD are lacking. In a prospective randomized parallel-group study of Liu et al about the effects of anesthesia on the progression of amnesic mild cognitive impairment to AD in a Chinese population accomplished that sevoflurane anesthesia for lumbar spine surgery accelerated cognitive decline (19). Further studies with a larger sample size and longer follow-up period were required to investigate this relationship.

As a result, to our date data from observational studies in humans about the association between surgery, GA and dementia have been inconsistent. Previously published studies and meta-analysis have been failed to show a relationship between these issues. Given the gaps

identified in the current research literature, there are several factors that should be considered in designing future studies in this area.

Adequately powered prospective trials meeting the aforementioned criteria and with a longer follow up period, are required to determine whether exposure to surgery and/or GA are causally associated with the development of AD.

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**DRUGS USED IN TREATING DEMENTIA AND
POTENTIAL PERIOPERATIVE INTERACTIONS**

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Dementia is a slowly progressive loss of cognitive abilities, which exceeds the normal age related decline in brain efficiency and is therefore classified as a disease

Coexisting medical conditions such as cardiovascular disease, chronic obstructive pulmonary disease are over represented in patients with dementia; the higher the number of comorbidities, the higher the incidence of postoperative adverse events so the risk of polypharmacy and potential for drug interactions is also increased.

Guidelines suggest stopping acetylcholinesterase inhibitors before elective surgery. Both galantamine and rivastigmine have short half-lives (7–8 and 3–4 h) and can be discontinued the day before surgery. Donepezil, on the other hand, has a long half-life of 70 h and would require a washout period of 2–3 weeks. This period without treatment may however engender irreversible decline in cognitive function and there is no definitive guidance on whether this drug should be continued or discontinued before elective surgery. All temporarily discontinued anti dementia agents should be re introduced as soon as practicable in the postoperative period.

In situations where it is not practical to stop anticholinesterasetherapy, e.g. emergency surgery, the anaesthetist should be aware of the potential for interactions and consider avoiding neuromuscular blocking agents altogether. However, if a non-depolarizing neuromuscular blocking agent is required, there are two options available. Since the reversal agent, neostigmine may be relatively ineffective (due to the preexisting level of cholinesterase inhibition) or, worse still, prolong neuromuscular block via a Phase II type interaction with succinylcholine, short acting agents that are spontaneously inactivated (e.g. atracurium, cisatracurium) should be used.

Alternatively, the use of sugammadex to predictably reverse rocuronium and vecuronium may be preferable.

Cholinesterase inhibitors, other drugs prescribed to patients with dementia to improve cognition and alleviate behavioural symptoms may interact with anaesthetic drugs and increase the risk of perioperative complications. One group of medication often overlooked in these patients is the herbal remedy, Ginkgo biloba. The leaf of the ginkgo tree is used to treat memory loss but may interfere with platelet function leading to impaired haemostasis. It is recommended that all herbal medicines are discontinued 2 weeks before surgery.

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AMBULATORY ANESTHESIA / ANALGESIA AND COGNITIVE DYSFUNCTION

Ezgi Erkılıç

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Postoperative cognitive dysfunction (POCD) is a common complication after cardiac and major non-cardiac surgery with general anaesthesia in the elderly. The elderly population numbered 39.6 million in 2009, or 12.9% of the population. By 2030, there is expected to be approximately 72.1 million elderly population (or 19% of the US population) A similar trend is reported in Europe, where elderly population will account for 30% of the population by 2060 (1). An increasing proportion of surgical procedures performed on an ambulatory basis. Technological advancements in surgery, improvements in anesthesia monitoring, and pain control will lead to the future expansion of ambulatory surgery for the elderly. There are clearly economic, societal, and patient benefits in treating elderly surgical patients on an ambulatory basis. All persons caring for patients intra- and postoperatively should know about the risk of POCD after anesthesia and surgery. Age has been increasingly reported as a significant and independent risk factor for POCD (2). Elderly patients are also more sensitive to the central depressant effects of anesthetic drugs. Furthermore, deterioration of renal and hepatic function affects the metabolism and excretion of many drugs. Elderly patients are more likely to be diabetic and experience perioperative hypoglycemic episodes. The increased adipose tissue expands the 'lipid reservoir' for centrally active anesthetic drugs, contributing to prolonged elimination half-life. In addition, the reduction in total body water decreases the central volume of distribution for water-soluble drugs, and elderly patients with poor nutrition can have decreased albumin levels that increase the freedrug concentrations. Delirium and postoperative cognitive dysfunction (POCD) are commonly reported as being part of the same continuum. This may not be appropriate, and it is reasonable to separate these two very different conditions despite their similarities(3). Elderly patients undergoing surgical intervention often have postoperative delirium (POD) and cognitive dysfunction (POCD). POD is an acute temporary change in orientation and cognition, whereas POCD is a more subtle and persistent impairment in intellectual/cognitive performance. Underlying infection, dehydration, poor blood glucose control, electrolyte imbalances and drug or alcohol withdrawal are small known risk factors for delirium (4). POCD is less well characterized. POCD affects a wide variety of cognitive

domains, such as memory, information processing and executive function(5) There are numerous neuropsychological tests, but they are very different and designed to focus on specific cognitive domains. There is no consensus on which tests to use in the diagnosis of POCD. The ISPOCD (International Study of Postoperative Cognitive Dysfunction) group has conducted several studies in this field and has made recommendations for further studies(6). The mechanisms leading to cognitive impairment after anesthesia and surgery are not yet fully clear. The findings of animal experiments suggest an important role for the immune response to surgery. Several studies have tried to answer the question of whether cognitive deterioration occurs after non-cardiac surgery in elderly patients. Few studies have addressed the issue of POCD in the setting of minor or out-patient surgery. Frailty is a concept that must be expected to be increasingly important with more and more elderly undergoing surgery. It would be highly relevant to include frailty in future studies of cognitive deterioration after surgery. The elderly are more fragile and may develop various degrees of more or less reversible deterioration in cognitive capacity or delirium-like states, or both, postoperatively. Effective planning avoiding prolonged pre-operative fasting and facilitating early discharge to the home environment may reduce the risk of cognitive impairment. ISPOCD investigators studied in-patient vs. day surgery and suggested that there was less cognitive dysfunction in the first postoperative week in elderly patients undergoing minor surgery on an out-patient basis and supported a strategy of avoiding hospitalization of older patients whenever possible. Cognitive complications such as delirium and postoperative cognitive dysfunction are less frequent in ambulatory surgery and enhanced recovery programmes for the elderly allow earlier discharge and seem beneficial. Frailty is becoming an increasingly important concept that needs to be considered in the elderly patients

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11:15-12:30 Panel XI

Monitoring in the elderly	Sahmurad Takirov (Uzbekistan), Aslı Dönmez (Turkey)
Hemodynamic monitoring	Vojislava Neskovic (Serbia)
Cerebral oximetry or biomarkers: Is effective to predict postoperative cognitive outcome	Slavenka Straus (Bosnia-Herzegovina)
How to achieve "black belt" in neuromuscular monitoring?	Janez Kompan (Slovenia)
Temperature monitoring and perioperative Thermoregulation	Süleyman Ganidağlı (Turkey)

HEMODYNAMIC MONITORING

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Background

The goal of hemodynamic monitoring is to evaluate the function of the cardiovascular system and identify if it matches the metabolic needs of the body. Ideally, use of monitoring should enable targeted treatment that leads to better function. Optimal management of cardiac output, fluid balance and hemodynamic status is considered key to improving outcome in high-risk surgical and critically ill patients.

It is clear that along with the technology development, number of different hemodynamic monitors is growing rapidly. It cannot be expected that physicians should be familiar with every existing method of monitoring, but knowing the advantages and disadvantages, as well as the correct application of the selected monitor, is certainly possible. If used properly, monitors should improve the quality of treatment and lead to better outcome.

However, all collected data should be interpreted and used within the clinical context and known limitations of each selected monitor. No monitoring, no matter how precise and safe it is, unless coupled with efficient treatment plan, will improve patient's outcome.

Basic principles

When selecting hemodynamic monitoring device, several basic principles should be considered:

1. *The least invasive* monitor should be used to assess hemodynamic profile of the patient
2. *Continuous monitoring* is more advantageous than intermittent
3. *Active treatment* of the patient is better than reactive, and
4. When interpreting data, it is necessary to understand the difference between the absolute value and the trend of changes of the individual parameter.

Monitoring can be non-invasive and invasive. Invasive monitoring are more informative and precise, but carries some risk of adverse events. This is why the risk and benefit of each monitor should be well balanced.

Hemodynamic monitoring and fluid management***Static parameters***

Static parameters evaluate filling pressures in the heart in order to estimate blood volume and organ perfusion.

Central venous pressure (CVP)

The CVP measurement is based on the assumption that its value is equivalent to the pressure in the right atrium and reflects the blood volume (preload). With some additional assumptions (absence of pulmonary pathology and pulmonary hypertension, absence of valvular defects and isolated right heart failure), CVP may reflect the loading pressure in the left atrium and ventricle. Normal CVP values are 6-12 mmHg. It is important to note that the trend of pressure changes carries more information than the individual measurement.

In recent years, especially in the treatment of patients with sepsis and septic shock, central venous saturation (ScvO₂) is used as the surrogate of mixed venous oxygen saturation (SvO₂).

Pulmonary artery catheter

The introduction of a pulmonary artery (PA) catheter in clinical practice has allowed measurement of different hemodynamic parameters that cannot be determined otherwise. One of them is the mixed venous oxygen saturation (SvO₂), which is an important indicator of adequate circulation. It is obtained with the gas analysis and oxygen saturation from the blood taken in the pulmonary artery (the distal lumen of the PA catheter).

Although it represents the gold standard of hemodynamic monitoring and synonym of the intensive care unit, there are numerous limitations in the use of pulmonary artery catheters. The most important one is its use by the under-trained doctors, which may be associated with poor therapeutic decisions. Today, it is difficult to demonstrate the clear benefits of PA catheters, and the use of other, less invasive monitors and diagnostic methods, primarily echocardiography, leads to its increasingly rare utilization.

Dynamic parameters

The basic principle of dynamic parameters is based on the assumption of the Frank-Starling curve for each individual patient with the cyclical changes in venous return (preload) caused by mechanical ventilation. The positive pressure ventilation reduces blood volume return to the right ventricle, and eventually to the left heart. By analyzing these effects on stroke volume or their surrogates, such as pulse pressure or systolic pressure, and their variations caused by mechanical ventilation, it is possible to recognize patients who may benefit from the fluid therapy (volume responders). The disadvantages of using these parameters are: insufficiently clear cut off points that discriminate hypovolemia, conflicting results in different patient groups and the possibility of its use only in mechanically ventilated patients.

Non-invasive measurement of the cardiac output

The use of oesophageal Doppler monitoring is a continuous, minimally invasive method for determining cardiac output and goal directed fluid management without invasive monitoring, such as CVP and PA catheter. By placing a probe into the esophagus, generated ultrasound signal detects changes in the blood flow through the descending aorta. From the signal, parameters such as stroke volume (SV) or stroke volume distance (SD) are obtained. Optimization of the cardiac output and hemodynamic parameters is achieved using

algorithms with the trial dose of the fluids (fluid challenge) and the analysis of the induced hemodynamic response.

Arterial Pulse Contour Analysis (Pulse Contour Analysis) enables the measurement of the stroke volume in real time, with each heartbeat. Computer programs calculate the area below the systolic part of the arterial pressure curve which correlates with the stroke volume. They are considered to be non-invasive monitors, although arterial cannulation is required. A good correlation between measured cardiac output parameters and the values obtained by invasive measurements using the PA catheter has been found in literature.

Echocardiography

In recent years, echocardiography, both transthoracic and transesophageal, has been increasingly used in patient management in the intensive care units and operating theaters. Direct visualization of the heart and heart structures gives a clear insight into the various pathology, which have influence on the hemodynamic stability of the patient. Also, with echocardiography, it is possible to determine the blood volume in the heart, cardiac output and hemodynamic profile of the patient.

Conclusion

The best strategy when assessing perioperative cardiac function is to recognise pathophysiology, choose the adequate monitoring system, derived data interpret wisely and apply treatment with the best possible effect. Possibility to discriminate surgical or critically ill patient that will respond to fluid management is the foundation for the choice of hemodynamic monitor.

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Temperature monitoring and perioperative Thermoregulation	Süleyman Ganidağlı (Turkey)

CEREBRAL OXIMETRY OR BIOMARKERS: IS EFFECTIVE TO PREDICT POSTOPERATIVE COGNITIVE OUTCOME?

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The aging of the population and new developments in medicine both imply that the number of older patients undergoing extensive surgery will keep rising.

Older patients in particular are vulnerable to memory disturbances and other types of cognitive impairment after surgical operations. This is an important issue in perioperative care as extensive surgery on older patients becomes more common.

Postoperative cognitive dysfunction - POCD is defined as a new cognitive impairment arising after a surgical procedure. Its diagnosis requires both pre- and postoperative psychometric testing. Its pathogenesis is multifactorial, with the immune response to surgery probably acting as a trigger. The incidence rate of POCD for older patients is as high as 25 to 40% at 2 to 10 days postoperatively, with gradual improvement to 10% at 3 months, 5% at 6 months, and 1% at 1 year.

Cognitive impairment after anesthesia and surgery (POCD) is a recognized clinical phenomenon. As early as 1955, it was described by Bedford in the Lancet under the designation "adverse cerebral effects of anaesthesia on old people".

POCD is a transient disturbance that can affect patients of any age but is more common in older people.

Although 60 years have passed since POCD was firstly brought up, there is currently no International Classification of Diseases, 10th Revision code (ICD-10) for POCD, and there are also no specific diagnostic criteria for POCD in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V).

But, also there is a question - Does POCD in patients really start postoperatively? Although there is a "post" in the definition of POCD, it's uncertain whether there was preoperative cognitive decline which was exacerbated postoperatively, or it may simply be a part of the

ongoing preoperative pathology as Silbert et al. found that there was a relationship between preoperative cognitive impairment and POCD.

Risk factors for postoperative cognitive dysfunction can be divided into three main groups:

1. Patient risk factors - advanced age; pre-existing cerebral, cardiac, or vascular disease; preoperative mild cognitive impairment (MCI); low educational level; history of alcohol abuse
2. Risk factors associated with surgery - extensive surgical procedure, intra- or postoperative complications, secondary surgery
3. Anesthesia as a risk factor - long-acting anesthetic, marked disturbance of homeostasis, organ ischemia due to hypoxia and hypoperfusion, intra- or postoperative anesthesiological complications

But we should keep in mind that age is a major risk factor for POCD.

Prevention of POCD is still unclear, there are currently no specific prevention and intervention routines of POCD.

What's more, old age, the definite risk factor of POCD, seems by no means preventable.

However, it does not mean that nothing can be done about it. Generally, efforts should be made trying to maintain stable internal environment during the perioperative period, such as water and electrolytes balance, normal blood pressure, proper blood glucose and sufficient oxygen supply. Also, minimal invasive surgery and some anti- inflammation drugs may have protective effects. Besides, it was reported that specific intravenous anesthetic drugs had neuroprotective roles.

Dedicated studies on POCD are currently lacking. It is theoretically obvious that an adequate intraoperative oxygen supply for all vital organs is essential if postoperative cerebral dysfunction is to be avoided. The same is true of tight intraoperative management of homeostasis to keep the patient in fluid, electrolyte, and glycemic balance. Cognitive impairment is a leading manifestation of disturbed homeostasis. Longitudinal studies have clearly shown that inadequate glycemic control impairs cognitive function.

No measuring instruments for cognitive performance have yet become established as part of routine clinical practice, because such instruments are time and labor-intensive. A further problem is that POCD is variously defined in the studies that have addressed it.

So keeping in mind everything mentioned so far, how can we then monitor the brain during perioperative period? What should be set up as a neuro-monitoring protocol for patients, especially those of the elderly? Should we use cerebral oximetry or biomarkers as obligated monitoring and are they effective to predict postoperative cognitive outcome?

Several clinical conditions routinely encountered in our daily practice have the potential to disrupt the balance between the brain oxygen supply and demand, exposing to the risk of intraoperative cerebral ischemia. These alterations in brain oxygen balance remain totally undiagnosed if we do not specifically monitor it; while the possibility of monitoring regional cerebral oxygen saturation through a simple and totally non-invasive device has the potential for optimizing our anesthesia plan to the real needs of our main target organ - brain.

Although the CNS is the primary endpoint of most general anesthetics, it is still the least monitored organ in clinical anesthesiology, and anesthesia is usually managed using indirect

parameters of adequate brain oxygenation, such as heart rate, blood pressure and peripheral oxygenation. In fact, we are able to monitor the function of cardiovascular, pulmonary, hepatic and renal systems with varying degrees of accuracy, but we are not able to know with certainty the neurological status of the anesthetized patient. CNS monitoring is technically difficult and demanding; moreover, anesthetic drugs directly interfere with brain activity, increasing the objective difficulties of data interpretation. Finally, like for other monitoring systems, there is only limited data to support the assumption that monitoring CNS can actually improve patient outcome.

To improve diagnosis and treatment of POCD research aimed to identify prognostic and diagnostic biological biomarkers. Biomarkers can determine severity and phase of the cognitive impairment, stratify patients who are likely to respond to specific treatment and monitor the efficiency of the treatment. Genetic markers, RNA, microRNA levels, proteins and post-translation changes such as glycosylation and phosphorylation have been demonstrated as prognostic biomarkers in a variety of conditions, disorders of CNS, and these biochemical entities should be considered as possible markers for POD and POCD.

Urine biomarkers could be promising diagnostic and prognostic indicators of POCD. A high ratio of trypsin inhibitor/creatinine was suggested to be an independent risk factor of POCD.

The major POCD biomarkers include inflammation-related molecules, imbalance between pro and anti-inflammatory signals and metabolic levels in urine.

An inflammatory response to postoperative stress may contribute to POCD via disruption of the blood-brain barrier. The increased risk is correlated with elevation of monocyte chemoattractant protein 1, procalcitonin, IL-1 β , IL-6, IL-8, IL-18, cytokines IL-2, TNF- α .

From all of the above, we can see the importance of considering the need for the introduction of neuro monitoring as mandatory monitoring. Each institution should consider what type of neuro monitoring is able to be introduced into each hospital as part of everyday monitoring. Whether it will be oximetry or biomarkers depends on the capabilities of that institution.

With the introduction of oximetry or biomarkers as mandatory neuro monitoring, we will be able to predict the development of POCD as well as to use appropriate therapy. Reduction of occurrence of POCD improves the postoperative recovery of patients, especially those in the elderly.

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11:15-12:30 Panel XI

Monitoring in the elderly	Sahmurad Takirov (Uzbekistan), Aslı Dönmez (Turkey)
Hemodynamic monitoring	Vojislava Neskovic (Serbia)
Cerebral oximetry or biomarkers: Is effective to predict postoperative cognitive outcome	Slavenka Straus (Bosnia-Herzegovina)
How to achieve "black belt" in neuromuscular monitoring?	Janez Kompan (Slovenia)
Temperature monitoring and perioperative Thermoregulation	Süleyman Ganidağlı (Turkey)

**HOW TO ACHIEVE "BLACK BELT" IN
NEUROMUSCULAR TRANSMISSION MONITORING?**

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Department of anesthesiology and perioperative intensive care medicine*

Neuromuscular blocking agents (NMBA) are an essential part of modern anesthesia and surgery. Improper use of NMBAs and the inability to completely antagonize their effect can lead to residual neuromuscular blockade, also called residual postoperative curarisation (PORC), and subsequently to respiratory and pulmonary complications. Old and frail people are much more prone to those complications due to their decreased physiologic reserve. It is suggested that health institutions should develop and implement strategies for managing neuromuscular blockade to avoid PORC and its complications. Neuromuscular transmission monitoring (NMT-M) is a crucial part of this package. Unfortunately, according to a 2010 survey by Naguib et al., the method still remains underused – for instance: 19% of European anesthesiologists never use it.

To my knowledge the reasons for underutilization of NMT-M have not been thoroughly investigated. However, we can assume the reasons are a lack of awareness on the importance of the issue, unavailability of NMT monitors and unfamiliarity with the measurement process. Some measures that could address the last problem and help achieve expertise in NMT-M are: 1. NMT-M should be available in every operating room; 2. NMT-M should be used every time when NMBAs are administered; 3. proper preparation of the measuring site (usually the hand) is essential – fixate it, it should be visible all the time during anesthesia, use spacer to prevent other fingers to block full movement of the thumb; 4. calibration before NMBA administration assures higher quality of the data; 5. in practice only two methods are needed: Train of Four – TOF (for majority of situations) and Post Tetanic Count - PTC (occasionally for deep neuromuscular block evaluation); 6. trends, graphs and visual representations of twitches should be used – they give much more information than just the TOF number; 7. during induction and reversal TOF should be measured every 10 to 20 seconds and during operation every minute; 8. NMBA reversal should be started as soon as the surgeon confirms there is no need for neuromuscular blockade anymore and TOF should be more than 90% before extubation.

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11:15-12:30 Panel 11: Monitoring in the elderly	Sahmurad Takirov (Uzbekistan), Aslı Dönmez (Turkey)
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TEMPERATURE MONITORING AND PERIOPERATIVE HYPOTHERMIA

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Leipzig physician Carl Wunderlich, established the paradigm of the mean normal body temperature of 37 °C, on the basis of axillary temperature measurements in thousands of patients at 1858. The temperature chart still in routine clinical use today. This paradigm was confirmed by modern thermometers.

Today it is also known that the core temperature of the body reflects fluctuations of biorhythm. The whole of the body's metabolism contributes to maintaining the temperature of the body by producing heat and is affected by physical activity and by hormones. So the normal temperature range can be defined between 36 and 37.5 °C.

The threshold for hypothermia is regarded as core body temperature of 36°C according to international guidelines. From this, it must be concluded that the need to prevent inadvertent perioperative hypothermia is a must for all medical staff.

Body thermostat in the hypothalamus is set to a lower temperature after induction of general anesthesia. Cooling of the patient is the result mainly of redistribution of heat after the induction of anesthesia together with the body's release of heat.

Radiation, accounting for about 50% to 70%, convection for about 15% to 25%, evaporation accounting for 5% to 20%, conduction accounting for about 3% to 5%. In practice, the measurement of core body temperature is subject to considerable error.

Core temperature should so far as possible be measured at the same site and using the same method perioperatively. Invasive measurement of core temperature in the pulmonary artery via a Swan-Ganz catheter is regarded as the reference method. Of the less invasive measurement sites, the oral (sublingual) is currently regarded as the most reliable. Other less invasive methods which are appropriate for perioperative use are naso/oropharyngeal, esophageal, vesical, or direct tympanic membrane temperature measurement.

Older age (60 years and over), low body weight, poor nutritional status, preexisting conditions that impair thermoregulation (e.g., diabetes mellitus with polyneuropathy, hypothyroidism, ingestion of sedatives or psychoactive drugs) an ASA risk class higher than I, pre-existing hypothermia (existing before the surgery) is also an independent risk factor for

further cooling of the patient. If general anesthesia is combined with regional anesthesia close to the spinal cord (especially high spinal blockade), the risk of intra-operative cooling of the patient rises further. Duration of anesthesia greater than 2 hours and intraoperative infusion of large volumes of unwarmed solutions or transfusion of cold red blood cell concentrates (4 °C) also increase inadvertent hypothermia.

In awake patient there is a natural temperature gradient between the core and the periphery (skin) of about 5 to 8 °C. Warming the surface of the body reduces this gradient and increases the overall heat content of the body, so that the initial drop in temperature due to redistribution after the induction of anesthesia is reduced.

This active prewarming before induction of general anesthesia is very effective in preventing perioperative hypothermia. The prewarming should last for 10 to 30 minutes. Patients should also be actively warmed before epidural or spinal anesthesia. During the intraoperative period that is, all patients who are scheduled to receive anesthesia for longer than 30 minutes should be actively warmed. In patients who have been prewarmed, active intraoperative warming is not required if the duration of anesthesia is less than 60 minutes. Conductive warming methods e.g. blankets laid on top of the body should be used for this. Heating blankets laid under the patient's back should only be used to supplement those on top. Thermal insulation is an external (passive), effective way of reducing radiating and convective heat loss via the skin. Insulation alone does not usually suffice to maintain normothermia intra operatively.

Administration of large volumes of cold infusion solutions or blood products reduces core body temperature, and therefore intraoperative warming of infusions and blood products given at infusion rates above 500 ml/h should also be implemented. Warming infusion solutions in an infusion warmer ("in-line warming") is very effective. In cases where there is little fluid exchange, the use of infusion warmers alone is not enough to maintain normothermia.

Intraoperative irrigation fluids should be prewarmed to 38 to 40 °C.

Infants cool down more rapidly because they have a higher core temperature than older children, their thermoregulation mechanisms are less mature and they have a higher body area to body weight ratio.

Shivering after surgery occurs in 10% to 60% of patients after general and regional anesthesia and should be treated by active warming. Supplementary medical therapy can be given in the form of clonidine or pethidine, for example, though this is an off-label use as neither one of these drugs is approved for this use.

After the end of anesthesia, the physiological thermoregulation mechanisms rapidly return. On admission to the unit providing postoperative care the patient's core temperature should be measured. Patients who are hypothermic postoperatively should be actively warmed until they reach normothermia and their core temperature should be measured regularly (e.g., every 15 minutes).

To implement the guideline, a perioperative checklist is recommended. Every 3-6 months, the incidence of postoperative hypothermia should be monitored by means of a sample survey.

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13:30-14:30 Panel XII

Pain management in the elderly patient	Feyhan Ökten (Turkey), Altan Şahin (Turkey)
Pain management in geriatric patients	Altan Şahin (Turkey)
Pain services and palliative medicine - an integrated approach to pain management	Handan Birbiçer (Turkey)
Pain control for the ambulatory elderly	Didem Tuba Akçalı (Turkey)

PAIN IN THE ELDERLY***Prof. Altan Şahin, MD***

- Pain in the elderly may be due to one or more pain relief. Determining the cause of treatment is the most important step.
- Many social, cognitive, emotional and organic causes contribute to the formation of the pain clinic. Besides, the effects of pain aging, accompanying diseases, changes in mental status, depression, functional deficiencies, drug and alcohol habits should be taken into account in the evaluation of pain.
- The pain should be defined by the character of the pain (duration, intensity, frequency, localization, increasing and decreasing factors), definition of pain, effect of daily life activity and social life. In addition, treatments that have already been applied should be considered.
- Scales such as visual analogue scale (VAS), numerical evaluation scale, verbal evaluation scale, facial expression scale can be used in evaluation of pain severity and follow-up of treatment.
- Patients should be examined and the causes of pain should be found, the necessary imaging methods and laboratory techniques should be used for this purpose.
- All treatment options should be audited and patients appropriate for the patient should be identified and directed to the patients.
- Treatment options can be classified as pharmacological, non-pharmacological, minimally invasive and surgical methods. Appropriate treatment of patients is often performed by their application in steps or in the field.
Non-pharmacological methods include patient education, changes in activities of daily living, exercises, physical therapy and rehabilitation treatment methods, and psychotherapy.
- Pharmacological methods can be grouped into three groups as non opioid, opioid and adjuvant treatments. The World Health Organization recommends that these groups be used at regular time intervals, in accordance with the three-step ladder principle, at a personalized dose, orally, by controlling side effects and informing the patient. In 1986, World Health Organization recommended nonopioids in low, mild-severe pain, weak opioids in moderate-intensity pain, and strong opioids in severe pain (Figure 1). Invasive procedures can be planned for patients who are resistant to these treatments and develop side effects that can not be controlled. Early application of invasive procedures should be considered to provide more effective analgesia with fewer side effects. Pharmacotherapy should be given to all these steps as an alternative or an adjunct, if practicable.

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PAIN CONTROL FOR THE AMBULATORY ELDERLY

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Department of Anaesthesiology and Reanimation***

Chronic pain is a very important symptom in the elderly which is usually undertreated. There are some barriers for pain treatment such as patient's and caregivers' beliefs, cognitive decline and communication barriers. Physiology of aging and its impact to pain and pharmacologic treatments are important. Most of the elderly patients have pain in more than 2 parts of the body.

Pain assessment must be adjusted according to the patient's communication skills. Non pharmacologic treatments such as Tai Chi, massage, music treatment etc must be used individually according to the patient's needs.

Commonly used nonsteroidal anti-inflammatory drugs (NSAIDs) are more likely to damage older kidneys. Opioids can be used in elderly population starting low dose and titrating slowly. Patients and caregivers must be informed about drug side effects and treatment choices. Short acting analgesic are preferred for prolonged clearance.

Polypharmacy is common in older people and increases the risk of adverse drug reactions, nonadherence, and increased cost. Pain treatment in elderly population with chronic illness is usually challenging. Episodic pain can be treated with medication as needed, whereas pain that is expected to last for several days should be treated by clock and additional measures when needed must be taken.

Elderly patients with comorbidities have specific features for pain treatment. Keynotes for heart failure, end stage renal disease, dementia, cancer, bone pain, neuropathic pain and frailty are reviewed.

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14:30-15:30 Panel XIII

Nutrition in the elderly	Ahmet Coşar (Turkey), Lale Karabıyık (Turkey)
Malnutrition and sarcopenia in the elderly population	Pinar Zeyneloğlu (Turkey)
Nutritional support in the elderly	Lale Karabıyık (Turkey)
Neuronutrition	Işıl Özkoçak Turan (Turkey)
Immunonutrition	Seda Banu Akıncı (Turkey)

**MALNUTRITION AND SARCOPENIA IN
THE ELDERLY POPULATION**

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Ageing is characterized by declining organ system reserves and an increasing nutritional risk. Therefore, malnutrition is common and sarcopenia prevalence increases among elderly. Both malnutrition and sarcopenia have similar physiological mechanisms and both entities are associated with adverse outcomes including decreased quality of life, increased healthcare costs, hospitalization rates, morbidity and mortality. Clinicians need to assess, screen and manage these conditions so as to improve outcomes.

Malnutrition is a condition in which a deficiency or imbalance of energy, protein and other nutrients lead to a negative effect on physical function and clinical outcomes. Many changes associated with ageing can promote a poor nutritional status due to factors including medical co-existing conditions, medications and cognitive decline. The best widely used test to evaluate nutritional status of the elderly people is MNA (Mini Nutritional Assessment). Malnutrition is one of the main pathophysiological causes of sarcopenia and the definition of sarcopenia requires the presence of both low muscle mass and low muscle function. The low muscle mass is usually measured by DEXA or bioelectrical impedance in clinical practice and sarcopenia does not require the presence of an underlying illness. Malnutrition-sarcopenia syndrome is a clinical presentation of both malnutrition and accelerated age associated loss of lean body mass, strength, and/or functionality. Their inherent association has a combined impact on clinical outcomes with increased mortality, morbidity such as infection and complications including disability and falls.

Screening tool for sarcopenia includes an algorithm based on gait speed measurement and for malnutrition; MST (Malnutrition Screening Tool), MUST (Malnutrition Universal Screening Tool), SF-MNA (Short Form of the Mini Nutritional Assessment) and NRS-2002 (Nutrition Risk Screening-2002) are used.

Clinicians should screen and assess elderly population for malnutrition and sarcopenia to search for the presence of malnutrition-sarcopenia syndrome so as to target nutritional interventions and proper exercise programs.

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NUTRITIONAL SUPPORT IN THE ELDERLY

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Introduction: Nutrition is an important determinant of health and nutritional therapy is a part of the treatment of the critically ill in elderly patients. Aging is characterized by diminished organ system reserves and weakened homeostatic controls. Physiological changes associated with aging, cognitive disorders, polypharmacy, changes in swallowing ability and chronic diseases such as diabetes mellitus, dementia, cardiopulmonary diseases affect the nutrient intake of the person in a negative direction (1). With the increase in the elderly population, there is an increase in chronic diseases and advanced age special geriatric syndromes.

Etiology: The prevalence of malnutrition in older adults is dependent upon the population studied, varying by geography, age distribution, and living situation. It is estimated that between 2-16% of community-dwelling elderly are nutritionally deficient in protein and calories. If mineral and vitamin deficiencies are included in this estimate, malnutrition in persons over the age of 65 may be as high as 35% (2). Malnutrition, which is common in the geriatric age group, is associated with more frequent hospitalization, prolonged hospital stay, more complications and increased morbidity and mortality. Studies of hospitalized older patients suggest that between 20-65% of these patients suffer from nutritional deficiencies, and the prevalence of malnutrition in long-term care facilities is estimated to be between 30-60% (3).

Screening for nutritional status: Serial measurements of body weight offer the simplest screen for nutritional adequacy and change in nutritional status in older adults (4). Although the official WHO body mass index (BMI) threshold for malnutrition is still 18.5 kg/m², experts recommend applying higher thresholds for the elderly (3).

The causes of involuntary weight loss; inadequate dietary intake, appetite loss (anorexia), disuse or muscle atrophy (sarcopenia), inflammatory effects of disease (cachexia) or a combination of these factors. Weight loss is considered to be clinically significant with the following parameters: ≥ 2 percent decrease of baseline body weight in one month, ≥ 5 percent decrease in three months, ≥ 10 percent in six months (5).

A number of screening tools have been developed for identifying older adults at risk for poor nutrition such as The Nutritional Risk Screening (NRS) 2002, The Simplified Nutrition

Assessment Questionnaire (SNAQ), SCREEN II: (Seniors in the Community: Risk Evaluation for Eating and Nutrition) and The Malnutrition Universal Screening Tool (MUST) (6).

Weight loss: Physiologic factors associated with weight loss include age-related decrease in taste and smell sensitivity, delayed gastric emptying, early satiety, and impairment in the regulation of food intake. Aging may influence production of, and/or central nervous system sensitivity to, several digestive hormones thought to be involved in satiety. Glucagon, glucagon-like peptide-1 (GLP-1), cholecystokinin (CCK), leptin, and ghrelin are peripheral satiety signals and appear to be less well-detected by the brain with increased age (7).

Sarcopenia: Unlike cachexia, sarcopenia does not require the presence of an underlying illness. Also, whereas most people with cachexia are sarcopenic, most sarcopenic individuals are not considered cachectic. Inadequate protein intake can also contribute to sarcopenia and decreased function. A prospective cohort study found that adults aged 70 to 79 with protein intake ≤ 0.8 g/kg/day were at greater risk of developing mobility limitations over six years of follow-up than those with protein intake ≥ 1.0 g/kg/day (8).

Cachexia: It usually occurs in the setting of underlying illness involving a cytokine-mediated response. Such illnesses include cancer, end-stage renal disease, chronic pulmonary disease, heart failure and rheumatoid arthritis. Proinflammatory cytokines commonly involved in cachexia include interleukin (IL)-1, IL-6, and TNF-alpha (TNF- α). Although elevated proinflammatory cytokines (especially IL-1, IL-6 and TNF- α) are commonly seen in older adults, levels are higher in those with cachexia (9,10).

Nutritional support: Factors such as depression, illness, chewing problems that cause weight loss should be determined and treated early. If the patient's nutrient intake is insufficient, social support should be provided, foods appropriate to the taste should be presented, and the nutrient density of food should be increased.

Enteral/parenteral nutrition should be considered in patients with severe malnutrition when oral supplements fail or require faster weight gain. Enteral nutrition should be considered first in any patient with a functional gastrointestinal tract. Parenteral nutrition should be considered only when the EN is contraindicated or not to be able to be tolerated and the nutritional requirements of the patient can not be met by enteral nutrition

Percutaneous endoscopic gastrostomy (PEG) is often used for artificial nutrition in the elderly, as EN is preferred to PN. Three groups of patients are identifiable for PEG (11): 1. The enteral nutrition requirement for a long-term because of dysphagia, which is persistent after a healing illness. 2. Short-term benefits before starting to rest on oral feeding. 3. In patients who are expected to die while applying enteral nutrition at home.

Protein undernutrition enhances frailty and aggravates diseases generally observed in elderly patients. For example, older people with hip fractures are often malnourished at the time of fracture, and subsequently have poor food intake. A low intake of calories, protein, and leucine is associated with reduced muscle mass in hip-fractured elderly. There is very low-quality evidence that nutritional supplements may reduce mortality or complications after hip fracture (12).

Micronutrients: Older people are at risk for micronutrient insufficiency. Micronutrient insufficiency appears to be higher in the care homes and the elderly in the hospital, especially for thiamine, pyridoxine, cobalamin, folate, vitamin C, vitamin E and selenium. Although the high prevalence of B12 deficiency and the ease and safety of treatment, serum vitamin B12 assay has not been endorsed in formal screening guidelines for the geriatric population (13).

The efficiency of calcium absorption from the gastrointestinal tract decreases significantly after age 60. Individuals between 70 and 90 years of age absorb approximately one-third less calcium than do younger adults. Additionally, elemental calcium should be provided daily (14).

Results and Conclusions: Malnutrition is often underdiagnosed in the elderly. Although there is no uniformly accepted definition of malnutrition in the elderly, common indicators include involuntary weight loss, abnormal body mass index, specific vitamin deficiencies, and decreased dietary intake. Nutritional assessment is necessary for both the successful diagnosis and development of treatment plans for malnutrition in this population. There is no evidence in a specific formula in enteral or parenteral nutrition, in the elderly. High protein content formulas may be useful in elderly patients, as higher protein intake is recommended in the elderly. Nutritional support therapy is intended to maintain functional status and quality of life in the elderly.

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NEURONUTRICION

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The anaesthesiologists and intensivists encounter with the neurodegenerative disorders due to increase in the population of patients higher than 85 years old. Demans and its major cause Alzheimer Disease (AD) are the main problems in this age group. Prevalance and incidence studies show that there is an exponential increase with age due to complex genetic and environmental factors. Nutricion is accepted to be one of the most important factors in AD.

The clinical diagnosis of AD is achieved by the deterioration in cognitive functions, especially in memory, emotional and affective control which prevent the patients to maintain daily life properly. The characteristic neuropathology is neuronal death caused by amyloid- β plaques in vessel walls and tau-protein deposits with microgliosis and astrocytosis in brain. Oxidative stress also plays a major role in the pathogenesis of AD.

The environmental factors, especially nutricion seems to take to the stage with advancing age despite the differences in the nutritional habits of the population in the world. Dietary factors such as saturated fatty acids, high calorie intake and excessive alcohol consumption are believed to be linked to AD which are very similar with the dietary pattern of metabolic syndrome and cardiovascular risk. The roles of caloric restriction, lipids, metal chelators, vitamine E, dietary polyphenols, wine and dietary spices have been investigated by numerous studies.

In conclusion, the arrangement of the dietary supplements of older population with physical and mental activity increase may be effective before the onset of AD.

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14:30-15:30 Panel XIII

Nutrition in the elderly	Ahmet Coşar (Turkey), Lale Karabiyik (Turkey)
Malnutrition and sarcopenia in the elderly population	Pınar Zeyneloğlu (Turkey)
Nutritional support in the elderly	Lale Karabiyik (Turkey)
Neuronutrition	Işıl Özkoçak Turan (Turkey)
Immunonutrition	Seda Banu Akıncı (Turkey)

IMMUNONUTRITION

***Prof. Seda Banu Akıncı, MD
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Department of Anesthesiology and Critical Care***

Immunonutrition in the critically ill patients is the most contemporary and debatable issue of pharmaconutrition in which the nutrients are served as drugs. Pharmaconutrition concept is raised because immunonutrients act as if they are pharmacologic agents when they are used in appropriate therapeutic doses. If the nutrients are perceived as drugs, they should be appropriate for the disease, whether the illness is acute or chronic and whether they interact with other drugs and like all other drugs they should be used in adjusted dosages as the illness progresses. Immunonutrition of the critically ill is affected by clinical diversity of diseases, chronic comorbidities, acute organ dysfunctions, gastrointestinal intolerance and dosage problems when the enteral way is used. Despite all these known variability, immunonutrition is continued because of the key roles of the immunonutrients in the biochemical pathways and their mechanisms of action. Detailed biochemical studies have revealed the interactions between these immune system affecting nutrients. The functions and interactions of the key immunonutrients (glutamine, arginine, omega-3 fatty acids, antioxidants) will be reviewed in this session.

Animal studies with immunonutrients showed positive results with promising effects on gastrointestinal mucosa, immune system, cell proliferation and differentiation, defense against oxidative stress, and cellular metabolism. Unfortunately, the positive results of initial clinical studies could not be replicated with larger randomized clinical trials and resulted in frustration.

Main problem with immunonutrition is that the optimum dosage including geriatric or bariatric subpopulations, side effects, drug interactions, dosage in coexisting organ failures such as in renal or liver failures aren't defined when the immunonutrients are used as drugs. Another problem with immunonutrition is that we do not have an immunometer or any other practical way to monitor the immunological status in order to be able to guide the immunomodulation with immunonutrients. Some nutrients have predominantly antiinflammatory actions such as glutamine or omega-3 fatty acids, whereas some others can be proinflammatory such as arginine. Therefore we don't know when to use, and which immunonutrient to use in critically ill patients, because we don't have a "point of care" immunometer. For example, a antiinflammatory nutrient may aggravate the immunosupresion of a critically ill patient and may even become detrimental. In fact, clinical studies investigating glutamine such as Scottish Intensive care Glutamine or seleNium

Evaluative Trial (SIGNET), REDOXS (REducing Deaths due to OXidative Stress), High-protein enteral nutrition enriched with immune-modulating nutrients vs standard high-protein enteral nutrition and nosocomial infections in the ICU: a randomized clinical trial (MetaPlus), and systematic reviews including these studies have all shown no benefit but even harm. Similarly, arginine has been reported to increase mortality especially in septic patients. Although studies of omega-3 fatty acids such as the EDEN-OMEGA (Early versus Delayed Enteral Feeding-Enteral Omega-3 in Acute Respiratory Distress Syndrome) study, INTERSEPT (Investigating Nutritional therapy with Eicosapentaenoic acid: gamma linolenic acid and Antioxidants Role in Sepsis Treatment) study and meta analysis by Manzanares and colleagues suggested decreased incidence of infections and decreased length of hospital stay in high quality studies with omega-3 fatty acids, no survival benefit could be documented.

The complex interdependent effects of pharmaconutrients, also needs to be underlined. For example, the metabolic pathways of glutamine and arginine are interdependent. Glutamine supplementation increases systemic arginine concentrations via an interorgan pathway involving intestinal conversion of glutamine to citrulline and renal conversion of citrulline to arginine or via providing nitrogen for arginine synthesis. The higher mortality associated with high dose glutamine may also be explained with increased arginine levels - higher mortality as a consequence- as seen in previous arginine supplementation studies. Similar interdependent effects including but not limited to glutamine and nucleotides, glutamine and folate have been reported. Therefore it is very difficult to find the optimal combination. On the other hand using one immunonutrient alone may theoretically result in relative deficiency of the other if both are needed to enter the same series of biochemical interactions.

Selenium is the most commonly studied antioxidant albeit not solely but in combination with other immunonutrients. The amounts of selenium used in different studies were so heterogeneous that one could not give any dosage recommendation. Another issue with selenium is that the selenium levels during admission to ICU reflect the local diet and the selenium levels in drinking water changes from one country. Although selenium supplementation looks promising, no clear cut recommendation can be made.

Other micronutrients such as Vitamin C and Vitamin D are also under investigation. We still don't know whether the decreased levels of immunutrients during critical illness are maladaptive or adaptive and if replacement is required at all.

Generally speaking there is no single immunonutrient or immunonutrient cocktail recommended for use in critically ill patients. Current nutrition guidelines provide weak recommendation for only extra nutritional supplementation in some subpopulations such as in malnourished postoperative patients, after bariatric surgery, patients with burns and major trauma. In the future, these before-mentioned molecules or other ones may only be recommended if well defined indications, dosage, drug interactions and side-effects are delineated.

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May 11, 2018 Friday

16:00-16:30 Conference II

Antiaging

Asuman Uysalel (Turkey),

Haluk Gümüş (Turkey)

Who is old? I know what it is to be young: Mehtap Özcan (Turkey)

Antiaging products

WHO IS OLD? I KNOW WHAT IT IS TO BE YOUNG: ANTIAGING PRODUCTS

Mehtap Özcan, R.Ph,

From fighting those pesky free radicals, to stimulating skin's natural collagen production, anti-aging products make some alluring promises. And consumers spend billions of dollars each year on such creams and lotions, according to the statistics. But for many creams, lotions and vitamin supplements that claim to reduce wrinkles or slow down premature aging, there isn't sufficient evidence to show they work. Although certain active ingredients used in anti-aging products have been shown to be safe and effective, the trick is finding the right ingredients that work well with you, experts say.

There's definitely an overabundance of products and ingredients that promise to deliver, "Its can be overwhelming for patients and doctors—it's hard to know which works, and which doesn't."

Here are five commonly listed active ingredients, and the scientific evidence about whether they may play a role in decreasing signs of aging.

Peptides

As you age, your skin becomes thinner and loses fat, causing it to sag and develop fine lines. The body produces less collagen and elastin, substances that enables the skin to maintain its smooth, plump and youthful appearance.

Peptides are small proteins that help stimulate new cells to grow and help skin cells to heal.

"The concern is that peptides are large molecules, and depending on their formulation and the skin surface, they may not be able to penetrate deeply enough to achieve their effect."

Alpha-hydroxy acids

Alpha-hydroxy acids, such as lactic, glycolic and citric acids, are natural ingredients that come from fruits and milk sugars.

"They are commonly used because they work as an exfoliant, getting rid of dead skin cells, allowing new cells to grow,"

Each acid has a slightly different effect. Lactic acid, which comes from sour milk, helps remove dead skin cells, which has a brightening effect on the skin. Glycolic acid, which comes from sugar cane, can helps by reducing fine lines and wrinkles, making the skin appear smoother and tighter.

Retinol / Retinaldehyde

Touted as a tried-and-true method for decreasing signs of aging, retinol, a natural form of vitamin A, works by reducing the appearance of wrinkles and boosts the thickness and elasticity of the skin. There is ample evidence that shows retinol improves the appearance of fine lines and wrinkles.

Resveratrol

Resveratrol is a plant compound — it is found in red wine, and is also available as a supplement. Some have claimed that the compound could prevent or reverse chronic health problems such as diabetes or heart disease.

While there is evidence that drinking wine in moderation has health benefits, whether resveratrol supplements might have a similar effect remains unclear.

Antioxidants

Antioxidants are commonly claimed to help fight cell damage from free radicals, which are molecules that could injure cells and increase inflammation, and increase the risk of cancer.

Substances with antioxidant properties include beta-carotene, lycopene, selenium, and vitamins A, C and E, according to the National Institutes of Health. These and other antioxidants are found in many foods, including fruits, vegetables, nuts, and some meats. Supplements of many antioxidants are also available.

May 12, 2018 Saturday

09:00-10:00	Panel XIV Rational Drug Use	Orhan Kanbak (Turkey), Tülin Gümüş (Turkey)
	Why rational drug use?	Aysun Ankay Yılbaş (Turkey)
	Rational drug use in elderly	Başak Akça (Turkey)

WHY RATIONAL DRUG USE?

Aysun Ankay Yilbas
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The definition of rational use of medicine (RUM) was made clear by World Health Organization (WHO) in 1985 in Nairobi in the Conference of Experts on the Rational Use of Drugs. According to this definition; RUM requires that patients receive appropriate medications, in appropriate doses and regimens for an appropriate time period at the lowest possible cost considering their individual clinical situation and needs (1). However, irrational use of medicines is still an important global health problem especially affecting the developing countries. One common example of irrational use of medicine is the overuse of antibiotics leading to emergence of drug-resistant forms of infectious diseases. According to the data of WHO in 2010, it is estimated that more than 50% of drugs are prescribed or sold inappropriately and more than 50% of patients can not take their drugs in the correct way even if it is prescribed appropriately (2).

The cause of irrational use of medicines is usually multifactorial. Poor training of doctors, incomplete diagnosis, persistent demands of patients and stress factors regarding workplace such as overpopulated polyclinics, inadequate staff, limited laboratory facilities all may have an impact on irrational use of medicines. The lack of RUM not only lead to waste of health resources, but also increased mortality, morbidity, adverse drug reactions, toxicities, failure of treatment and emergence of antimicrobial resistance (1).

The negative impact of irrational drug use is obvious, however what should be done to improve the practice is little bit complicated due to the multifactorial nature. First step is of course to improve the awareness of the prescribing doctor. Training of pharmacotherapy and evidence-based prescribing practices should start at medical faculty. Prescribing drugs according to evidence based guidelines rather than the information gained from pharmaceutical companies should be encouraged to decrease irrational use of medicines. Special committees should be constituted to monitor and improve the use of medicines in each country and even in each hospital. Since this is a major problem affecting multiple disciplines, training other health care providers such as pharmacists and nurses will also be relevant to improve issues especially related to preparation and administration of medicines. Besides all these, education of patients and providing adequate supply of needed drugs with an appropriate cost is essential (1, 2).

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May 12, 2018 Saturday

09:00-10:00	Panel XIV	
	Rational Drug Use	Orhan Kanbak (Turkey), Tülin Gümüş (Turkey)
	Why rational drug use?	<i>Aysun Ankaç Yılbaş (Turkey)</i>
	Rational drug use in elderly	<i>Başak Akça (Turkey)</i>

RATIONAL DRUG USE IN ELDERLY

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World population is aging. Diseases of elderly are becoming one of the most important subjects of health care and rates of drug use in elder population, which is higher than the general population, is becoming a real concern. Side effects and intoxications of drugs, multiple drug usage, drug-drug interactions, changes in drug pharmacodynamic and pharmacokinetics are common due to cognitive problems such as forgetting and misunderstanding

Pharmacokinetic-pharmacodynamic changes that occur with aging should also be taken into consideration during the planning of treatment in elderly. According to World Health Organization estimations, more than 50 % of medicines worldwide are improperly prescribed, provided or sold. Furthermore, half of the elderly patients do not use their drugs correctly. That means the elderly population suffer not only from overuse of medicines but also from underuse.

Polypharmacy is the use of at least four drugs at the same time and is another important issue in this patient group. Physicians should always be informed about the list of medicines and the instructions of use. The drug regimen should be monitored separately for indication, compliance and the possibility of returning to a safer or cheaper agent, minimum effective dosage, timing, efficacy, side effects and toxicity, and drug-drug interaction. This check should be done periodically and also when there is any acute deterioration. Potentially useful drugs should not be used sparingly.

All health professions have responsibilities in rational drug use (RDU). A better implementation of rational drug use (RDU) principles in this age group will provide more "effective, safe and suitable" treatment so that the quality of life and compliance to treatment of patients will improve; drug interactions, adverse event incidence and treatment costs will be reduced.

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ORAL PRESENTATIONS

OP-01**EFFECT OF FULLERENOL C60 ON ERYTHROCYTE DEFORMABILITY DURING ISCHAEMIA-REPERFUSION INJURY OF LOWER EXTREMITY IN DIABETIC RATS**

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Background: Fullerenol, a water-soluble C60-fullerene derivative synthesized by Chiang et al, has been demonstrated to be able to scavenge free radicals in vitro and in vivo. Although its protective effects have been already studied and shown in ischemia reperfusion injury, additional investigation is necessary for its effect on erythrocyte deformability. The purpose of our study was to look into the effects of fullerenol C60 on erythrocyte deformability in rat lower extremity ischemia reperfusion injury model.

Materials and Methods: After approval of the ethics committee, 30 Wistar Albino rat were divided into 5 groups (n:6) as; Control (C), Diabetes (group D), diabetes+ fullerenol C60 group (DF), diabetes+I/R (group DIR) and diabetes I/R+ fullerenol C60 (DIR-F). 55 mg/kg streptozotocine was administered to the rats for diabetes. 72 hour after blood glucose concentration was measured, 250 mg/dl and above were considered as diabetic rat. Four week after the formation of diabetes, rats were subjected to 2 hour ischemia and 2 hour reperfusion. Erythrocyte packs were prepared from heparinized blood samples and deformability measurements were performed.

Results: The deformability index was significantly increased in diabetic rats ($p=0.017$, $p=0.006$, $p<0.0001$, $p<0.0001$, respectively); however, it was similar in Group D, DF and DIRF (Group D-Group DF, $p=0.635$; Group D-Group DIRF, $p=0.131$; Group DF-Group DIRF, $p=0.291$). It was significantly increased in Group DIR when compared to Group C, D, DF and DIRF ($p<0.0001$, $p=0.001$, $p=0.003$, $p=0.033$, respectively). The relative resistance was increased in IR models (Figure).

Conclusion: In our study, we detected unfavorable effects of I/R on erythrocyte deformability which may lead to disturbance in blood flow and hence tissue perfusion in infrarenal rat aorta. We also found that fullerenol C60 had beneficial effects by reversing undesirable effects of I/R. In our opinion, further studies with larger volume are required to support our promising results.

Key-Words: Erythrocyte deformability, ischemia reperfusion, fullerenol C60, rat

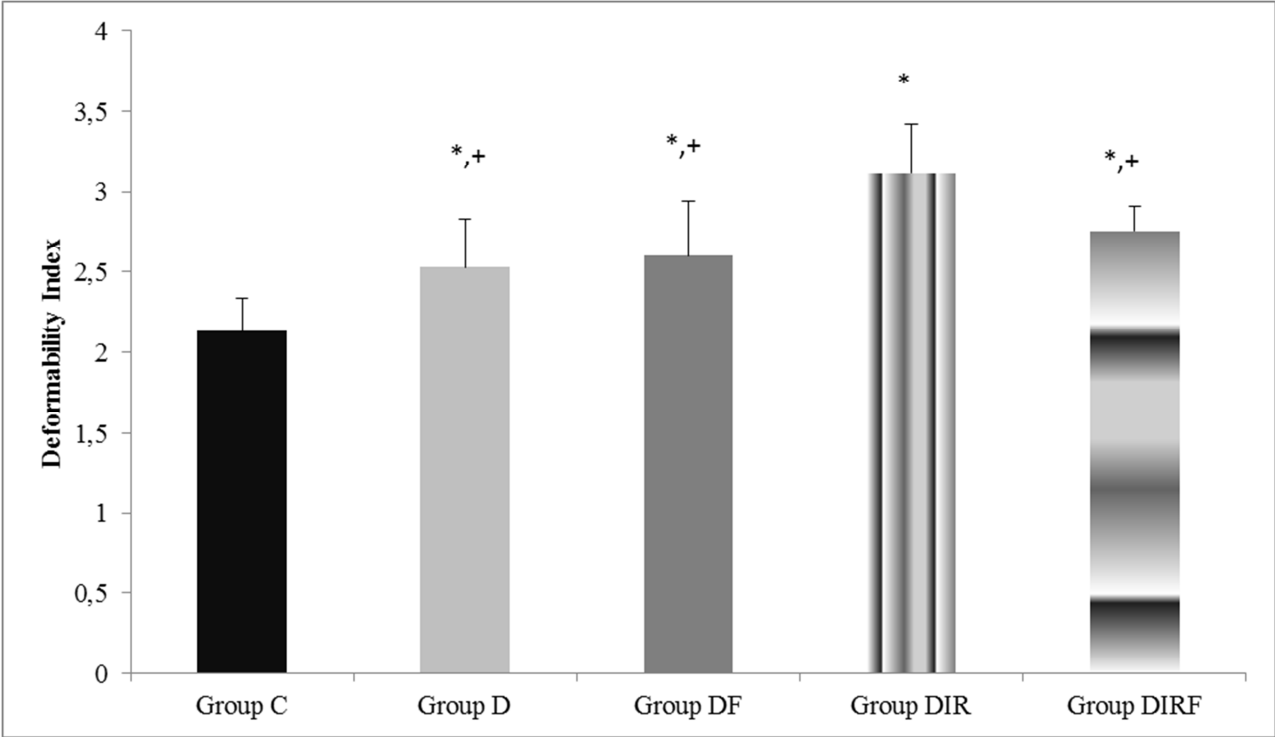


Figure: Erythrocyte deformability index values of the groups. Each bar represents the mean ± sd.

* p<0.05 compared to the Group C

+ p<0.05 compared to the Group I/R

OP-02**THE EFFECTS OF IN OVO ADMINISTRATION OF PROPOFOL ON DEVELOPMENT AND MORTALITY OF CHICKEN EMBRYOS**Murat Izgi¹, Emrah Sur²

1 Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara

2 Selçuk University, Faculty of Veterinary Medicine, Department of Histology and Embryology, Konya

Background and Goal of Study: Women undergo non-obstetric surgeries approximately 0.5-2% during their pregnancy period (1). The aim of this study was to determine the embryotoxic and teratogenic effects of propofol by using the fertilized chicken eggs. The chick embryos have been used previously as an alternative laboratory animal in embryotoxicity and teratogenicity studies (2).

Materials and Methods: For this purpose, 430 fertilized eggs were used in our study. The eggs were divided into 5 groups as follows; 1-The control group (n=55), 2-The Serum Physiologic group (n=60), 3- 2.5mg/kg propofol group n=90), 4-12.5 mg/kg propofol group (n=100), 5-37.5mg/kg propofol group (n=125). The solutions (100 microlitres) were injected via air-sac just prior to the settlement of the eggs into the incubator. Eggs from each group were opened on 15th, 18th and 21st days of the incubation and developmental stages of embryos were determined according to the Hamburger-Hamilton (HH) scale (3). The number of dead embryos, weights, HH stages and crown-rump lengths (CRL) were recorded.

Results and Discussion: The rates of dead embryos were: 16% for group 1, 28.8% for group 2, 46.4% for group 3, 31.2% for group 4 and 73.2% for group 5 respectively. The CRL values between 4th and 2nd groups for the 18th day were found statistically significant (p=0.021). The HH stages of dead embryos between groups 5 and 3 (p<0.001), and groups 5 and 1 (p=0.041) for day 21 were statistically significant. The embryonic deaths concentrated at HH 20 (21.2%) and 40 (20.4%) during the incubation period. During the first 14 days of gestation, the fetus is either lost or preserved intact (4), and these days are the unknown days of pregnancy.

Conclusion: The exposure of propofol during the early period of gestation can result in loose of the embryo. Although propofol is not known as a teratogenic agent, the anesthetists should have to consider the women of child-bearing age should be asked about their last menstrual period and if their pregnancy status is uncertain, pregnancy testing should be performed. Whenever possible, elective surgery should be deferred until after the first trimester to minimize potential fetal loss.

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OP-03**THE EFFECTS OF LACTOBASILLUS REUTERI ON LIVER ISCHEMIA - REPERFUSION INJURY IN RATS**

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Objective: Ischemia-reperfusion (IR) injury (IRI) is associated with various clinical conditions, such as myocardial and brain infarction, major trauma, shock, and surgery under vascular occlusion. We aimed to investigate the protective and therapeutic effects of Lactobasillus Reuteri (LR) on liver injury induced by IR in an in vivo rat model.

Methods: Thirty-two rats were randomly divided into 4 experimental groups n = 8 in each group: sham, IR, LR and IR+ LR. LR (5 mg / kg) was intraperitoneally administered for 30 min before 60 min of ischemia followed by 60 min of reperfusion to rats in the LR and IR+ LR groups. All rats were killed on day to evaluate immunohistopathological changes as well as tissue levels of oxidants and antioxidants.

Results: IR decreased tGSH levels in IR group when compared to the SHAM group. LR supplementation to IR group significantly ameliorated t GSH levels (P <0.05). Also, IR caused elevation of MPO production when compared to the SHAM group whereas LR treatment prevented these hazardous effects. However, plasma SOD, CAT, and MDA levels did not differ between the LR +IR than the IR rats. LR treatment reduced significantly loss of the glycogen in the hepatocytes (P<0.05). In addition, the number of Kupffer cells was determined to have decreased in the IR+ LR compare to IR group (P<0.05). Also, immunohistopathological tissue damage was reduced in the LR and IR+ LR group.

Conclusion: The main finding of the present study was that LR may be protective against liver IRI. Our results suggested that LR pretreatment suppressed oxidative stress and increased antioxidant levels in an rat model of liver IR.

Keywords: Lactobasillus Reuteri, liver, ischemia - reperfusion injury, rats

Table I. The biochemical results

Group	SHAM	LR	IR	LR+IR
tGSH	16.70±8.30	14.26±5.64	7.63±2.72 ^a	18.53±4.27 ^b
MPO	32.95±9.46	29.04±6.85	57.20±17.75 ^c	43.81±4.53
MDA	30.42±4.71	30.64±5.60	34.95±3.43	32.44±3.57
SOD	44.26±2.52	45.63±2.49	41.41±1.94	43.53±1.74
CAT	180.0 (154.2-187.9)	298.9 (260.7-315.6)	183.6 (168.1-204.1)	191.5 (177.1-315.5)

^aSignificant decrease (P<0.05), vs. sham group. ^bSignificant increase (P<0.05), vs. IR group.

^cSignificant increase (p<0.05), vs. sham group.

Table III. The results of histopathological score and number of Kupffer and ki-67 positive cells in all groups.

Gruplar	SHAM	LR	IR	LR+IR
Congestion	0.0 (0.0-2.0)	0.0 (0.0-2.0)	2.0 (0.0-3.0) ^a	2.0 (0.0-3.0)
Infiltration	0.0 (0.0-2.0)	0.0 (0.0-1.0)	1.0 (0.0-2.0) ^a	0.5 (0.0-2.0)
Hypereosinophilic Hepatocyte	0.0 (0.0-1.0)	0.0 (0.0-1.0)	0.0 (0.0-2.0) ^a	0.0 (0.0-2.0) ^b
Necrosis	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-3.0) ^a	0.0 (0.0-0.0) ^b
Glycogen Loss	0.0 (0.0-1.0)	0.0 (0.0-2.0)	3.0 (1.0-3.0) ^a	2.0 (0.0-3.0) ^b
Kupffer cells	2.0 (2.0-10.0)	5.0 (2.0-15.0)	14.0 (4.0-32.0) ^a	9.0 (2.0-25.0) ^b
Ki-67 positive hepatocyte	1.0 (0.0-5.0)	1.0 (0.0-4.0)	0.0 (0.0-4.0) ^c	0.0 (0.0-4.0) ^c

^aSignificant increase (P<0.05), vs. sham group. ^bSignificant decrease (P<0.05), vs. LR +IR group. ^cSignificant increase (p<0.05), vs. sham group.

OP-04**THE COMPARISON OF MC-GRATH SERIES 5 VIDEOLARYNGOSCOPY AND MACINTOSH VIDEOLARYNGOSCOPY IN THE NASOTRACHEAL INTUBATION IN TERMS OF EFFICIENCY**

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Background and Goal of Study: In this study we aimed to compare two different methods of nasotracheal intubation (Group 1: Seldinger method using McGrath series 5 VL(video laryngoscope) and GEB(gum elastic bougie) / Group 2: Classical method using Macintosh laryngoscope and Magill pens) in terms of bleeding and duration of intubation in patients undergoing general anesthesia due to mandibular fracture. In addition; we compared glottic image quality, hemodynamic responses, and early complications such as sore throat, voice anxiety between groups.

Materials and Methods: Our study, a prospective, randomized clinical trial, was performed in the Ankara Numune Training and Research Hospital operating rooms from March 2016 to March 2017. It was performed in 46 patients aged between 18 and 65 years old with an ASA risk score of I-III who underwent elective reconstruction surgery due to mandibular fracture. After randomization, intubation was performed with Macintosh laryngoscope and Magill pens in one group while performed with VL and GEB in the other group. Patients' thyromental, sternomental, interincisor distances, Mallampati and CL scores were recorded. Two methods have been compared; intubation times and bleeding complication being as primary target.

Results and Discussion: In our study, there was no statistically significant difference in terms of gender, age, body weight, height, body mass index, ASA, thyromental distance, sternomental distance, interincisor distance, Mallampati score ($p > 0,05$) between two groups. Also there was no statistically significant difference in terms of performer's subjective intubation difficulty grade evaluation, number of trials, Cormack Lehane score, laryngeal pressure requirement, duration of intubation, vital findings, postoperative bleeding, sore throat and postoperative voice distress ($p > 0,05$) between two methods.

Conclusion: Nasotracheal intubation with Seldinger method using GEB and VL may be an alternative method that can be safely used without increasing the number of complications, the number of interventions and the duration of intubation.

Key words: nasotracheal intubation, videolaryngoscopy, gum elastic

OP-05**USE OF INTRAOPERATIVE LACTATE LEVELS AS A RISK FACTOR FOR POSTOPERATIVE RECOVERY IN LIVING LIVER DONORS**

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Background: Liver transplantation is an effective and curative treatment modality for patients who have end-stage liver disease (1). However, due to the limited number of cadaver donors, dependence on living donors has recently increased since the number of patients requiring transplantation increase (2). The safety of liver donor is one of the most important concerns during this process (3). Abnormal liver functions of healthy living donor following hepatic resection may lead to some morbidities and may be associated with prolongation of hospitalization (4,5). The role of intraoperative anaesthetic parameters, duration of operation and postoperative hematologic variables on the duration of hospitalization and morbidities of living donors have not been clearly specified yet.

In this study, we aimed to investigate whether intraoperative maximal blood lactate level is a risk factor for delayed recovery of liver functions, duration of hospitalization and other morbidities in healthy liver donors.

Material and Method: Sixty living liver donors were retrospectively identified who were subjected to hepatectomy at our hospital since 2009. Of them, 39 with demographic variables, intraoperative and postoperative data were included. The patients were divided into 2 groups as group Y (n=21, patients with high intraoperative lactate levels) and group D (n=18, patients with low intraoperative lactate levels).

Results: The groups were similar for demographic variables including sex, smoking status, age, body mass index, preoperative hemoglobin and albumine levels, INR, total bilirubin, AST, and ALT. Also, among intraoperative variables, amount of total colloid infusion, duration of surgery and anaesthesia, volumes of removed and remnant liver tissue were similar, but patients in Group Y were given higher amount of crystalloid. Among postoperative variables, AST, ALT, total bilirubin, INR, duration of intensive care unit stay and duration of hospitalization were found to be similar between two groups whereas glucose levels were higher in Group Y.

Conclusion: Although intraoperative blood lactate level plays an important role in morbidity and mortality following several surgeries, its level is not a significant risk factor for delayed liver functions, increased morbidity or prolongation of hospitalization in living liver donors.

OP-06

EFFECTS OF OVER DOSE LORNOXICAM AND INTRAVENOUS IBUPROFEN ON KIDNEY TISSUE

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Background and Goal of Study: Lornoxicam and/or ibuprofen intravenous (iv) administration for postoperative pain management is becoming more common. The aim of this study is to evaluate the histopathological effects of over doses lornoxicam and ibuprofen on kidney tissue of the rat.

Materials and Methods: Eighteen male Wistar Albino rats were randomly divided into three groups; as Lornoxicam group (Group L) (20 mg/kg), i.v. ibuprofen group (Group I) (300 mg/kg iv), and control group (Group C). Intravenous administrations were done in all groups except Group C. Kidney tissue was removed for histopathological examination. Each kidney preparation were evaluated in a similar manner in terms of damage criteria for glomerular vacuolization (GV), tubular dilation (TD), Vascular vacuolisation and hypertrophy (VVH), tubular cell degeneration and necrosis (TCDN), Bowman's space dilatation (BSD), tubular hyaline cylinders (THC), lymphocyte infiltration (LI), tubular cell shedding (TCS). 4-point scoring system was used. They were rated as 0: No change. +1: Minimal change. +2: Moderate change. +3: Serious change. Results were analyzed with Kruskal-Wallis and Mann-Whitney U test.

Results: GV, VVH, THC, LI and TCS of the Group L and Group I were found to be significantly higher than the Group C. TD and BSD was observed more for the Group L when compared with Group C (Table).

Conclusion: Lornoxicam and ibuprofen were cause to mild to moderate reversible injury in rat kidney tissue. Our findings may be a guide for future animal studies investigating the effects of lornoxicam and ibuprofen on kidney tissue.

Key words: Rat, lornoxicam, i.v. ibuprofen, kidney histopathology

Table. Kidney tissue histopathology [Mean ± SE]

	Group C (n=6)	Group L (n=6)	Group I (n=6)	p**
Glomerular vacuolization (GV)	0.33±0.21	2.00±0.26*	2.00±0.26*	<0.0001
Tubular dilation (TD)	0.67±0.21	1.83±0.31*	1.17±0.31	0.031
Vascular vacuolisation and hypertrophy (VVH)	0.50±0.22	2.00±0.36*	1.67±0.33*	0.010
Tubular cell degeneration and necrosis (TCDN)	0.17±0.17	1.00±0.37	1.00±0.26	0.077
Bowman's space dilatation (BSD)	0.50±0.23	1.67±0.23*	1.00±0.26	0.010
Tubular hyaline cylinders (THC)	0.17±0.17	1.50±0.22*	1.50±0.22*	<0.0001
Lymphocyte infiltration (LI)	0.33±0.21	1.83±0.31*	1.67±0.33*	0.004
Tubular cell shedding (TCS)	0.50±0.22	1.50±0.22*	1.50±0.22*	0.008

p**: Statistical significance was set at a p value < 0.05 for Kruskal-Wallis test

* p<0.05 compared to Group C

OP-07**PERIPARTUM ANESTHETIC MANAGEMENT OF LIVER TRANSPLANT PATIENTS**

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Background: Survival rates after liver transplantation (LT) are increasing depending on improvements in immunosuppressive treatment and surgical techniques. Successful LT can restore fertility and childbearing potential in female patients. However, these pregnancies are still more risky than in the general population. Although there are data about the outcome of pregnancy in the literature, there has been few on anesthesia management. Because of the frequency of LT operations in our center, non-transplant surgeries and cesarean delivery (CD) are increasing. We aimed to present the obstetric anesthesia management of patients who were become pregnant after LT.

Materials and Methods: The clinical data of all patients who underwent LT in our hospital were reviewed. Between 186 female in childbearing age (15-45 years old), we reached the data of 18 pregnant women (a total of 27 pregnancies).

Results and Discussion: Of the 18 deliveries ended in a live birth (66,6%), 8 were by vaginal delivery while 10 were by CD. CD was achieved with spinal anesthesia (with marcaine heavy+fentanyl) in 6 patients with normal coagulation and with general anesthesia in 4. One pregnant underwent emergence CD under general anesthesia at 36th week due to hepatic encephalopathy. Following liver support treatments in ICU, re-transplantation was performed on 3rd postoperative day. One case was administered general anesthesia due to preterm labor at 32nd week. The other two cases received general anesthesia because of preeclampsia and coagulopathy. In cases with preeclampsia, invasive artery monitoring was performed before induction and nitroglycerin infusion was administered intra-operatively. These cases were transferred to ICU and taken to service after 3rd postoperative day. General anesthesia management was performed with 3mg/kg pentothal and 0.6mg/kg rocuronium, followed by 0.8-1% sevoflurane in 50% O₂/air mixture.

Discussion: In preoperative evaluation, careful attention should be taken due to the risk of obstetric complications (such as preeclampsia and gestational diabetes), immunosuppressive treatments, and co-morbidities. Regional anesthesia can be successfully applied except conditions such as coagulopathy and encephalopathy. In terms of graft function, hemodynamic monitoring and close follow-up is important.

Conclusion: Obstetric anesthesia management of the LT recipients can be achieved without any problems with close perioperative monitoring.

OP-08**THE EFFECT OF ROBOTIC-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY PROCEDURES ON POSTOPERATIVE COGNITIVE DYSFUNCTION AND S100B RELEASE: A PROSPECTIVE OBSERVATIONAL STUDY**

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Background: The present study aims to investigate the association between postoperative cognitive dysfunction (POCD) and increased serum levels of S100B protein after robotic-assisted laparoscopic radical prostatectomy (RALRP).

Methods: The study included 62 consecutive patients who underwent RALRP at Antalya Training and Research Hospital, Antalya, Turkey. Serum values of S100 were determined preoperatively, after anesthesia induction, 30 min after surgery and 24 h postoperatively. Cognitive function was assessed using neuropsychological testing preoperatively and 7 days and 3 months postoperatively.

Results: The mean ages of the patients with and without POCD on postoperative day 7 were 66 ± 7.2 and 60.6 ± 7.6 years, respectively. The mean ages of the patients with and without POCD at postoperative 3 months were 70 ± 5 years and 61.2 ± 7.5 years, respectively. Although there was no significant age difference between patients with and without POCD at day 7 ($p=0.062$), patients with POCD at 3 months were significantly older than those without POCD ($p=0.030$). Eighteen (29%) patients exhibited POCD 7 days after surgery, and seven (11.2%) at 3 months after surgery. S100B protein serum levels were significantly increased at 30 min after surgery in patients displaying POCD 7th day and POCD 3rd month after surgery in comparison to patients without POCD. Duration of anesthesia was significantly longer in patients with POCD at 7 days and at 3 months after surgery when compared with patients without POCD ($p=0.012$ and $p=0.001$, respectively). Duration of Trendelenburg was also significantly longer in patients with POCD at 7 days and at 3 months after surgery when compared with patients without POCD ($p=0.025$ and $p=0.002$). Duration of Trendelenburg and S100B protein levels at the 30 min after surgery were significantly correlated.

Conclusions: S100B protein increases after RALRP and this increase is associated with POCD development. The duration of Trendelenburg position and anesthesia contribute to the development of POCD.

Trial Registry Number: Clinicaltrials.gov (No. NCT03018522)

Keywords: S100B protein, postoperative cognitive dysfunction, robotic assisted laparoscopic radical prostatectomy

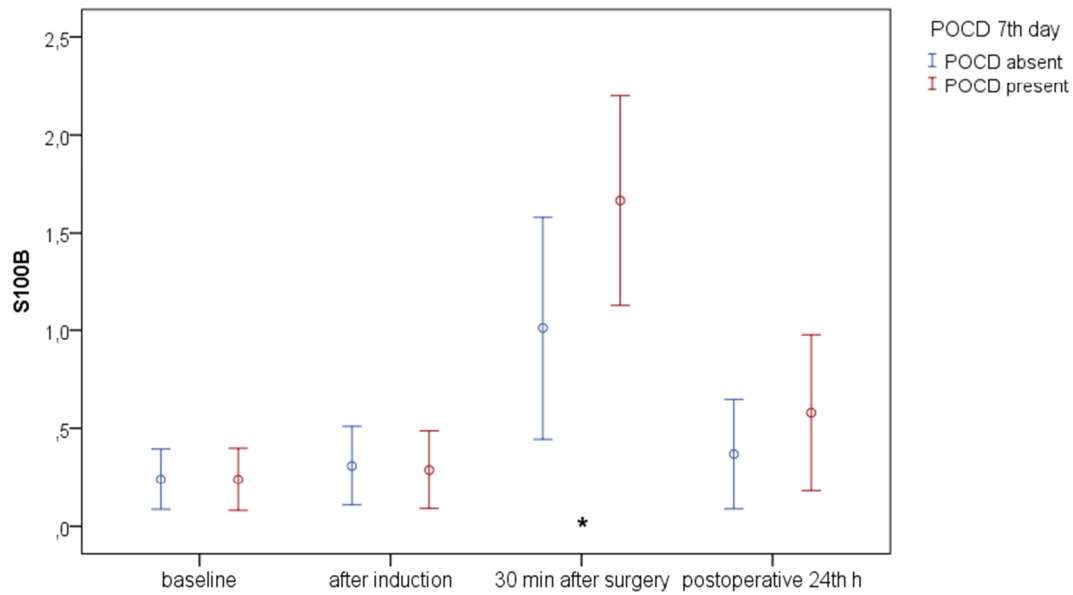


Figure 1A. Serum S100B protein level profiles according to presence or absence of POCD at postoperative (postop) day 7. Data are shown as mean \pm SD.

* $p < 0.05$ indicates significant difference between patients with and without POCD

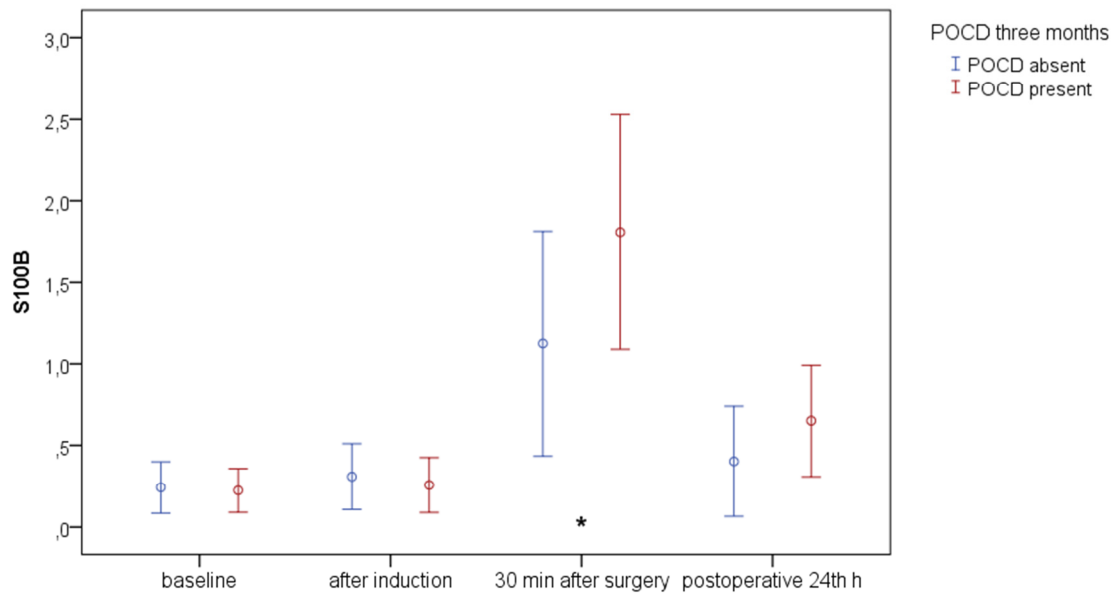


Figure 1B. Serum S100B protein level profiles according to presence or absence of POCD at postoperative (postop) 3rd month. Data are shown as mean \pm SD.

* $p < 0.05$ indicates significant difference between patients with and without POCD

OP-09**INCIDENCE OF HEPATITIS IN PATIENTS WHO WERE FOLLOWED IN AN INTENSIVE CARE UNIT**Havva SayhanSakarya University, Medical Faculty,
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Background and Study Goals: The study aimed to investigate the incidence of hepatitis B surface antigen (HBsAg) and anti-hepatitis C virus (HCV) in serum samples and to evaluate biomarkers taken from patients who were followed in the intensive care unit of Sakarya University Training and Research Hospital. The intensive care unit attracts attention because healthcare workers in this unit are more susceptible to the risk of becoming infected with hepatitis.

Materials and Methods: This retrospective study included 501 cases with various diagnoses in intensive care units between 1 January 2015 and 1 January 2016. Sakarya University's Faculty of Medicine Review Board (71522473/050.01.04/113) approved the study after approval of the research ethics committee. Hospital medical record forms and the hospital's electronic medical record system were used in the analysis of medical data with regard to age, sex, HBsAg, anti-HCV, aspartamine amino (AST) and alanine transferases (ALT), bilirubin, and creatinine levels.

Results and Discussion: In the study, 565 patients were examined. Sixty-four patients were excluded from the study because of repeatedly being taken to the intensive care unit. 198 (39.6%) female and 303 (60.4%) male patients (501 total) were included. 185 (37%) patients were accepted through the emergency service and 316 (63%) patients were accepted through the inpatient service. 290 (58%) of the patients were transferred to various services, 194 (39%) patients were exitus, 10 (2%) of the patients were discharged and 6 (1%) patients were transferred to another centre. The distribution of HBsAg cases was 18 (3.6%) patients as the total of 9 (%1.8) males and 9 (%1.8) females, and there were 3 (0.6%) anti-HCV positive patients. No statistically significant differences in AST, ALT, bilirubin and creatinine levels were found when HBsAg and anti-HCV seropositive and seronegative groups were compared ($p>0.05$).

Conclusion: Seropositivity rates of our data were in agreement with the average rates from other various studies conducted in our country; however, comprehensive studies with extended series of cases are needed. Nosocomial infections should be taken into account in order to prevent healthcare workers and other patients from becoming infected with viral hepatitis.

Key words: Hepatitis, Intensive Care Unit, HBsAg, anti-HCV

OP-10

SEDATION VERSUS GENERAL ANESTHESIA IN ELDERLY PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI): A RETROSPECTIVE COHORT STUDY

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Background and Goal of Study: Aortic stenosis or insufficiency has a high prevalence with high mortality in elderly patients. It has a mortality that can be up to 50% in the first 2 years after the onset of cardiac symptoms such as angina, syncope or heart failure (1). Transcatheter aortic valve implantation (TAVI) has become a less invasive and good alternative to surgery with high-risk and inoperable patients (2). Along with technological advances, implantation devices have been developed and started with less invasive methods with transcatheter approach (3). In this study, we aimed to compare two different anesthetic applications (sedation versus general anesthesia) in patients undergoing TAVI.

Materials and Methods: Forty-nine adult patients who underwent TAVI were retrospectively studied. Patients with ASA scores I-IV and high risk of surgical operation were included. Patients were divided into two groups: Group S: Sedation (n: 26), Group G: General anesthesia (n: 23). Demographic features, operation characteristics and hemodynamic data were recorded at important time points.

Results: Mean age of 49 patients was 76.42 ± 7.60 . Demographic characteristics were similar in the groups (Table 1). EuroSCORE values were 26.19 ± 3.91 in Group S and 27.08 ± 2.82 in Group G. Patients of Group S did not require colloid resuscitation. The need for permanent pacemaker was significantly higher for Group G. The duration of anesthesia and surgery was significantly higher in Group G. The duration of implantation and ICU stays were similar in the groups (Table 1). Heart rates of Group G were significantly lower at the time of after valve implantation. Mean arterial pressure were similar in both groups. Peripheral oxygen saturation of Group G were significantly higher at the time of before and after valve implantation.

Discussion and Conclusion: Comprehensive preoperative preparation and detailed follow-up are required for these patients with high risk of operation. The anesthesia management, skill and experience of operation team are very important because of elderly ages and comorbidities of the patients. Anesthetist must consider carefully the anesthetic agent preferences, complications related to catheterization, hemodynamic instability, requirement of immobility and adequate analgesia.

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Table 1. Demographic and procedure data

	Group S (n=26)		Group G (n=23)		p value
	Range	Mean \pm std	Range	Mean \pm std	
Age, years	60 – 87	75.26 \pm 6.93	48 – 89	77.73 \pm 8.25	0.261
Sex, male/female	15/11	-	11/12	-	0.572
Height, cm	155 – 180	166.42 \pm 7.43	150 – 180	166.87 \pm 7.14	0.832
Weight, kg	50 – 100	73.23 \pm 11.95	50 – 110	74.26 \pm 12.87	0.773
BMI	19 – 39	26.65 \pm 4.66	21 – 35	27.08 \pm 3.90	0.728
ASA, II/III	4/22	-	0/23	-	0.112
Aortic stenosis/Aortic	21/5	-	22/1	-	0.194
NYHA Classification, III/IV	24/2	-	23/0	-	0.491
EuroSCORE	20 – 34	26.19 \pm 3.91	21 – 32	27.08 \pm 2.82	0.370
Hemoglobin	9 – 16	12.23 \pm 1.94	9 – 15	12.13 \pm 1.51	0.843
Hematocrit	26 – 50	38.65 \pm 5.91	30 – 47	37.13 \pm 4.68	0.327
Invasive Arterial Monitorization	26	-	23	-	
Duration of implantation, min	2 – 20	8.38 \pm 4.80	2 – 14	6.91 \pm 4.20	0.263
Total crystalloid, ml	300 – 1500	715 \pm 371	400 – 1000	726 \pm 222	0.905
Total colloid, ml	0	0	0 – 1000	434 \pm 232	<0.001*
Cardioversion	1	-	2	-	0.788
Pacemaker	6	-	12	-	0.043*
Duration of anesthesia, min	40 – 100	59.03 \pm 15.81	50 – 160	105.65 \pm 30.31	<0.001*
Duration of procedure, min	20 – 90	49.34 \pm 16.45	40 – 140	89.56 \pm 27.58	<0.001*
Duration of ICU, day	1 – 2	1.61 \pm 0.49	1 – 6	2.00 \pm 0.95	0.078

ASA; American Society of Anesthesiology, BMI; Body Mass Index, EuroSCORE: European System for Cardiac Operative Risk Evaluation, Group G: Group of General Anesthesia, Group S: Group of Sedation/Analgesia, IBW; Ideal Body Weight, ICU: Intensive Care Unit, NYHA: New York Heart Association, std; Standard Deviation, TAVI: Transcatheter Aortic Valve Implantation, *p<0.05 (statistically significant)

OP-11**THE PREFERENCE OF AIRWAY MANAGEMENT STRATEGY
DURING CARDIOPULMONARY RESUSCITATION: A SURVEY OF 357 CLINICIANS**

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Background and Goal of Study: The optimal airway management strategy during cardiopulmonary resuscitation (CPR) has not been determined yet. The widely acknowledged practice is using a stepwise approach towards more advanced techniques with minimalized interruptions to high quality chest compressions. The aim of this study was to investigate the airway management approach of clinicians during cardiopulmonary resuscitation.

Materials and Methods: Following ethical committee approval, we conducted an online survey of clinicians working in intensive care units, emergency services and anesthesiology clinics of university and training and research hospitals in Turkey between 01.05.2017 and 01.07.2017. The survey questioned data regarding airway management strategies during CPR, the equipment and techniques used, preferred rescue techniques in case of difficult airway, and the usage of end-tidal carbon dioxide.

Results: Three hundred and fifty-seven clinicians responded to the survey. Twenty-four percent reported that they interrupt chest compressions ≥ 5 seconds for an intubation attempt. The interruption times were significantly shorter in specialists and anesthesiologists compared to residents and non-anesthesiology specialties respectively ($p=0.001$). Specialists were much likely to perform < 3 attempts compared to general practitioners and residents. Despite reporting less intubation attempt times and being more experienced, specialists were more likely to use supraglottic airway devices (SAD) as an alternative to intubation during CPR (Table 1). The ratio of clinicians who believed that they were experienced enough in videolaryngoscopy and emergency front of neck access were 35.8% and 15.6% respectively. Thirty-three percent of clinicians reported that they have never used end-tidal carbondioxide monitoring during CPR.

Conclusion: Both the 2015 ERC and AHA guidelines (1,2) emphasize the importance of uninterrupted and high-quality chest compressions for the success of CPR. Therefore, the usage of alternative techniques like SAD can be recommended instead of interrupting chest compressions for several intubation attempts. The data of our study suggests that anesthesiologists and specialists (irrespective of their medical specialty) were more consistent with the recommendations of current resuscitation guidelines compared to other specialties and residents&general practitioners respectively. There still remains room for improvement and update of knowledge and skills of clinicians who can face with CPR frequently during their daily practice.

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Table 1. Clinical practice patterns during cardiopulmonary resuscitation

	General practitioners (n=25)	Residents (n=79)	Specialists (n=253)	p
Interruption to chest compressions (≤ 5 sec)	56% (n=14)	64,6% (n=51)	81,4% (n=206)	<i>0,001</i>
SAD as an alternative to intubation	32% (n=8)	50,6% (n=40)	84,2% (n=213)	<i><0,001</i>
<3 intubation attempts in case of difficult intubation	28% (n=7)	60,8% (n=48)	67,2% (n=170)	<i><0,001</i>
Experienced in FONA	0% (n=0)	2,5% (n=2)	21,4% (n=54)	<i><0,001</i>

SAD: Supraglottic airway device, FONA: Front of neck access

OP-12

THE KNOWLEDGE AND AWARENESSES OF ANESTHESIOLOGISTS IN TURKEY ABOUT DI(2-ETHYLHEXYL) PHTHALATE; A SURVEY INVESTIGATION

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Background and Goal of Study: Rapid development of the industry, while providing many facilities for human life, also causes the living creatures to face new synthetic chemical substances. Phthalates are among those substances that are harmful to human health (1).

The main use of Di(2-ethylhexyl) Phthalate (DEHP) (95%) is PVC (*polyvinyl chloride*) production and Phthalates are frequently used to soften medical materials made of PVC (2).

This study aims to evaluate the knowledge and experiences of anesthesiologists in Turkey about the presence and hazards of DEHP and increase their awarenesses.

Materials and Methods: The questionnaire study consisting of web based 20 survey questions about DEHP is sent to anesthesiologists in Turkey via electronic mail. Participants were asked questions about whether they heard the name of the DEHP, whether they knew the harmful effects that the DEHP could cause, whether it was the effect of DEHP in the selection of the operating room and intensive care medical supplies. The responses are loaded to SPSS 15.0 database and analyzed in this way.

Results and Discussion: The statistics reveal that the response rate of the survey is ~12% (n=270), the majority of the participants are women and participation from universities comes to the forefront. We determined that 70% of anesthesiologists have never heard of 'the name or notion of DEHP. The study also demonstrates that 90-95% of them do not know whether the medical supplies that they use contain DEHP and they suffer from lack of knowledge about the purchase and selection of medical supplies. The other striking result of the survey is that more than 50% of anesthesiologists have no information about the mode of DEHP transmission to humans and effects on patient groups. At the same time, more than 70% of them are not aware of national and international warnings on DEHP.

Conclusion: According to the data of this research, the majority of the anesthesiologists in Turkey have insufficient information about DEHP. Due to the lack of information, doctors and patients may be confronted with chemicals with toxic effects. In order to prevent this threat, there is a need for multidisciplinary working from industrial organizations to health institutions.

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OP-13**THE FACTORS ASSOCIATED WITH LENGTH OF INTENSIVE CARE UNIT STAY IN SURGICALLY TREATED GYNECOLOGIC CANCER PATIENTS OVER 65 YEARS OF AGE**

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Background and Goal of Study: Post-operative (PO) care in intensive care unit (ICU) after high-risk gynecological oncology surgical procedures may allow for greater recognition and correct management of PO complications. PO monitoring and the presence of comorbid illnesses are the most common reasons for admission to the ICU. The aim of this study was to evaluate the underlying factors associated with prolonged ICU stay of geriatric patients after surgery for gynecological malignancies.

Materials and Methods: This retrospective study evaluated 148 patients requiring ICU after gynecological cancer surgery from January 2013 to December 2015. Demographic, clinical and laboratory parameters were reviewed. The patients were separated into two groups according to length of ICU stay (Group 1 \leq 2 days, Group 2 $>$ 2 days) for further analysis. The data was analyzed with nonparametric tests and multivariate analysis. Then a multivariate logistic regression model was set for the results showing statistical significance ($p < 0.05$).

Results and Discussion: A total of 48 geriatric gynecological cancer patients was admitted to ICU with a mean age of 70.7 ± 5.8 . Of these, 28 (37.8%) patients spent more than 48 hours in the ICU. The most common indications for ICU admission were hemodynamic instability (56.3%) and respiratory insufficiency (37.5%). Hypertension, hyperlipidemia, high ASA score were statistically significant preoperative variables when compared with the patients $<$ 65 years of age ($p < 0.05$). Extubation failure, hypotension, hypoalbuminemia, the pH of the blood gas analysis, and higher APACHE II scores were found as significant PO risk factors ($p < 0.05$). On multivariate analysis, being in geriatric age group (OR=5.1, 95%CI=1.36-19.2) significantly increased the duration of ICU and length of hospital stays ($p < 0.05$).

Conclusions: This study evaluated the risk factors for prolonged ICU stay in geriatric patients requiring ICU admission after gynecological oncology surgery. As a substantial number of gynecological cancer patients might be admitted to the ICU after surgery, this study may help physicians better understand the risks of prolonged ICU stay and allow more efficient clinical management for these patients to have a better outcome.

OP-14**EVALUATION OF PREOPERATIVE ANXIOLYTIC AND POSTOPERATIVE ANALGESIC EFFECTS OF PREGABALIN PREMEDICATION**

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Background: The studies about use of pregabalin for premedication have been recently carried out due to pregabalin has analgesic and anxiolytic effects together. In this prospective, randomized, double blind and placebo controlled study, we evaluated the effects of preoperative pregabalin on anxiety, hemodynamic parameters, side effects, postoperative pain and analgesic consumption in elective abdominal hysterectomies.

Materials and Methods: The patients were randomly separated into 34 patients of two groups. pregabalin 150 mg (Pregabalin Group) or placebo (Control Group) was given to the patients 12 and 1 hour before operation. STAI-I anxiety scale were performed to the patients during preoperative examination and 1 hour before operation. In both groups, intraoperative hemodynamic parameters, postoperative pain levels with VAS, morphine consumption and developing side effects were recorded and analyzed.

Discussion and Results: When all patients were compared in terms of demographic data, no difference was found between groups. STAI-I points were found significantly different between Pregabalin ($p=0.000$) and Control groups ($p=0.195$) both premedication and postmedication phases ($p<0.05$). MAP data were found lower in pregabalin group at intraoperative 30th, 40th and 75th minutes and postoperative 1st minute ($p<0.05$). Postoperative VAS values were found lower in Pregabalin Group ($p<0.05$). Additional analgesic use and morphine consumption, were lower in Pregabalin group except 1st ($p=0.321$) and 30th minutes ($p=0.203$) ($p<0.05$). When both groups, examined in terms of side effects, side effect rates of Control Group were %29 and rates of Pregabalin Group were %10.

Conclusion: In this study, it was concluded that pregabalin use at 12 and 1 hour before operation decreased preoperative anxiety, provided postoperative analgesia and found superior to placebo due to decreasing side effects via decreasing the consumption of analgesics, however for the routine use of pregabalin in premedication it was needed further studies with different doses and large sample sizes.

Keywords: premedication, preoperative anxiety, postoperative pain, pregabalin

OP-15**THE FACTORS AFFECTING PREFERENCE OF ANESTHESIA RESIDENTS REGARDING
SUBSPECIALTY TRAINING AND THEIR OCCUPATIONAL FUTURE**

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Background and Goal of Study: There is a paucity of data assessing the factors that influence the career decisions of anesthesia residents in Turkey. The aim of this study was to determine the preferences of anesthesiology and reanimation residents in Turkey regarding future career and subspecialty training plans and practice location, and to determine the factors that influence those preferences.

Materials and Methods: Using a cross-sectional study design, an online survey was sent to all anesthesia residents enrolled at the societies of anesthesiology in Turkey (n=692). Data were collected on demographics and preferences regarding subspecialty training, and future practice location.

Results and Discussion: Two hundred eighty four residents (41%) responded to the survey. The ratio of participants who intended to pursue fellowship on intensive care and algology were 12.1% and 23.1% respectively, 21.7% of participants did not intend to pursue any fellowship training and the decision of 43.1% of participants was uncertain. The most popular causes to pursue a fellowship were to make compulsory service in a better place (47.2%) and economical income (43.1%). Forty two percent of participants did not intend to pursue any fellowship training because of their attention to general anesthesiology practice and 15.2% because of the compulsory service obligation following the training. The most important reason to be uncertain about fellowship programme was the compulsory service obligation following the training (66.7%). The most commonly choosed factors for selecting the institution for training were the city that the institution takes place (68.2%) and the reputation of the institution (52.7%). The top factor that influence a resident's preference for desired future practice location after the compulsory service was the city that he/she would like to live (37.1%). Of the residents intending to pursue a fellowship, 65.5% planned to practice at an academic hospital (42.9% university hospital and 22.6% education and training hospital). Fifty five percent of respondents found this survey beneficial whereas 15.6% found it unnecessary.

Conclusion: Understanding the career preferences of residents can help to shape residency program planning and future strategies of the Ministry of Health. Nevertheless, the preferences of anesthesia residents and influential factors may change as new subspecialties emerge and with reform of the compulsory service program. This study will serve as a framework to document the career and subspecialty preferences and motivations of anesthesiology and reanimation residents training in Turkey.

OP-16**THE EFFECT OF PREOPERATIVE ANXIETY TO POSTOPERATIVE NAUSE AND VOMITTING IN ELDERLY PATIENTS UNDERGOING AMBULATORY DENTAL SURGERY**Ozlem Kocaturk

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Background: Postoperative nausea and vomiting (PONV) is a common problem in patients undergoing general anesthesia. There is a limited number of studies showing PONV associations with preoperative anxiety. Furthermore, there are no studies about preoperative anxiety and PONV relationship especially in elderly patients. We designed this prospective-observational study to show the association between preoperative anxiety and PONV in elderly patients.

Methods: This prospective-observational study was conducted in 141 patients over 65 years of age, scheduled for ambulatory dental surgery under general anesthesia. The patients were interviewed one hour before the operation to determine their levels of preoperative anxiety by Beck Anxiety Inventory (BAI). The BAI is comprised of 21 symptoms that measure anxiety levels. According to the total scores, values until 8 were recorded as “no-anxiety”, and the value 8 and higher ones were recorded as “anxiety”. While 58 patients who were identified as “anxious” were making the group A, 66 patients who were identified as “no-anxiety” made the group NA. Routine general anesthesia procedure was applied to each patient. The presence of PONV was defined as at least one episode of nausea-vomiting within the first 24h after surgery. The relationship between preoperative anxiety and PONV in patients was evaluated.

Results: Patient characteristics showed that the female/male sex ratio in the anxiety group was 40/27 while in the non-anxiety group this ratio was 28/46 ($p=.003$). The ratio of patients who had PONV history to who had not this was 32/35 in the anxiety group whereas it was 21/53 in the non-anxiety group ($p=.024$). (Table1) PONV rate was found to be 62.3% in the anxiety group and 37.7% in the non-anxiety group. The results of this study among elderly surgical inpatients show that high levels of preoperative anxiety are associated with PONV ($X^2=9.41$, $p=.002$). (Table 2).

Table 1. Demographic variables and patients’ characteristics

	Group A	Group NA	p
Gender (F/M)	40/27	28/46	0.003*
Age	68±3	69±4	.869
Weight	74±11	76±13	.426
Duration of anesthesia	85±36	82±25	.385
Current smoking (+)/(-)	24/43	28/46	.127
History of PONV or motion sickness(+)/(-)	32/35	21/53	.024*
Perioperative opiod analgesic (+)/(-)	23/44	30/44	.182
Postoperative pain (VAS)	4±2	3±2	.294

Numbers represent mean (±SD) or n.

F: female, M: male, VAS: Visual Analog Scale, PONV: postoperative nausea-vomitting

Table 2. Comparison of the groups in terms of PONV

	Group A	Group NA	X ²	p	
PONV (+)/(-)	38/29 (62.3/36.3)	23/51 (37.7/63.8)	9.41	.002	

Numbers represent n (%).

PONV: postoperative nausea-vomitting

Conclusion: It is stated that preoperative anxiety can be predictive of PONV in some studies. As a result of this study, we have concluded that routine preoperative anxiety measurement in elderly patients may be necessary in terms of predicting and preventing PONV.

OP-17**THE RELATIONSHIP BETWEEN SERUM ESTROGEN CONCENTRATION AND PROPOFOL CONSUMPTION: A PROSPECTIVE OBSERVATIONAL STUDY OF PATIENTS UNDERGOING OOCYTE RETRIVAL**

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Background and Goal of Study: Controlled ovarian hyperstimulation results in elevated levels of estrogen during in vitro fertilization (IVF). Although serum ovarian steroid hormones were found to influence central nervous system and anesthetic requirements, the relationship between propofol requirements and serum estradiol concentration in women undergoing oocyte retrieval has not been studied. In this study we aim to determine relationship between serum estradiol and progesteron concentrations and required propofol dose for loss of consciousness (LOC).

Methods: Ninety patients undergoing oocyte retrieval for IVF were enrolled. Anesthesia was induced by administration of 200mL/h 1% propofol infusion to reach LOC. Anesthesia was maintained with a propofol infusion guided by entropy. The correlation between estradiol, progesteron levels and propofol dose at the time of LOC was analyzed. Emergence time from anesthesia and total propofol consumption were recorded.

Results: The mean serum estradiol concentration was 1825 ± 1135 pmol/L. There was significant positive correlation between serum estradiol and propofol dose required for LOC (Pearson correlation $r=0.28$ $p= 0.008$). Progesteron had no significant correlation with total propofol dose at the time of LOC. Patients with high estradiol levels (higher than the median value) had similar propofol requirement for LOC, total propofol consumption and emergence time with patients who had low (below the median value) levels.

Conclusion: Although increased estradiol levels create positive correlation with propofol dose for LOC, estradiol is not seems to be the only factor for anesthetic requirement of patients undergoing controlled ovarian hyperstimulation.

Keywords: In vitro fertilization, estrogen, progesteron, anesthesia, propofol

OP-18**COMPARISON OF THE EFFECTS OF PREOPERATIVE PREGABALIN AND DULOXETINE ON POSTOPERATIVE PAIN AND COGNITIVE FUNCTIONS OF ADULT PATIENTS UNDERGOING SPINAL SURGERY**

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Background and Goal of Study: The surgical trauma is known to induce hyperalgesia and if the pain management is insufficient, it contributes to persistent pain in the postoperative period.

In this study, our primary aims are to compare the effects of pregabalin and duloxetine on postoperative pain scores and cognitive functions. Our secondary aim is to determine drug-related side-effects.

Materials and Methods: The patients between 18-65 years of age with ASA status I-II, and scheduled for elective repair of lumbar disc herniation were included in the study. The patients were randomly divided into three groups; the first group orally received pregabalin 75 mg one hour prior to the surgery and at the postoperative 12th and 24th hours. The patients in the second group orally received duloxetine 60 mg one hour prior to the surgery. At the postoperative 12th hour, they received a placebo capsule and at the postoperative 24th hour, they received duloxetine 60 mg again. The third group orally received placebo capsules at all timepoints. At the end of the operation, 1 mg/kg tramadol was administered intravenously and when requested, intramuscular diclofenac sodium was applied in the surgical ward. Postoperative pain evaluation was conducted using visual analogue scale (VAS) at postoperative first minute, 30th minute, first hour, 12th, 24th and 48th hour. The preoperative and postoperative 6th hour cognitive functions were evaluated with Montreal Cognitive Assessment (MOCA) test.

Results and Discussion: The demographic variables of the patients were similar. There was a significant reduction in mean MOCA scores postoperatively in all groups ($p < 0.01$). The highest MOCA score reduction was in pregabalin group ($1,83 \pm 1,31$ point), then in duloxetine group ($1,16 \pm 0,82$) and least decrease was in control group ($0,49 \pm 0,61$). At all timepoints mean VAS scores of pregabalin and duloxetine groups were similar to each other and they were lower than control groups ($p < 0.05$) (Table). The ratio of all complications were similar between the groups ($p > 0.05$).

Conclusion: Preoperative use of duloxetine 60 mg can be a good alternative to pregabalin 150 mg as it has similar analgesic effect on postoperative pain with fewer drug-related cognitive function deterioration.

Table: The Assessment of Postoperative Mean VAS Scores of the Study Groups

VAS		Duloxetine (n=31)	Pregabalin (n=30)	Control (n=33)	<i>p</i>
1st min	<i>Mean±SD</i>	0,45±0,93	0,27±0,52	0,76±0,94	0,049*
	<i>Median (min-max)</i>	0 (0-4)	0 (0-2)	0 (0-3)	
30th min	<i>Mean±SD</i>	2,16±1,27	1,63±1,03	2,94±0,90	0,001**
	<i>Median (min-max)</i>	2 (0-5)	2 (0-4)	3 (1-5)	
60th min	<i>Mean±SD</i>	3,39±1,23	3,20±1,00	4,45±1,03	0,001**
	<i>Median (min-max)</i>	3 (2-7)	3 (1-5)	4 (2-6)	
120th min	<i>Mean±SD</i>	4,52±1,41	4,57±1,36	5,18±1,47	0,079
	<i>Median (min-max)</i>	4 (3-8)	4 (3-7)	5 (2-8)	
24th hour	<i>Mean±SD</i>	3,19±1,11	3,20±1,03	4,03±0,81	0,001**
	<i>Median (min-max)</i>	3 (2-6)	3 (1-5)	4 (2-6)	
48th hour	<i>Mean±SD</i>	2,10±1,11	1,90±1,21	3,12±0,89	0,001**
	<i>Median (min-max)</i>	2 (0-4)	2 (0-4)	3 (0-5)	
<i>Kruskal Wallis test</i>		<i>*p<0,05</i>	<i>**p<0,01</i>		

OP-19

FUNGEMIA AGENTS AND ANTIFUNGAL SUSCEPTIBILITY IN OUR HOSPITAL

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Objective: Fungemia is commonly found in Candida species. Candida species cause 8-10% of all nosocomial bloodstream infections. Rates of candidemia are highest in ICU; 1-4% of all patients. The attributable mortality rate remains as high as 35%, even with treatment (1).

The aim of study is to investigate the distribution of fungal species in blood stream infections and antifungal susceptibilities.

Material and Method: Between January 2015 and February 2018 blood cultures sent to the KSU Hospital Microbiology Laboratory were loaded into automated system BacT-Alert 3D (Biomérieux, USA). Positive signaling samples were plated on routine use media and were examined microscopically. Isolates were evaluated for their colony appearance on Chromogenic candida agar (RTA, Turkey). Fluconazole, amphotericin B, voriconazole, caspofungine susceptibilities were evaluated by disk diffusion and E-test. For identification and antifungal susceptibility testing of some isolates Phoenix 100 (BD, USA) System was used.

Results and Discussion: The total of 50 isolated fungi were *C. albicans*, *C. parapsilosis*, *C. glabrata*, *C. tropicalis*, *C. kruzei* and *C. kefyr* (Table 1).

Antifungal susceptibilities of 50 isolates were determined. Two *C. glabrata* isolates was resistant to amphotericin B, 14 *C. albicans* and 2 *C. glabrata* isolates resistant to fluconazole, 14 *C. albicans*, 1 *C. glabrata* and 1 *C. kruzei* isolate resistant to voriconazole and 2 *C. glabrata* isolate has a dose-dependent susceptibility to fluconazole.

In the past, almost all the isolates responsible for bloodstream infections were *C. albicans*, whereas in recent years a growing proportion of episodes of candidemia have been caused by Candida species other than albicans.

Table 1. Distribution of Candida species isolated from blood cultures

Causative Fungemia Agents Isolated from Blood Culture	Number of fungal agents (%)	Total number (%)
<i>C. albicans</i>	23 (46 %)	23 (46 %)
Non-albicans Candida		
<i>C. parapsilosis</i>	12 (24 %)	
<i>C. tropicalis</i>	6 (12 %)	27 (54 %)
<i>C. tropicalis</i>	6 (12 %)	
<i>C. kruzei</i>	2 (4 %)	
<i>C. kefyr</i>	1 (2 %)	

Conclusion: A widespread use of fluconazole has been associated with the development of infections due to non-albicans species that are intrinsically resistant to fluconazole or have developed resistance during treatment.

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OP-20**A RETROSPECTIVE EVALUATION OF TRAUMA CASES IN THE INTENSIVE CARE UNIT**Gülçin Aydın

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Background and Goal of the Study: Trauma is a life threatening situation requiring intensive care treatment that can result in mortality. In this study, we aim to evaluate the parameters that effect morbidity and mortality in patients in our intensive care unit (ICU) with a diagnosis of trauma.

Materials and Methods: After ethics committee approval, the data of 120 patients in the ICU between the years 2014-2017 were screened retrospectively. The patients were divided into two groups: patients discharged after treatment (Group-1, n:85) and exitus (group-2, n:35). The age, sex, trauma type, Glasgow Score, APACHE-score, co-morbidities, mechanical ventilation needs, ICU treatment period, post treatment infection, ARDS, AKI, atelectasis, heart failure, MODS and development of sepsis was compared. Mean, standart deviation, minimum- maximum values of the patient were evaluated. Mann Whitney U test was used to compare between groups, $p < 0,05$ values accepted as significant.

Results and Discussion: Ninety-six patients (78.8%) were male and 26(21.3%) were female. The mean age was $37.7(\pm 24.55)$. Sixty patients (50.4%) had mechanic ventilator support, 55 patients (45.5%) had head trauma. Thirty-five patients (29.1%) died following treatment. Upon comparison between the groups, group-2 had a higher age avarage ($47.68 \pm 27,27$ $p:0,009$). The presenting APACHE-scores were higher in group-2 ($22,09 \pm 4.03$ $p:0,001$) whereas the GCS was lower ($5,2 \pm 3,31$ $p: < 0,001$). Head trauma (65.7% $p:0.004$) and vessel injury (29.4% $p:0.003$) rates were higher in group-2. The mechanic ventilation requirement (94.3% $p < 0.001$) and the days intubated ($14.22 \pm 23,65$ $p < 0,001$) in group-2 were significantly higher. The rates of atelectasis (80%, $p:0,0041$), AKI (48.6% $p < 0,001$), heart failure (22.9%, $p < 0.001$), MODS (20% $p < 0,001$) and sepsis (20% $p < 0,001$) were also higher in group 2. The risk of mortality was higher in patients with male sex, advanced age, head trauma and vessel injury. Low GCS on presentation and high APACHE-scores also increased the risk of mortality. Mechanic ventilator requirement, the number of days of mechanic ventilation and atelectasis, AKI, MODS and sepsis increase the risk of mortality.

Conclusion: The determination of these factors that influence the mortality of trauma patients can make a positive contribution to the management of trauma patients in ICU.

TABLE 1: Number, percentage values of the patient datas and comparison results between groups. Mann Whitney U test was used to compare between groups, $p < 0,05$ values accepted as significant

		TOTAL (N:120)		GROUP 1 (N:85)		GROUP 2 (N:35)		P value
		number	%	number	%	number	%	
GENDER	MALE	96	78,7	62	72,9	32	91,4	,026
	FEMALE	26	21,3	23	27,1	3	8,6	
MV SUPPORT	YES	59	49,6	57	67,9	2	5,7	,000
	NO	60	50,4	27	32,1	33	94,3	
HEAD TRAUMA	NO	66	54,5	54	63,5	12	34,3	,004
	YES	55	45,5	31	36,5	23	65,7	
VESSEL INJURY	NO	103	85,8	78	91,8	24	70,6	,003
	YES	17	14,2	7	8,2	10	29,4	
INFECTION	NO	96	80,0	72	84,7	24	68,6	,046
	YES	24	20,0	13	15,3	11	31,4	
ATELECTASIS	NO	116	96,7	84	98,8	32	91,4	,041
	YES	4	3,3	1	1,2	3	8,6	
AKI	NO	101	84,2	83	97,6	18	51,4	,000
	YES	19	15,8	2	2,4	17	48,6	
HEART FAILURE	NO	111	92,5	84	98,8	27	77,1	,000
	YES	9	7,5	1	1,2	8	22,9	
MODS	NO	113	94,2	85	100,0	28	80,0	,000
	YES	7	5,8			7	20,0	
SEPSIS	NO	112	93,3	84	98,8	28	80,0	,000
	YES	8	6,7	1	1,2	7	20,0	

OP-21**EVALUATION OF LOW AND HIGH FLOW ANESTHESIA METHODS' EFFECTS ON PERIOPERATIVE HEMODYNAMICS, DEPTH OF ANESTHESIA AND POSTOPERATIVE RECOVERY IN PATIENTS UNDERGOING ABDOMINAL SURGERY**

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Evaluation of low and high flow anesthesia methods' effects on perioperative hemodynamics, depth of anesthesia and postoperative recovery in patients undergoing abdominal surgery

Introduction: The safe implementation of low-flow anesthesia has greatly facilitated, because of the anesthesia machines monitors that analyze the anesthetic gas composition detailed way, increase the knowledge of anesthetics. In this research; we aimed to compare the effects of high and low-flow general anesthesia methods on the perioperative hemodynamics, anesthesia depth and postoperative recovery time in patients with abdominal surgery in the presence of bispectral index monitoring.

Method: ASA I-II, 40 patients; 18-75 ages, who will have abdominal surgery were randomly divided into two groups, after the approval of the ethics committee and the patients. Anesthesia induction was performed with 6 mg/kg thiopental sodium, 1 µg/kg remifentanyl and 0.5-20 µg/kg/min remifentanyl infusion, 4-6% desflurane after routine ECG, blood pressure, SpO₂ and BIS monitorization to all patients. In the low-flow group after the first 10 min 4 lt/min fresh flow, the flow was reduced to 1 lt/min. Values of the heart rate, MBP, SpO₂, FiO₂, BIS, tympanic temperature at before induction and after intubation and the minutes of 15th, 30th, 45th, 60th, 90th, 120th are recorded. Lactate and COHb values were measured in blood gas analyzes performed at 30th and 90th minutes.

Results: When SpO₂ and FiO₂ values measured in different time periods of the individuals in both two groups were compared, differences between the minutes of 30th, 45th, 60th, 90th, 120th were significant.

Discussion and Conclusion: In this research; it is revealed that low-flow anesthesia which has advantages in many aspects can be used safely like high flow anesthesia when applied with adequate information equipment, appropriate anesthesia devices and necessary monitorizations.

Keywords: Low flow anesthesia, Bispectral index, Desflurane

OP-22**ASSOCIATION OF MODIFIED NUTRIC SCORE AT ICU ADMISSION WITH MORTALITY IN GERIATRIC PATIENTS**

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Background and Goal of Study/Background: The intensive care unit (ICU) course of geriatric patients differ in various ways from that of younger patients. Geriatric patients admitted to the ICU often have several comorbidities with multiple drug uses. Evaluation of the nutritional status upon initial admission is vital for the geriatric patient (1,2). Several scores and evaluations exist in the ICU setting, the modified NUTRIC score being one especially designed for the ICU patients, taking into account age, APACHEII, SOFA, number of comorbidities and day from hospital to ICU admission. Our study aims to retrospectively investigate the association between modified NUTRIC score at first admission with mechanical ventilation duration and mortality in the geriatric patients which constitute the majority of our ICU patients.

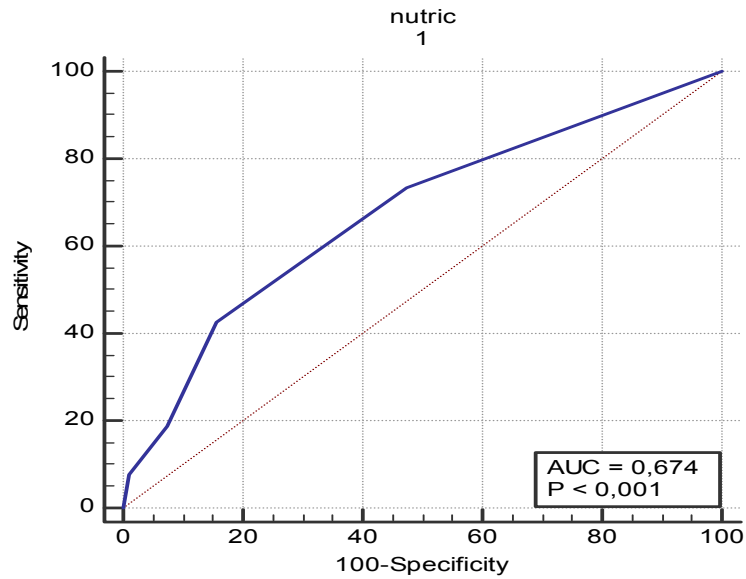
Materials and Methods: We retrospectively investigated patients admitted to our clinic in 2017, aged ≥ 65 , APACHE, SOFA, SAPS, GCS, modified NUTRIC scores, days under invasive and non-invasive ventilation, and comorbidities. Patients under low risk of malnutrition with a modified NUTRIC Score of 0 to 4 comprised Group A while patients with a high risk of malnutrition and a score of 5 to 9 comprised Group B. Both groups were investigated for days under ventilation and mortality. Statistical analysis was done with SPSS 23 software.

Results and Discussion: 14.6% of patients were diagnosed with primary respiratory insufficiency, 34.1% with secondary respiratory insufficiency, 9.8% with intracranial pathologies, 35.4% with postoperative ICU requirement, 4.8% with cardiac arrest and CPR, 0.8% with trauma and 0.5% with malignancies. Groups did not differ for renal replacement therapy applied. Age, modified NUTRIC Scores and comorbidities are listed in Table 1.

Table 1:

	Group A (Mod NUTRIC 0-4) n=197 Mean \pm SD	Group B (Mod NUTRIC 5-9) n=199 Mean \pm SD	p
Age	75.7 \pm 7.2	81.4 \pm 7.2	0.000
APACHE II	13.8 \pm 5.7	25.4 \pm 9.3	0.000
SOFA	3.1 \pm 2.1	6.9 \pm 4.4	0.000
SAPS	33.6 \pm 12.9	55 \pm 18.3	0.000
GCS	11.5 \pm 3.6	9.4 \pm 4.1	0.000
Number of Comorbidities	2.1 \pm 1.3	2.8 \pm 1.4	0.000

An association between an increase in modified NUTRIC score and days under mechanical ventilation was not observed. Mortality was significantly higher in Group B. (mortality/alive: 117/82, $p < 0.001$) Cut-off value for mortality was defined as 6 for Group B (Graphic1)



Mukhopadhyay A et al(2) have demonstrated an association between the modified NUTRIC score and 28-day mortality in the ICU. Kaliaselvan MS et al(3) have also shown a correlation between mortality, as well as length of stay, and the modified NUTRIC Score.

Conclusion(s): We believe the routine use of the modified NUTRIC score for the ICU patients will be beneficial.

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OP-23**EFFECTS OF INFORMING INTENSIVE CARE UNIT PATIENTS' RELATIVES BY SINGLE OR MULTIPLE PHYSICIANS ON ANXIETY AND DEPRESSION LEVELS**

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Background and Goal of Study: Intensive care unit (ICU) is a stressful place for both patients and their families. Anxiety and depression levels are quite high in critically ill patients' relatives. The most important factor in reducing the anxiety of patients' relatives is ensuring them about the adequacy of provided healthcare services. We aimed to investigate the effects of informing patients' relatives by single or at least 3 physicians on anxiety and depression levels.

Materials and Methods: One first-degree relative above the age of 18 was included in the study starting from the day that patients were transferred to ICU. 38 individuals were informed by 3 different physicians while 37 individuals were informed by single physician for 3 days once a day. The participants were asked to fill Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), State Trait Anxiety Inventory (STAI) on the first and 3rd day of ICU hospitalization. The relatives of deceased patients were excluded. Inventories were assessed by a blind psychiatrist.

Results and Discussion: Mean of sum of basal inventory scores were found as (22±10,67), (22.60±13.87), (51.74±10.46), (49.02±10.26) for BAI, BDI, STAI-I and STAI-II for all participants, respectively. The aforementioned parameters were found as (28.66±7.45), (27), (56.54±9.76), (58.87±6,60) in multiple physicians group and (13.68±7.92), (12), (45,63±7.97), (43±11,02) in single physician group, respectively. There are studies investigating emotional, somatic, cognitive and motivational symptoms or how the individual feels about themselves independent from conditions. However, the effects of physician change weren't evaluated. In a study, it was reported that patient's relatives consider the physicians as the most important information source (1). Another study revealed that enlightening the relative about patient's situation wasn't related with anxiety (2). However, we found that anxiety, disturbance, and depression were reduced in single physician group.

Conclusions: ICU patients' relatives can represent anxiety and depression. It is thought that they are related with trust relationship between the individual and physician. Furthermore, it can be asserted that communication with single physician rather than multiple physicians effects their mood positively.

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OP-24**DISTRIBUTION AND MORTALITY RATES FOR GERIATRIC PATIENTS: INTENSIVE CARE UNIT**

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Background and Goal of Study: Together with scientific developments in the field of medicine, the patient population aged 65 years and older is increasing. Due to conditions in Turkey, the insufficient numbers of long term care facilities have transformed a significant portion of ICUs into geriatric patient care units.

In this study, the aim was to determine the geriatric patient admission rates, mortality and age groups in our ICU and discuss these accompanied by the literature.

Materials and Methods: Patients aged 65 years and older admitted to ICU from 01.01.2017 to 31.12.2017 were retrospectively investigated. The investigation assessed the patients' ages, gender and ICU admission rates. Additionally, an attempt was made to determine the clinic patients were sent to. The study used SPSS for Windows 11.0 program.

Results and Discussion: Of 701 patients admitted to the ICU, 413 (37%) were geriatric patients. Of these patients, 225 were transferred to other clinics, 136 were exitus during ICU admission and only 16 were discharged. While male geriatric patients were higher in the 65-74 age group, the number of female patients was higher in the ≥ 75 years age group. Total median age was 76 years, with mortality 34.1%. The highest number of geriatric patients were admitted from the emergency service and orthopedic service.

According to a literature investigation, though the 65-74 years geriatric patient admission rates are high for our ICU, our ≥ 85 years geriatric patient admissions are slightly low. Reyes et al. determined mortality rate as 17% and Daubin et al. stated 42%, while our rate was 34%. Similar to previous studies, the highest admission diagnosis for the ICU was cardiac diseases. It is noted that more geriatric patients were admitted from the surgical services, especially. We think this situation is due to our hospital not having a postanesthetic care unit (PACU).

Table 1. Demographic and Mortalite Rates

	Number (n)	65-69 age (n)	70-74 age (n)	75-84 age (n)	>85 age (n)	Age		Number of days of admission		Mortality
						Mean \pm sd	Median (min,max)	Mean \pm sd	Median min,max	
Male	226	55	67	82	22	75 \pm 7.3	73 (64,94)	11.6 \pm 21	3 (1,114)	% 34.1
Female	187	27	39	91	30	77.3 \pm 6.9	78 (64,96)	13.4 \pm 25	3 (1,147)	% 34.2
Total	413	82	106	173	52	76.1 \pm 7.1	76 (64,96)	13 \pm 23.4	3 (1,147)	% 34.1

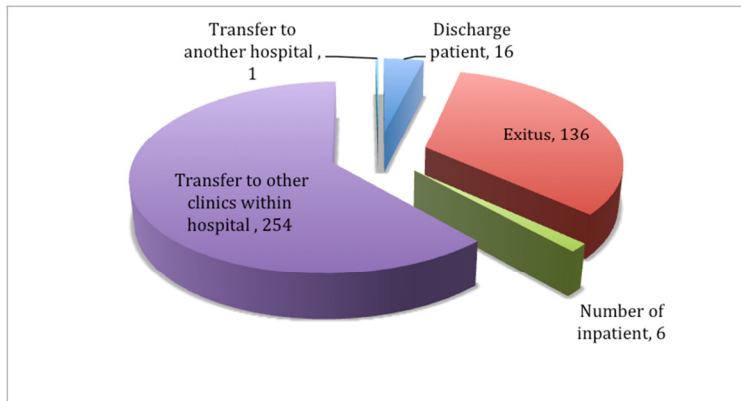


Figure 1. Types of discharged patients from ICU

Conclusion: Geriatric patients take a lot of space in ICUs and the increase in this leads to problems like young and/or good prognosis patients not being admitted. We believe this problem may be solved by application of ICU admission criteria as recommended in the guidelines and effective use of PACU in all hospitals.

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OP-25**ASSESSMENT OF POSTOPERATIVE INTENSIVE CARE
REQUIREMENTS OF GERIATRIC PATIENTS**Bengü G. Aydın, Gamze Küçükosman

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Background and Goal of Study: Currently, with the advances in anesthesia and surgical techniques, many geriatric patients are offered elective and emergency major surgery services (1). The majority of postoperative complications in the geriatric age group form linked to accompanying perioperative diseases, the general status of the patient. As a result of all these reasons, the risk increases and there is a need for intensive care (IC) in the postoperative period (2). In our study, we aimed to assess the properties and predictive factors of geriatric patients requiring intensive care in the postoperative period.

Materials and Methods: Data for the study was obtained by investigating a total of 124 geriatric patient files operated at Bülent Ecevit University Hospital from January 2017 to January 2018. The patients' ages, gender, anesthesia method used, surgical intervention type, operating department, accompanying chronic diseases, albumin levels, cancer presence, preoperative echocardiography results and postoperative intensive care requirements were assessed. Postoperative patients were divided into two groups as those requiring intensive care and those not requiring intensive care. In this study, the Pearson chi-square test, Fisher exact test, and t-test were used. Results were assessed with the level of significance $p < 0.05$.

Results and Discussion: The mean age of patients was 73.790 ± 6.85 years, with 53 female and 71 male patients. The duration of intensive care monitoring was 86.030 ± 167.476 hours, with mean anesthesia duration 173.950 ± 108.972 minutes. When reasons for admission to intensive care are examined, close monitoring of vital signs (38.8%) and respiratory failure (22.4%) was the most common. The majority of patients receiving intensive care were operated by general surgery 24.2%, orthopedic 22.6% and neurosurgery 14.5%. The most common anesthesia method was general anesthesia (GA) (80.6%). There were significant differences between the groups regarding ASA score, anesthesia duration, albumin levels, surgical intervention type, increase in the number of invasive interventions, COPD history, cancer presence and mortality ($p < 0.05$).

Conclusion: We believe noting surgical intervention type, high ASA score, the presence of COPD and low albumin levels on pre-anesthetic assessment of geriatric patients is essential for determining postoperative IC needs and may reduce unnecessary IC monitoring and treatment costs.

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OP-26**OUTCOME OF CRITICALLY ILL 75-84 YEARS VERSUS AGED 85 AND OLDER PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT: A RETROSPECTIVE STUDY**Derya Karasu, Canan YılmazHealth Sciences University, Bursa Yuksek Ihtisas Training and Education Hospital,
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Background and Goal of Study: A substantial proportion of patients admitted to intensive care units (ICU) are elderly patients. Life expectancy has improved significantly in the previous few decades. As the older population increases, the number of elderly patients who receive critical care services is expected to increase substantially over the next 10 to 20 years. In this study, we aimed to compare the mortality rates with the first acceptance, and laboratory and clinical findings of ICU in 75-84 years old and over 85 years old patients who were in tertiary ICU in the last one year, retrospectively,

Materials and Methods: Patients over the age of 74 years, who admitted to ICU between January 2017 and February 2018 after the approval of the ethics committee, were included in the study. Among the postoperatively admitted patients whose length of stay were shorter than 24 hours were excluded. Patients aged between 75-84 years were classified as Group 1, and patients over 85 years were classified as Group 2. Statistical analyses were carried out with the SPSS 21 software. The Chi-square test and Independent T Test were used for analysis of obtained data. The $p < 0.05$ value was accepted significant.

Results: 113 patients in Group 1 and 65 patients in Group 2 were evaluated. The demographic data of the patients are shown in Table 1. The most frequent diagnosis of admission in ICU were respiratory causes in both groups. Male patients were significantly higher in Group 1. The only difference in terms of laboratory values (Hemoglobin, Leukocyte, Lymphocyte, Platelets, AST, ALT, BUN, Creatine, Glucose, Albumin, Na, K, Cl) was higher Na and Cl values in Group 2. There was no difference in mortality rates between the groups.

Conclusions: The number of patients aged ≥ 75 years admitted to ICU in Turkey is rapidly increasing. Because of these patients have more comorbid illness, are less likely to be discharged home, and the mortality is high. Finally, we can say, there is no difference between ≥ 75 and > 85 years old patients in terms of clinical approach.

Key Words: elderly, intensive care unit, outcome, mortality

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Table 1: Characteristics at admission in ICU (n=178)

	Group 1 (n= 113)	Group 2 (n= 65)	p
Age	79.87±2.80	87.56±2.79	0.000*
Gender (Male) (%)	54.9	38.5	0.035*
Diagnosis (%)			0.975
Respiratory causes	36	32.3	
Neurological causes	27	29.2	
Post-CPR	15.3	13.8	
Cardiac causes	3.6	4.6	
Others	18	20	
APACHE II Score	29.46±6.95	30.58±6.37	0.286
Glasgow Coma Scale	7.25±4.02	6.24±3.46	0.094
In the first 24 hours (%)			
Need for mechanical ventilation	78.8	81.5	0.657
Need for dialysis			
Need for operations	7.1	4.6	0.511
	8.8	6.2	0.520
Na	138.52±6.94	141.30±8.02	0.016*
Cl	100.74±15.75	105.10±7.63	0.038*
Length of stay in ICU	16.09±22.56	16.33±21.04	0.946
Mortality (%)	61.9	72.3	0.161

*p<0.05

OP-27**COMMUNITY ACQUIRED INFECTIONS IN ICU AMONG GERIATRIC REFUGEES REFERRED FROM REFUGEE CAMPS: 5- YEAR EXPERIENCE OF A TERTIARY HOSPITAL IN A BORDER CITY**Berna Kaya Uğur

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Background: Turkey hosted the majority of refugees (3.531.416) resulting from the Syrian civil war that has become one of the most humanitarian disasters of this century. Elderly refugees that are >65 years old was about 69.672(1). However data relating to CA diseases in ICUs regarding elderly refugees are scarce in literature.

The aim of the study is to analyze the impact and burden of CA infections among geriatric Syrian refugee population in ICUs.

Materials and Methods: This retrospective, descriptive, single center, cohort study is designed to analyze CA infections in geriatric Syrian refugee population who were referred to ICU units from refugee camps to Gaziantep University Hospital. Inclusion criteria were >65 years old refugee patients who suffered from CA infection and admitted to ICUs between January 1st 2010 to December 31st 2015. Demographic, clinical and descriptive data and outcomes were all recorded. Statistical analyses were performed with the help of SPSS version20.

Results and Discussion: 40 patients met the inclusion criteria. Mean age of the patients was 73,50±5,86 years. At least one comorbidity was observed in all patients.

Patients with community acquired (CA) infectious diseases comprise 20% of the cases in intensive care units (ICUs) regardless of age (Table 1).

In our study higher rates of CA infection(30%)is expected when age-related characteristics of the population group was considered. Most common agent isolated was Ecoli which may be related to tough living conditions (Table 2).

Mortality rate related to CA infections in ICU was 25 (62,5%).

Conclusion: Rate of infectious diseases have always been higher among migrant populations throughout history due to poor living conditions. Geriatric patients are the most susceptible cohort of the refugee population. Further research is needed to determine the infection profile in this vulnerable population.

Table 1: Distribution of infections	n(%)
Sepsis(undetermined etiology)	5 (12,5%)
Sepsis+pneumonia	3 (7,5%)
Pneumonia	3 (7,5%)
Sepsis+urinary tract infection	1 (2,5%)
Pneumonia+urinary tract infection	1 (2,5%)
Urinary tract infection	1 (2,5%)
Total	14(35%)

Table 2: Isolated infecting microorganism	n(%)
Ecoli	6 (15%)
Klebsiella spp/Enterobacter spp	1 (2,5%)
Klebsiella spp/Enterococcus spp	1 (2,5%)
Acinetobacter/Pseudomonas	1 (2,5%)
Klebsiella spp/Acinetobacter	1 (2,5%)
Klebsiella/Candida Albicans	1 (2,5%)
Acinetobacter/nonalbicans candida	1 (2,5%)
Total	12 (30%)

Reference

1) www.goc.gov.tr (1st March 2018 data)

OP-28**HOW SUCCESSFUL OUR RESULTS ARE WITH THE OCTOGENERIANS IN ICU?**

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Background and Goal: By 2010, very old population (> 80, octogenarians) have been % 10 of the intensive care unit (ICU) admissions (1). As outcomes of octogenarians aren't favorable, debates have aroused about the ICU admissions of them (2). In this retrospective study, we aimed to evaluate the outcomes of the octogenarians in a third level general ICU.

Materials and Methods: After approval of ethical committee, Charlson Comorbidity Index, APACHE II and Glasgow scores, admission diagnosis and service, length of ICU (LOS), length of mechanical ventilation (LOMV) and discharge information of the patients aged > 85 admitted in 2017 were recorded after evaluating the patient files.

Results: Total number of ICU patients were 1057 and 636 of them were aged > 65 years (60,1%). The number of patients aged > 85 were 163 (15,4 %). Males were 61 patients (37,4%) and females were 102 (62,6 %) (p<0,05). Mean age of all were 88 ± 3.1. The admissions were from emergency service (53,4%), other services (42,9%) and other ICU's (3.7%). The median values of Glasgow scores, Charlson comorbidity index and APACHE-II scores were 10, 6 and 23, respectively. Vasopressor drug need was in 49,7%. LOMV was 6,65± 10.9 days. Central venous catheters were placed in 46,6%. Mean LOS was 13,25± 12,9 days. Discharge ratio was 58,9 %, where as 41,1% were exitus. Exitus rates of the patients: other ICU's (66,7%), emergency unit 41,4 %, other service 38,6 %. The admission reasons: postoperative failure 27%, general status disorder 20%, respiratory failure 18,4%, neurological failure 15,3%, sepsis-infection 6,7%.

Conclusion(s): We can assume that at least 5 of the 38 ICU beds are reserved for octogenarians. The relatively high discharge percentage of these patients are in accordance with the other studies affirming that octogenarians may deserve high level ICU care (1,2). The high incidence of general status disorder may indicate that octogenarians are transferred to ICU's without detailed evaluation. We conclude that ICU outcomes of octogenarians have to be evaluated with further studies.

OP-29**EVALUATION OF APACHE IV AND SAPS 3 AS PREDICTORS OF MORTALITY IN PATIENTS OVER 65 YEARS ADMITTED TO ICU**

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Background & Goals of Study: Prognostic scoring systems have been developed for intensive medicine in an effort to objectively describe and quantify the severity of the conditions of selected groups of critically ill patients. Acute Physiology and Chronic Health Evaluation (APACHE) scores and Simplified Acute Physiology Score (SAPS) models are widely used for severity of illness assessment and outcome predictions in critically ill patients. The most recent revisions of the mentioned prognostic models were published between 2005 and 2007; the APACHE IV in 2006, the European SAPS 3 in 2005. The aim of this study is to evaluate the effectiveness of SAPS 3 and APACHE IV to predict mortality in elderly intensive care unit (ICU) patients.

Materials & Methods: The data were collected retrospectively between 2016 and 2018, 100 patients were evaluated. Data collection included age, gender, ICU admission and outcome. APACHE IV, SAPS 3 scores and predicted mortality rate (PMR) were calculated by using a web-based calculator. The assessment of the overall accuracy of the mortality predictions was performed using the standardized mortality ratio (SMR), and the calibration was assessed using the Lemeshow-Hosmer “goodness-of-fit” C statistic. Discrimination was evaluated by using ROC curves based on calculations of the areas under the curve (AUCs).

Results & Discussion: The mean age of the patients was 76.9 ± 12.3 years, and the representations of both sexes were relatively proportional (66% males versus 34% females). The total mortality at discharge was 11% (11 patients). The PMR calculated with SAPS 3 was 0.162 whereas with APACHE IV was 0.098. Mortality was predicted correctly with the APACHE IV system. SAPS 3 significantly overestimated the expected mortality (Table 1). The discrimination capabilities of the models assessed according to the constructions of the ROC curves were evaluated as good. The calibrations of all models were evaluated as unsatisfactory.

Table 1. In-hospital mortalities predicted by the scores

Score	Actual mortality	Predicted mortality	SMR	95%CI	Brier score	BS scaled
APACHE IV	0.11	0.098	1.11	1.00-1.22	0.0806	17%
SAPS 3	0.11	0.162	0.67	0.63-0.71	0.0764	21.3%

Conclusion: APACHE IV system is a better prognostic model to predict the mortality for elder patients admitted to ICU. Regarding our group, the discrimination capabilities as evaluated with ROC curves were good for two prognostic models. Nevertheless, the conclusions of our work need to be interpreted with caution due to the limitations and restrictions, particularly the relatively low number of the studied population.

Key words: Scoring systems, intensive care unit, acute physiology and chronic health evaluation IV, simplified acute physiology score 3, mortality, elder patients

OP-30**ASSESSMENT OF THE PREDICTIVE VALUE OF THE MODIFIED FRAILTY INDEX FOR CLAVIEN-DINDO GRADE COMPLICATIONS IN ELDERLY PATIENTS UNDERGOING UROLOGIC OPERATIONS**

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Background & Goal of Study: Older patients are at increased risk for postoperative complications. The predictors of postoperative complications are based on a single organ system and consequently they are subjective. "Frailty" is generally defined as decreased physiological reserve throughout multiple organ systems. With an increasing rate of elective operations in the ageing population, the outcome of surgery on frail patients has become an important issue. We aimed to determine if "frailty" predicts surgical complications according to Clavian Dindo Classification after urologic surgeries in elderly patients.

Material&Methods: After ethic committee approval from Institutional Review Board, records of the patients who had undergone transurethral resection of the prostate and bladder, radical or partial nephrectomy, radical prostatectomy were detected. Frailty was classified using a 15-point validated scale as modified frailty index (mFI). Patients with a score 3 or more were classified as frail, 1, 2 were intermediately frail, and 0 were nonfrail. Main outcome measures were 30-day surgical complications according to Clavian- Dindo classification and length of stay (LOS) at hospital.

Results & Discussion: A total of 131 patients were queried. The mean age of the patients was 73,69±6.91 and 84% were male. mFI levels were 0 in 25.2% (n = 33), 1 in 36.6% (n = 48), 2 in 27.5% (n = 36) and 3 or more in 10.7% (n=14). Clavian Dindo classification 1 in 61.1% (n=80), class 2 in 24.4% (n=32) and class 3 or more in 14.4 (n=19). Mean length of stay at hospital was 6.78±5.43 days. A statistically significant difference was found between Clavian Dindo classification according to mFI scores. In the mFI = 2 and mFI ≥3 groups, Clavian Dindo class 3 ratio was significantly higher than the mFI = 0 and mFI = 1 groups (Table 1). Therefore, as the level of the mFI increases, so does the Clavian Dindo class. LOS at the hospital in mFI≥3 group were significantly higher than in mFI = 1 group.

Conclusion:

Increasing mFI scores are associated with worsening outcomes and prolonged LOS in elderly patients undergoing urologic operations. Classifying elder patients by their functional status using the mFI may help predict outcomes after urologic operations.

Key words: modified frailty index, elderly, Clavian Dindo complications, urologic operations.

Table 1: Demographic and clinical characteristics according to mFI

		mFI=0 (n=33)	mFI=1 (n=48)	mFI=2 (n=36)	mFI≥3 (n=14)	<i>p</i>
Age (year)	<i>Min-Max (Median)</i>	62-95 (72)	58-92 (73)	65-86 (73)	66-89 (73)	^a 0,507
	<i>Mean±SD</i>	73,39±7,90	73,44±6,69	73,25±6,14	76,36±7,19	
	<70	12 (36,4)	15 (31,3)	12 (33,3)	2 (14,3)	^b 0,514
	≥70	21 (63,6)	33 (68,8)	24 (66,7)	12 (85,7)	
Gender; n (%)	Female	5 (15,2)	5 (10,4)	9 (25,0)	2 (14,3)	^b 0,360
	Male	28 (84,8)	43 (89,6)	27 (75,0)	12 (85,7)	
Diabet; n (%)		0 (0)	2 (4,2)	8 (22,2)	7 (50,0)	^b 0,001**
Hypertension; n (%)		0 (0)	26 (54,2)	31 (86,1)	14 (100)	^c 0,001**
End stage renal disease; n (%)		0 (0)	0 (0)	4 (11,1)	2 (14,3)	^b 0,006**
ASA ; n (%)	II	33 (100)	46 (95,8)	9 (25,0)	0 (0)	^b 0,001**
	III	0 (0)	2 (4,2)	27 (75,0)	14 (100)	
Operation; n (%)	Nephrolithotomy	7 (21,2)	6 (12,5)	4 (11,1)	2 (14,3)	^b 0,410
	Partial nephrectomy	0 (0)	1 (2,1)	0 (0)	0 (0)	
	Prostatectomy	2 (6,1)	10 (20,8)	8 (22,2)	4 (28,6)	
	Radical nephrectomy	3 (9,1)	3 (6,3)	6 (16,7)	0 (0)	
	TURM	21 (63,6)	28 (58,3)	18 (50,0)	8 (57,1)	
Clavian Dindo classification; n (%)	1	29 (87,9)	34 (70,8)	15 (41,7)	2 (14,3)	^b 0,001**
	2	4 (12,1)	11 (22,9)	12 (33,3)	5 (35,7)	
	3	0 (0)	3 (6,3)	9 (25,0)	7 (50,0)	
Length of stay at hospital	<i>Min-Max (Median)</i>	2-8 (4)	2-20 (5)	2-34 (7,5)	4-39 (10)	^d 0,001**
	<i>Mean±SD</i>	4,33±1,34	5,67±3,72	8,39±6,43	12,21±8,41	

^aOneway ANOVA Test^bFisher Freeman Halton Test^cPearson Chi-Square Test^dKruskall Wallis Test***p*<0,01

OP-31**THE EFFECT OF NUTRITION IN INTENSIVE CARE UNIT: OUR EXPERIENCES**A.Muhittin Taşdoğan

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Clinical nutrition, patients are receiving treatment in a hospital or home support nutrition in the control of physicians. Physicians, dietitians, pharmacists, and nurses made a multidisciplinary control. In our study of nutrition team the first year after passing the activity, compared to the previous year, the General Intensive Care Unit (IC) evaluated the hospitalization rates Mortality rates, pressure ulcer formation rate, albumin utilization rates, patient length of stay, APACHE II score, parenteral, enteral products.

The study has been included in the IC 13 beds. Retrospective method by 1 January admissions made by patients between 1 January 2016 and 31 December 2016. 31 December 2017 admissions in 2017 were compared with patients who underwent.

Hospitalization number of patients admitted 315, in 2016, 325 in 2017, the number of patients exitus in 2016 52 (16.5%) in 2017 49(15%). The number of patients who developed pressure ulcers in 2016 118 (37.4%) in 2017 in 102 (31.3%). Human Albumin 20.75% use 100 ml (2016 use 294, 2017 use 233 units) decreased. The patient length of stay has dropped to 9.3 days 6.8 days. While the average APACHE II score was 33 in 2016, 30 in 2017 was observed. The breakdown according to the type of product in 2016, the utilization rate of enteral, parenteral product ratio of 2 to 1, while for parenteral use of enteral products in 2017 was 2 to 1.

Nutrition, patients were followed up in the intensive care unit, clinical course directly affects. Proper nutrition can reduce the use of products and additional costs such as the use of natural nutrition products such as albumin opinion, In our opinion this way reduce of cost.

OP-32**EVALUATION OF ANESTHETIC METHODS IN GERIATRIC PATIENTS:
A RETROSPECTIVE ANNUAL OUTCOME**Elzem ŞenGaziantep University, School of Medicine,
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Background: The fastest growing portion of the population is the elderly ones and accounts for 25-30 % of all surgical procedures (1). Anesthesia applications are important because of the high mortality and morbidity in these patients (2). We aimed to evaluate anesthetic technique, type of surgery and intensive care requirements of the elderly patients in our hospital's operating room.

Materials and Methods: This study was conducted according to Declaration of Helsinki's ethical principals. The data were reviewed retrospectively from the hospital records after the approval of the local ethics committee (2018-4,18.01.2018) for patients older than 65 years who had undergone anesthesia between 01.01.2017 and 31.12.2017 in our hospital.

Results and Discussion: A total of 131.362 patients underwent anesthesia in 2017 and 35.857 (27.9%) of them were over 65 years. Of these geriatric patients, 17.388 (48.5%) underwent emergency anesthesia and (18.469) 51.5% were electively anesthetized. A total of 25.580 patients operated in the main operating room and 3090 (12%) of them were over 65 years. Number of 65-74 year-old group, 75-84 year-old group, over 85 year-old group were 2004 (64.85%), 926 (29.96%) and 160 (5.17%) respectively. The operations were performed by 26.3% urology, 17.6% general surgery, 11% ortopedics, 10% ear nose throat (ENT) clinics (Table 1). General anesthesia was applied to 64.2%, regional anesthesia was applied 34% and sedoanalgesia was applied to 5.4% of the patients (Table 2). Of these patients, 21.5% were decided to be send to intensive care unit postoperatively and 2.16% of them died. The expectations of the elderly population have increased in terms of their life span and quality.

Table 1. Type of surgical intervention.

Clinics	n =3090
Urology	815 (26.37%)
General Surgery	545 (17.63%)
Orthopedy	342 (11.06%)
ENT	323 (10.45%)
Others	1065 (34.49%)

Table 2. Type of anesthetic technique.

Anesthetic Technique	n=3090
General	1984 (64.2%)
Regional	938 (30.35%)
Sedoanalgesia	167 (5.4%)

Conclusion

The anesthesia technique used in elderly patients should be selected with caution because of co-morbidities. In terms of the increasing number of elderly patients, we consider that preparing optimum facilities such as intensive care requirements is essential.

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OP-33**ANESTHESIA ADMINISTRATION FOR GERIATRIC ORTHOPEDIC SURGERY:
RETROSPECTIVE STUDY**

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Background: Many geriatric patients (GPs) undergoing surgery require anesthesia (1). Our aim is to assess the effect of anesthesia on mortality for GPs undergoing orthopedic surgery (OS).

Material and Methods: Following the permission of the ethics committee, the records of patients older than 65, undergoing OS from 2015 to 2017 were retrospectively analyzed. The demographic characteristics, ASA score, surgery type-procedure, anesthesia management-duration, duration of preoperative hospital stay, comorbidities, preoperative hemoglobin (Hb) values, intraoperative fluid amounts, blood transfusion and inotrope requirements, postoperative intensive care unit (ICU)-mechanical ventilator (MV) requirements and duration, complications, total hospital stay and mortality rates were studied. To analyze the data SPSS 22.0 statistics programme and Mann-Whitney U test were used.

Results and Discussion: 135 patients were analyzed. 94.1% had elective surgery. 25.9% had total hip prosthesis, 24.4% lower extremity fracture, 18.5% total knee prosthesis, 14.1% upper extremity fracture and 17% amputation surgery. Of patients, 9.6% were exitus. The mortality rates of patients with ASA score ≥ 3 were found to be high ($p < 0.05$). Anesthesia methods included general ($n=100$), regional ($n=24$) and general+regional ($n=11$). There were no differences in mortality rates in between the anesthesia methods. ($p > 0.05$). The postoperative mortality rate of patients undergoing amputation surgery (76.9%) was high ($p < 0.05$). Mortality was identified to increase with age, comorbidities, duration of anesthesia and preoperative hospital stay ($p < 0.05$). The correlation between low preoperative Hb values and mortality was found to be significant ($p < 0.05$). Mortality rates were high for patients monitored in the ICU, those requiring MV and those with postoperative complications ($p < 0.05$).

Intraoperative fluid amounts, blood transfusion, inotrope requirements, ICU and total hospital duration had no effect on mortality ($p > 0.05$).

The influence of anesthesia on mortality and on postoperative morbidity in elderly is still controversially discussed(2-4). However the main risk factors reported are older age, ASA score, comorbidities, preoperative low Hb values, postoperative ICU-MV requirements and complications (5-7).

Conclusion: Our findings suggest that, anesthesia method had no effect on mortality. It was concluded that comorbidities, advanced age, high ASA score, operation type, duration of anesthesia and preoperative hospital stay duration affected mortality.

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OP-34**THE EFFECT OF ANAESTHETIC TECHNIQUE ON NEUTROPHIL-TO-LYMPHOCYTE RATIO IN SURGERY FOR HIP PROSTHESIS IN GERIATRIC PATIENTS WITH CARDIAC DISEASE**Mahmut Alp Karahan

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Background: The neutrophil-to-lymphocyte ratio (NLR) in the peripheral blood is reported to be an easily assessable factor. NLR is a recognized marker of inflammation associated with poor outcomes in various clinical situations (1). Current studies have indicated that NLR is an independent predictor of morbidity and mortality in cardiovascular diseases (2). An increased NLR reflects these processes. We analyzed The effect of anaesthetic technique on NLR in surgery for hip prosthesis in geriatric patients with cardiac disease.

Materials and Methods: We retrospectively investigated medical and anesthesia records of 41 geriatric patients with cardiac disease underwent hip prosthesis surgery. Demographical data, peroperative NLR, type of anaesthesia, duration of surgery, and postoperative complication usage were recorded.

Results: Intensive care duration is positively correlated with age ($p=0,006$ and $r=0,422$) and NLR level of before surgery ($p=0,018$ and $r=0,318$). Neutrophil and NLR level significantly increased after surgery when compared before surgery and decreased in the 2nd day of surgery; but the levels of neutrophil was similar before and after surgery. As the ASA score increased NLR level significantly increased after surgery first and second day. When compared to the type of anesthesia, Spinal anesthesia group with the lowest NLR ratio and the highest rate was seen in general anesthesia. Bleeding was observed in only three patients in the spinal anesthesia group (30,00%). When the complication rates were examined, it was determined with the least rate in the spinal anesthesia group ($p=0,026$). (Table 1-2)

Discussion: Elevated NLR were associated with increased complication after hip prosthesis surgery. NLR may guide perioperative management and risk-stratification of hip prosthesis surgery in geriatric patients with cardiac disease. Spinal anesthesia has less effect on NLR levels than other techniques in this group of patients. Spinal anesthesia causes less complication in this group of patients than other techniques.

Table 1: Complication rates according to anesthesia type

		Type of anesthesia						p
		General		Spinal		Combined		
		Count	Column N %	Count	Column N %	Count	Column N %	
Complication	Embolism	1	5,60%					0,026
	None	4	22,20%	7	70,00%	5	38,50%	
	Bleeding	7	38,90%	3	30,00%	6	46,20%	
	Hyphotension	6	33,30%					
	Delirium					2	15,40%	

Table 2 NLR ratio change according to anesthesia type.

	Type of anesthesia									p
	General			Spinal			Combined			
	Median	Minimum	Maximum	Median	Minimum	Maximum	Median	Minimum	Maximum	
NLR (before)	7,12	1,3	13,42	3,24	1,98	5,69	4,89	2,83	17,16	0,021
NLR (initial)	10,85	3,12	70,13	4,78	2,57	17,1	7,3	3,65	19,3	0,015
NLR (2nd day)	7,95	3,07	35,82	3,98	2,39	13,06	5,24	3,13	23,98	0,032

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OP-35

PERIOPERATIVE GERIATRIC SURGERY: PATIENT RATIOS AND ANESTHETIC TYPES

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Background and Goal of Study: The geriatric population continues to rapidly increase around the world. This increase in the geriatric population affects the surgical intervention rates. Perioperative morbidity is higher in geriatric patients. As a result, together with the increase in age, both anesthesiologists and surgeons have to deal with more challenging perioperative care.

The aim of our study is to determine the perioperative geriatric patient population rates and determine the applied anesthesia types according to age group.

Material and Methods: The study retrospectively investigated patients aged 65 years and older undergoing operations at Tepecik TRH surgery between 01.01.2017 and 31.12.2017. The investigation assessed the patients' ages, gender and applied anesthesia types. Additionally, the clinic performing the operation, distribution of age groups and anesthesia types were determined.

Results and Discussion: During 1 year, the number of patients operated was 23549. Of these patients, 17% (3989) were 65 years and older. Of geriatric patients, 54% were male and 46% were female. When age groups are investigated, the number of patients in the 65-69 year age group was higher compared to the other groups. It was observed that general anesthesia was mostly chosen for the geriatric population. Most geriatric patients were operated by the Ophthalmology clinic, followed by the general surgery and orthopedic clinics. General anesthesia was the most commonly chosen anesthesia type.

We believe that perioperative care will become more challenging in future periods. Our geriatric patient rate of 17% was lower than data in the literature (35%, 34%). Among geriatric patients, Styan et al. and Deiner et al. found higher numbers in the 70-79 year group, while we found the 65-69 year group was highest. The clinic with highest geriatric patient rates was determined as ophthalmology.

Conclusion: The number of geriatric patients undergoing surgical operations is increasing every day, not only in Turkey but globally. We believe it is necessary to expand the use of specific units like post anesthetic care units or perioperative medicine in all hospitals for this population with high comorbidities.

Table 1. Demographic Datas and Anesthesia Types According to Age

	Number (n)	65-69 age (n)	70-74 age (n)	75-84 age (n)	>85 age (n)	Age	
						Mean±SS	Medyan (min,max)
Male	2167 (54%)	826 (%38.1)	631 (%29.1)	633 (%29.2)	77 (%3.6)	72.6±5.8	71 (65 96)
Female	1822 (%46)	695 (%38.1)	523 (%28.7)	502 (%27.6)	102 (%5.6)	72.7±6	72 (65 92)
Total	3989	1521 (38%)	1154 (30%)	1135 (28%)	179 (4%)	72.6±6	72 (65 96)
General Anesthesia	1778*	687	500	504	87	72.6±6.1	71 (65 94)
Regional+ Peripheral block	556	221	148	152	44	68.7±6.3	69 (65 88)
General Anesthesia + Epidural	80	36	28	16	(-)	70.8±4.6	71 (65 82)
Genel Anesthesia + Spinal	32	11	7	13	1	73.2±5.8	72.5 (65 86)

OP-36**OUR EXPERIENCE IN THE ANESTHETIC MANAGEMENT OF PATIENTS AGED OVER 85 YEARS**

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Introduction: Individuals aged over 85 years are classified as very elderly population by gerontologists (1). The anesthetic practices performed in very elderly population have increased in line with recent developments. The advanced old-age patients undergoing surgery have a greater risk of pre- and post-operative complications due to their lower physiological adaptation capacity compared to younger patients and the presence of accompanying systemic diseases (2). In this study, we aimed to present our experience in the anesthetic management of advanced old-age patients.

Materials and Methods: The retrospective study included 49 patients aged 85 years and above who underwent surgery under emergency or elective conditions at Yuzuncu Yil University Dursun Odabas Medical School between July 1, 2016 and December 1, 2017. Age, gender, surgical diagnosis, accompanying diseases, anesthetic method, intraoperative blood/blood products transfusion, ASA score, hospital stay, requirement of postoperative intensive care, length of stay at intensive care unit (ICU), and mortality were reviewed in each patient. The study was approved by the local ethics committee (Date, Feb. 2, 2018; No. 04).

Results: The study included 49 patients aged over 85 years whose medical records were reachable. The patients included 17 (34.7%) men and 32 (65.3%) women. Mean ICU stay was 4.1 days and mean hospital stay was 9.8 days. Most common surgeries included extremity surgeries (44.9%) and abdominal surgeries (24.5%). Of the 49 patients, 4 (8.2%) patients underwent inotrope treatment and 18 (36.7%) patients received blood/blood product transfusion due to various reasons. Most common comorbidities included respiratory and cardiovascular diseases and the least common comorbidities included renal and thyroid diseases. The outcomes of patients are in the table 1.

Table 1. Patient outcome

	Discharged	Transferred	to Died	Total	<i>p</i>
ASA score					
ASA 1	6	0	0	6 (12%)	.291
ASA 2	16	0	1	17 (35%)	.057
ASA 3	13	1	8	22 (45%)	.098
ASA 4	1	0	3	4 (8%)	.079
Surgical procedure					
Emergency	16	1	10	27 (55%)	.042
Elective	20	0	2	22 (45%)	
Anesthetic Technique					
General	25	0	5	30 (61%)	.265
Central block	9	1	6	16 (32%)	
Peripheral block	2	0	1	3 (6%)	
TOTAL					
N	36	1	12	49	
%	73.5%	2.0%	24.5%	100.0%	

Discussion and Conclusion: The ASA classification is the most important method for the prediction of postoperative mortality in old-age patients. In particular, the aggravation of the accompanying diseases in advanced old-age patients further complicates the anesthetic management of the patients during emergency surgery (3). In our study, although the mortality rate was low as 24.5% in the patients in whom the accompanying respiratory and cardiovascular diseases were controlled during elective surgery, the complication rate was 55% in the patients who underwent emergency surgery. We conclude that the postoperative complications in advanced old-age patients can be reduced by performing a detailed investigation of the accompanying diseases and by controlling them prior to surgery (4).

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OP-37

INTENSIVE CARE NEEDS AND MORTALITY AFTER ELECTIVE ABDOMINAL SURGERY

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Background and Goal of Study: Compared to younger, fitter patients, elderly patients are at a disproportionately greater risk of avoidable morbidity and mortality. And the PACU (postanaesthetic care unit) aims to improve the structure of care provision for high-risk surgical patients¹. The aim of the study is to compare intensive care need and mortality in young and elderly patients who need PACU after elective abdominal surgery.

Materials and Methods: After approval of the ethics committee, patients in need of PACU had elective abdominal surgery in 2015 and 2016 were evaluated retrospectively. Patients were divided into three groups as group-1 (18-65years) (n=391), group-2 (66-79 years) (n=169) and group-3 (80 years or older) (n=44). These groups were compared according to gender, ASA classification, duration of operation and anesthesia, need for intensive care and mechanical ventilation, length of stay in ward and hospital, comorbidities, whether the cause of the operation was oncologic or not and mortality.

Results and Discussion: There was no statistically significant difference between groups in terms of sex, duration of anesthesia and operation, mechanical ventilation requirement and mortality. Results of study are defined in Table-1. In comparison of comorbid numbers according to the systems, only the number of renal-derived comorbidities was significantly higher in group-1 (p <0.05). The overall mortality was 5% (n=30), (4.1% in group-1 6.5% in group-2 and 6.8% in group 3).

Parameters	Group-1	Group-2	Group-3	p
ASA II	218 (55.8)	51 (30.2)	9 (20.5)	0.000
Comorbidity	287 (73.4)	142 (84)	38 (86.4)	0.007
Number of	1 (2)	2 (2)	2 (2)	0.000
Oncologically	166 (42.5)	48 (28.4)	16 (36.4)	0.007
Duration of	3.4 ± 3.8	3.5 ± 3.4	14 ± 8	0.000
LOS in ward (day)	14.2 ± 10.6	16.8 ± 12.2	17.6 ± 9.8	0.011
LOS in hospital (day)	14.9 ± 11.2	17.7 ± 12.6	20.3 ± 11.7	0.001
LOS in ICU (day)	8.3 ± 8.5	5.8 ± 5.2	15 ± 10.3	0.017
ICU need	32 (8.2)	25 (14.2)	8 (18.2)	0.018
Postoperative	10.4 ± 9.6	7.7 ± 7.4	30.7 ± 22.5	0.008
Mortality	16 (4.1)	11 (6.5)	3 (6.8)	0.406

LOS: length of stay, ICU: Intensive care unit, Values are given as mean ± SD, number (%), median (interquartile range).

Conclusion(s): As a result, we can say that the need for intensive care, length of stay in intensive care and hospital, and the risk of anesthesia due to ASA classification increase even though there is no significant increase in mortality in patients who require PACU after elective abdominal surgery.

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OP-38

**MAY THE CHOICE OF ANESTHETIC TECHNIQUE CONTRIBUTE TO ACUTE CHANGES IN
COGNITIVE STATE IN ELDERLY PATIENTS UNDERGOING KNEE OR HIP ARTHROPLASTY?
A RETROSPECTIVE STUDY**

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Background and Goal of Study: Perioperative acute changes of cognitive state are frequent among elderly people which include mental confusion with sudden onset, fluctuating course and disturbances in levels of consciousness, orientation and memory. We aimed to evaluate retrospectively whether the type of anesthesia might be related to delirium in elderly patients undergoing arthroplasty.

Materials and Methods: The study was based on the retrospective evaluation of patients' medical records between January- July 2017. After Institutional Review Board approval, those records containing any descriptions or diagnosis about behavioural changes (delirium, confusion, agitation, disorientation, drowsiness) were evaluated in terms of anesthetic technique and of risk factors described in literature such as advanced age, hypertension, diabetes, laboratory disturbances etc. Data were analysed using SPSS 15.0 for windows. Pearson chi-square test was used for demographics and anesthetic technique comparisons while risk factors were compared using multipl regression analysis.

Results: Records of 278 patients (71.2 ± 6.6 years) were analyzed. 31 patients (11%) showed acute confusional changes who were older compared to study group (mean age 78.4 ± 8.6 years; p<0.05). Of 31 patients, 26 (83.8 %) had regional anesthesia, 5 (%16.2) had general anesthesia. This ratio was not statistically different from the entire study population. The common risk factors of patients with cognitive changes were hypertension, diabetes mellitus, smoking, history of multidrug use, demans, and delirium which were compatible with literature but also similar in patients without cognitive changes (Table I). It was found that majority of patients with cognitive changes had hypoxia at the same time (75%).

Conclusion: We concluded that the type of anesthesia is not related to confusional changes in elderly patients while advanced age was the only contributing factor. Hypoxia and confusional changes may have a relationship which necessiate further studies to evaluate.

Table I. Comparison of Study Group with Patients Having Acute Confusional Changes in Perioperative Period

	Total Patients	Patients with Acute Confusional	p*
n (%)	278 (100%)	31 (11.1%)*	
Sex (F/M)	153/125	16/15	>0.05
GA	49 (17.6%)	5 (16.1%)	>0.05
RA	229 (82.4%)	26 (83.9%)	>0.05

RISK FACTORS FOR PERIOPERATIVE ACUTE CONFUSIONAL CHANGES

Age (years)	71.2 ± 6.6	78.4 ± 8.6	<0.05
Metabolic Disturbance	8 (2.8%)	1 (3.2%)	>0.05
HISTORY of Demans	0	0	>0.05
Hypertension	81 (29.1%)	10 (32.2%)	>0.05
DM	46 (17.2%)	4 (12.9%)	>0.05
Smoking	30 (10.8%)	4 (12.9%)	>0.05
Multidrug use	195 (%70.1)	24 (77.4%)	>0.05
Delirium	0	0	>0.05

* p values < 0.05 are considered as statistically significant. Abbreviations: GA= General Anesthesia,

OP-39

COLISTIN-ASSOCIATED NEPHROTOXICITY IN GERIATRIC AND NON-GERIATRIC CRITICALLY ILL PATIENTS

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Background and Goal of Study: Colistin is an old glycopeptide antimicrobial agent discovered in 1946. Due to resistance to novel antibiotics, the use of colistin increased considerably. The reported incidence of colistin-associated nephrotoxicity varies from 0-60%. We present the retrospectively analyzed data of geriatric (≥ 65 yrs) (GP) and non-geriatric patients (< 65 yrs) (NGP) who received colistin for *Acinetobacter baumannii* infection in our Intensive Care Unit.

Materials and Methods: After Institutional Ethical Committee approval, the clinical and laboratory data of 21 patients admitted to the ICU of Selcuk University Faculty of Medicine during 1 October 2016 – 1 February 2018 who received colistin (colistimethate sodium, Kocak Farma, Turkey) are presented. Differences regarding clinical and laboratory data among geriatric and non-geriatric patients are evaluated. Continuous normally distributed data (mean \pm SD), were compared using t-test. Non-normally distributed data, were compared using the Mann–Whitney U-test. $P < 0.05$ = significant.

Acute Kidney Injury was determined by the RIFLE criteria which is based on the change in the glomerular filtration rate, serum creatinine levels, or urinary output.

Results and Discussion: 21 Patients with *Acinetobacter baumannii* infection received colistin (11GP, %52,3; 10NGP, % 47.6). Dose of colistin was 2.5-5 mg/kg/day (maximum 300 mg). 6GP and 3NGP patients developed Acute Kidney Injury (AKI) and received renal replacement therapy (RRT). Laboratory results are presented in table 1.

Risk factors which contribute to colistin-associated nephrotoxicity are still controversial. Comorbidity (hypertension, diabetes), severe sepsis, albumin levels, contrast media, diuretic use, and old age have been implicated as risk factors.

Conclusions: Our results suggest that higher incidence of hemodialysis, obesity, DM and worse APACHE scores are more frequent in geriatric patients compared to non-geriatric patients which may contribute to colistin-associated nephrotoxicity.

Table 1:

	Geriatric	Non-geriatric	p
Age	73.27 \pm 7.04	37 \pm 13.49	$p < 0.05$
Urea initial	40.09 \pm 31.02	30.4 \pm 17.65	NS
Urea Highest	215.18 \pm 82.6	174.8 \pm 105.5	NS
Creatinin level initial	1 \pm 0.66	0.6 \pm 0.31	NS
Creatinin level highest	3.35 \pm 0.93	3.11 \pm 2.06	NS
Diabetes Mellitus	7/11	3/10	$P < 0.05$
AKI	6/11	3/10	$p < 0.05$
BMI > 25	7	3	$p < 0.05$
Hemodialysis	6	3	$p < 0.05$
APACHE	23.7 \pm 8.48	18.1 \pm 9.73	$p < 0.05$

OP-40**THE EFFECT OF GENERAL ANESTHESIA AND SPINAL ANESTHESIA ON POSTOPERATIVE PAIN AND ANALGESIC CONSUMPTION IN ELDERLY PATIENTS WITH LAMINECTOMY OPERATION: OUR RETROSPECTIVE EXPERIENCES**

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Background and Aim: More stable perioperative hemodynamic conditions, lower costs and a lower perioperative complication rate were reported in patients undergoing lumbar laminectomy surgery in spinal anesthesia (SA) compared to general anesthesia (GA) (1,2,3). Our aim is to observe SA and GA's effects on pain scale and tramadol consumption in elderly patients who have undergone this surgery..

Materials and Methods: In a retrospective analysis 62 ASA II-III patients who underwent single level lumbar spine surgery in SA (group S) were compared with 59 ASA II-III patients who were operated in GA (group G) between 01.01.2017 and 31.12.2017. Elderly patients (>65 years old) were admitted to this study. Intraoperative hemodynamic effects, postoperative mobilization times, complications, visual analog scale (VAS), and postoperative consumption of Tramadol HCL were recorded 24 hour after surgery.

Results and Discussion: The mean VAS were similar among groups ($p>0.05$). The cumulative Tramadol HCL consumption was 120.96 mg and 213.55 mg ($p<0.05$) for groups S and G. First tramadol HCL using time was 589.51 and 233.13 minute ($p<0.05$) for groups S and G. Hemodynamic parameters scores, postoperative mobilization times and side effects did not differ among the groups ($p>0.05$). The results of this study showed that SA is a safer and more comfortable anesthetic method than general anesthesia at single level lumbar laminectomy surgery.

Conclusions: Lumbar laminectomy surgery in patients who are elderly with SA is safe, allows good perioperative hemodynamic stability, lower consumption of Tramadol. Further prospective studies are needed to confirm these findings.

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Table 1. Comparison of the Demographic Data of the Groups

	Group S	Group G
Age(years)	67.45±2.05	67.88±0.85
Male/female	36/26	36/23
ASA I/II/III	7/43/12	6/42/11
Duration of operation (minutes)	87.98±7.54	90.25±6.72

Table 2. Comparison of the Data of the Groups

	Group S	Group G	p
VAS (overall)	3.93±0.78	4.15±0.58	0.08
Vomit(number)	0.11±0.31	0.2±0.4	0.17
Mobilization time (minutes)	462.74±22.11	466.72±11.89	0.22
First analgesic time (minutes)	589.51±70.46	233.13±8.99	0.00*
Total analgesic consumption (mg)	120.96±41.04	213.55±57.1	0.00*

*p<0.05 when compared the groups.

OP-41**OUR EXPERIENCE ON THERAPEUTIC PLASMA EXCHANGE IN GERIATRIC PATIENTS WITH ACUTE ON FAILURE**

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Background and Goal of Study: Plasma exchange is a substantial therapeutic procedure used to treat numerous diseases through the removal of plasma. We focused on TPE among geriatric patients with acute on chronic liver failure (ACLF) and aimed to report our experience on outcomes including complications and survival.

Materials and Methods: It was a retrospective study of geriatric patients with various disorders who were admitted to intensive care unit and underwent TPE at Baskent University Ankara Hospital from 2011 to 2018. Out of these geriatric patients, we evaluated those with only ACLF. We reviewed patients' characteristics, clinical and laboratory outcomes, and prognosis. Acute physiology and chronic health evaluation II (APACHE II) score, chronic liver failure - sequential organ failure assessment (CLIF-SOFA) score and model for end-stage liver disease –sodium (MELD-Na) score were carried out to analyze prognosis. According to prognosis, the patients were divided into deceased group and survival group, and the differences between two groups were compared.

Results and Discussion: There were 60 patients (27 women, 33 men) age of 73.3 ± 6.5 years. A total 398 TPE sessions were performed for different conditions like renal, rheumatological, hematological, neurological, infectious, and immune diseases. There were 24 patients (7 women, 17 men) diagnosed with ACLF and received TPE treatment, in which, 18 patients (75%) died within 28 days, and 6 patients survived. Patients in deceased group had significantly higher APACHE II scores, CLIF-SOFA scores and MELD-Na scores when compared to those in survival group. In patients with ACLF accompanied by hyperbilirubinemia, coagulopathy or encephalopathy without any further organ failure, prognosis was more favorable. However, once other extrahepatic organ systems were affected, a progressive multi-organ failure developed, and caused survival disadvantage.

Conclusion: In this study, 24 geriatric patients diagnosed with ACLF received TPE. We recognized that those geriatric patients, with higher APACHE II scores, CLIF-SOFA scores and MELD-Na scores had worse prognosis. However, we can speculate that TPE can be beneficial in patients with ACFL before transition to multi-organ dysfunction based on our limited data.

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OP-42**ACUTE PAIN TREATMENT IN PEDIATRIC ANESTHESIA**Donev.LJ, Trposka A, Grncarevski M, Kartalov A, Naumovski F, Leshi A

Members of the Department of Anesthesiology recognize that pediatric patients have special needs. Working with this category of patients has to be a positive experience for both sides, medical team and parents and child. The anesthesiologists at DA who care for children need to have highly specialized training in all aspects of pediatric anesthesiology and the management of pediatric pain. Experience is crucial.

Number one priority in controlling pain in pediatric case is children's safety. Therefore, there is a wide specter of analgesics or anesthetics with significant positive pain-control and reduced side effects.

Knowledge of new analgesics and newer applications of old analgesics in the last two decades have helped the pediatric anesthesiologist in managing pain in children more efficiently.

The practice of pediatric pain management has made great progress in the last decade with the development and validation of pain assessment tools specific to pediatric patients. Almost all the major children's hospitals now have dedicated pain services to provide evaluation and immediate treatment of pain in any child. A multimodal approach to preventing and treating pain is usually used. Mild analgesics, local and regional analgesia, together with opioids when indicated, are frequently combined to minimize side effects of individual drugs or techniques.

Keywords: pediatric pain control, acute pain medicaments, pain medication in children

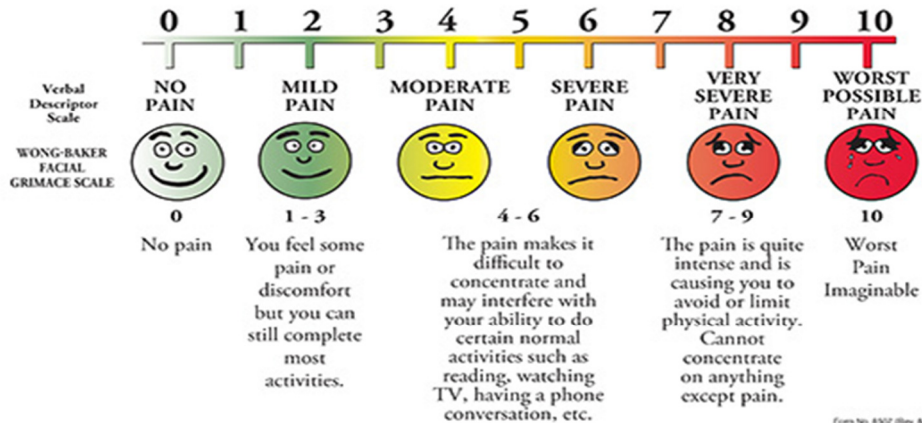
Introduction: The ability to assess pain in children appropriately by using standardized pain scores has improved the clinician's ability to treat pain in children over the past years. Children suffer pain in the same way as adults. The main difference is that factors such as fear, anxiety, coping style and lack of social support can further exaggerate the physical pain in children.

In general, there are three ways in which doctors can assess the level of pain a child is feeling:

- *Self-reported measures of pain:* Doctors may ask children to rate their pain on a scale of 1-10 or show pictures that reflect different emotions and ask them which best illustrates how they are feeling.
- *Behavioral measures of pain:* Doctors will evaluate the child's motor responses, facial expressions, crying and behavior (for example, sleep-wake patterns).
- *Physiologic measures of pain:* Doctors measure blood pressure and pulse changes, as well as take note of palm sweating.

PAIN AND FUNCTION ASSESSMENT TOOL

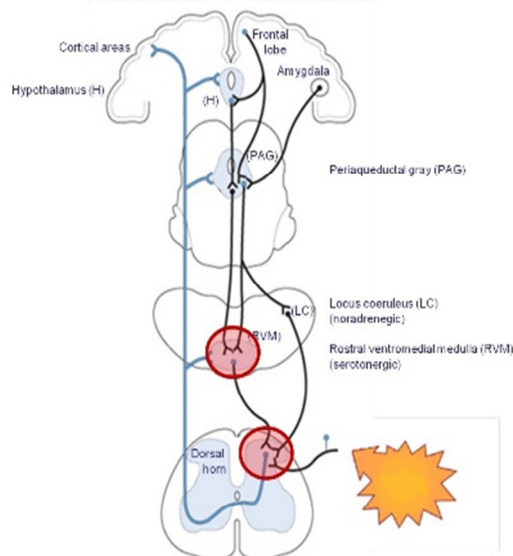
This tool is intended to help patient care providers assess pain according to individual patient needs. Explain and use 0-10 Scale for patient self-assessment. Use the faces or behavioral observations to interpret expressed pain when patient cannot communicate his/her pain intensity.



In pediatric anesthesia most common analgesics used in treating acute pain are those from the group of *non-opioid analgesics* like Acetaminophen (Paracetamol), Ibuprofen, Naproxen, Diclofenac, Ketorolac and etc. They are adequate to treat mild pain although they need to be combined with other agents for treating moderate to severe pain.

- ❖ **Acetaminophen** is available in a wide variety of oral formulations alone or in combination with decongestants in cold remedies and with opioids for the treatment of moderate to severe pain. Acetaminophen is an antipyretic with weak analgesic properties. It exerts the antipyretic effect at the hypothalamus and the analgesic effects by blocking central prostaglandin synthesis, reducing substance P-induced hyperalgesia, and modulating the production of hyperalgesic nitric oxide in the spinal cord. Additional doses can be given orally (10–15 mg/kg) or rectally (20 mg/kg) round the clock (RTC) every 4–6 hours (and not as needed) to produce analgesia with the maintenance of an adequate blood level of 10–20 mcg/mL. The total daily dose of acetaminophen, via any route, should not exceed: 100 mg/kg for children; 75 mg/kg for infants; 60 mg/kg for term and preterm neonates older than 32 weeks post conceptual age; and 40 mg/kg for preterm neonates younger than 32 weeks post conceptual age.

Sites of action of paracetamol



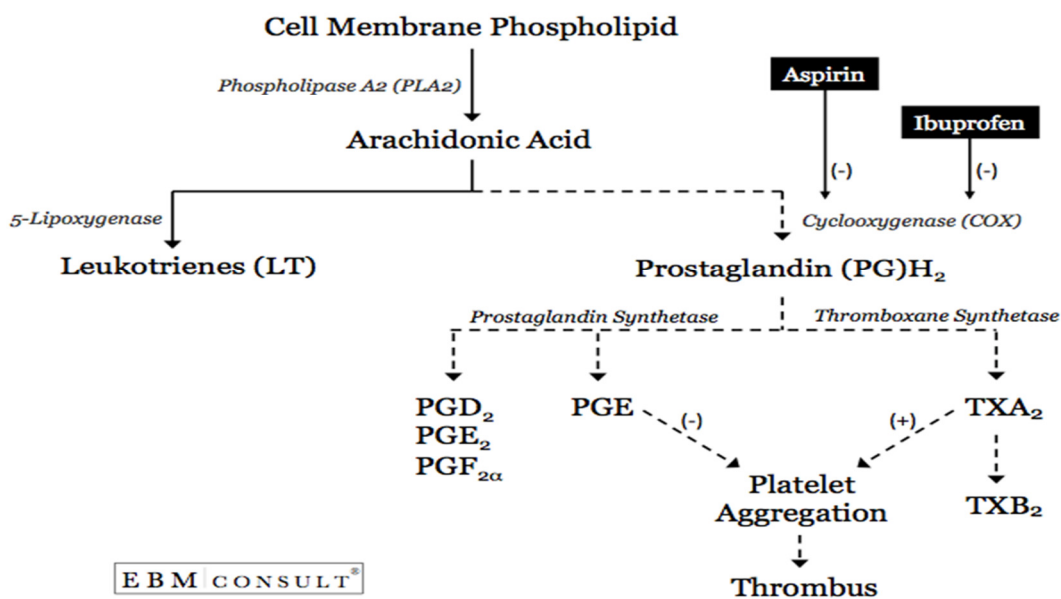
Adapted from: McMahon & Koltzenburg: Wall and Melzack's Textbook of Pain 5e, © Elsevier 2006

- ❖ **Ibuprofen** is a pain-relief medication suitable for mild to moderate pain in children, adolescents and adults. It should not be used in children under three months of age or be given to children with bleeding disorders.

Ibuprofen is a non-selective inhibitor of an enzyme called cyclooxygenase (COX), which is required for the synthesis of prostaglandins via the arachidonic acid pathway. COX is needed to convert arachidonic acid to prostaglandin H₂ (PGH₂) in the body. This PGH₂ is then converted to prostaglandins. The inhibition of COX by ibuprofen therefore lowers the level of prostaglandins made by the body. The prostaglandins that are formed from PGH₂ are important mediators of sensations such as pain and processes such as fever and inflammation. The antipyretic effects may arise as a result of action on the hypothalamus leading to vasodilation, an increased peripheral blood flow and subsequent heat dissipation.

Anticoagulant effects are also mediated through inhibition of COX, which converts arachidonic acid into thromboxane A₂, a vital component in platelet aggregation that leads to the formation of blood clots.

There are two forms of COX in the body - COX-1 and COX-2. The pain and inflammation reducing effects of NSAIDs are mediated through the inhibition of COX-2, while COX-1 inhibition blocks the formation of thromboxane.



- ❖ **Analgin (metamizole)** is a medicine of the pyrazolone group, possessing hard analgesic and antipyretic effects and moderate anti-inflammatory activity. Blocking of the synthesis of endogenous pyrogens - prostaglandins D and E - is the cause for the antipyretic activity and also for the analgesic action of this drug. The decrease of the prostaglandins production in the periphery (and respective decrease of nerve endings sensitivity) plays a relatively smaller role. In contrast to the other nonnarcotic analgesic drugs, Analgin stimulates the release of β-endorphins, explaining its activity in cases of visceral pain. Analgin has a slight spasmolytic activity on the smooth muscle cells of the biliary and urinary tracts and also on the muscle of the uterus. The single dose for all age groups is 8-16 mg/kg body weight according to the following scheme: 16-31 kg body weight - 250 mg Analgin (1/2 ml); 32-46 kg body weight - 500 mg Analgin (1 ml); 47-62 kg body weight - 500-750 mg Analgin (1-1.5 ml); and over 63 kg body weight - 750-1000

mg Analgin (1.5-2 ml). In persistent pain, the dose can be repeated in 6-8 hours. Maximal daily dose - 4.0 g Analgin.

- ❖ **Diclofenac** is an acetic acid nonsteroidal anti-inflammatory drug (NSAID) with analgesic and antipyretic properties. The anti-inflammatory effects of diclofenac are believed to be due to inhibition of both leukocyte migration and the enzyme cyclooxygenase (COX-1 and COX-2), leading to the peripheral inhibition of prostaglandin synthesis. As prostaglandins sensitize pain receptors, inhibition of their synthesis is responsible for the analgesic effects of diclofenac. Antipyretic effects may be due to action on the hypothalamus, resulting in peripheral dilation, increased cutaneous blood flow, and subsequent heat dissipation.

Conclusion: Effective analgesia in infants and young children continues to evolve with innovative methods of therapy using newer drugs or older drugs introduced via novel routes. Age appropriate pain assessment tools continue to be critically evaluated, validated and improved as one of the most critical components of pain management. A multimodal approach to preventing and treating pain is usually used to minimize the side effects of individual drugs or techniques. A well-organized pediatric pain service which includes well trained pediatric anesthesiologists who can teach the trainees daily and act as pain consultants to the other departments of the hospital together with a group of equally committed and specially trained nursing staff is essential for the successful management of acute pain in infants and children.

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OP-43

OPIOID FREE ANAESTHESIA

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Introduction: Opioids are the mainstay of perioperative analgesia but can have several well-known dose-related side-effects. More recently, there have been concerns that large doses of opioids may cause acute tolerance and hyperalgesia, resulting in worsening pain control. Because of that in the 1990s was introduced the concept of balanced or multimodal analgesia. The concept was based on the presumption that use of a combination of opioid and non-opioid analgesic would improve surgical outcomes by reducing opioid related side effects.

Side Effect Of Opioids And Why Should They Be Avoided: Most common side effects of opioids are well known like respiratory depression, pruritus, nausea and vomiting, ileus, constipation, urinary retention, tolerance by desensitisation, reduced cardiac output, dizziness, somnolence and short duration of central muscle stiffness. A less known side effect is pharyngeal muscle weakness giving obstructive breathing and should be avoided in obese patients. A recent guideline of the ASA recommends avoidance or minimizing of perioperative use of respiratory depressants in patients with obstructive sleep apnea. Several reasons are added every year to reduce or avoid the use of synthetic opioids. Enhanced recovery after surgery advocates the strong reduction of opioids postoperative to improve the healing and to avoid the suppression of the immunologic system. If no opioids are used during surgery, less opioids are needed to achieve a pain free recovery, as addiction did not destroy yet our mu receptor system. Oncologic patients have a better survival when no opioids are used during surgery and brain dysfunction is certainly less in neonates. Opioid induced hyperalgesia and chronic pain syndromes are more frequent when high dose opioids are used per operative.

The Importance Of Multimodal Approach: Analgesia, or being pain free, is only important post-operative when patients are awake. Per-operative we need a stress free anaesthesia or a sympathetic block to achieve hemodynamic and other organ stability. What actually counts is supporting the function of all organs by guaranteeing a sufficient tissue perfusion to provide nutrients and oxygen and to remove carbon dioxide and waste. Opioids were the ideal agents to achieve these needs in the past but today it is possible without them. But is the outcome also better without opioids? Hypnosis only is not enough but awareness is what patients are most afraid and therefore amnesia is what should be achieved with hypnosis. Immobilization is what was needed most frequently. Several acts like intubation and laparoscopy might require deep muscle relaxation. Deep hypnosis or high dose opioids can improve immobilization and block respiration but will never give the same muscle relaxation as achieved by neuromuscular blocking agents. Therefore muscle relaxation and not immobilization remains an essential part of many anaesthetics.

The new approach in anaesthesia should mention hypnosis with amnesia, sympathetic stability to protect organs and provide sufficient tissue perfusion and muscle relaxation at the moment that anaesthesiologist and surgeons require it. It is also important to reduce postoperative cognitive dysfunction. This is a frequent problem after balanced anaesthesia with inhalation and TIVA as both use opioids in moderate or large amounts. Avoiding opioids during anaesthesia is possible without hemodynamic instability. We need to stabilize the

sympathetic system and avoid cardio vascular instability. Opioids in high dose were the ideal agents to achieve this stability. Their introduction was important because the hypnotics at that time were strong cardiovascular depressant agents and a lot of patients had unknown and untreated cardiovascular coronary diseases. Giving high doses of opioids allowed the reduction of hypnotics and muscle relaxants. Today we have safe hypnotics and neuromuscular blocking agents that can be used to achieve a sufficient depth of hypnosis and muscle relaxation and most patients are treated for their cardiovascular problems. Today we also have drugs that stabilize the sympathetic system and given together in a multimodal approach you can avoid opioids at all. A sympathetic blockade per-operative and a multimodal approach of non opioid analgesics starting per-operative are needed to reduce and frequently avoid any opioid use at all postoperative. This can be called the opioid paradox, the more opioids you give per-operative the more opioids you need to give postoperative or the higher the pain scores will be.

Indications For OFA: The best indications for this opioid free anaesthesia (OFA) today are obese patients, patients with obstructive sleep apnoea syndrome (OSAS), opioid addiction, hyperalgesia problems and chronic pain syndromes better known as Complex regional pain syndromes (CRPS) (previously described as Causalgia, Suddeck's atrophy, Raynaud syndrome and reflex sympathetic dystrophy). Sympathetic block is the standard treatment in this group of patients and why should we not extend their treatment during anaesthesia when the risk for sympathetic stress is increased.

Contraindications For OFA: Possible relative contraindications are nodal block and the disorders of autonomic failure better known as orthostatic hypotension (Multiple System Atrophy). Patients with a known critical coronary stenosis or an acute coronary ischemia should not receive an opioid free anaesthesia for the moment. Opioid free anaesthesia should also be avoided in non-stabilized hypovolemic shock and poly-trauma patients as peripheral vasodilation can limit the perfusion of critical central organs while opioids induce vasoconstriction.

Controlled hypotension for minimal blood loss in the operation field requires a cardiac output depression. This is easier achieved with high dose remifentanyl than with the vasodilation medications of the opioid free method. If opioid free is used additional drugs are required to reduce the cardiac output, like B blockers. Vasoconstrictors to reduce CO will stimulate most of the time also the cardiac contraction directly and indirectly by an increased myocardial perfusion. Moreover the vasoconstriction takes place in a vascular bed of non-critical organs like the splanchnic circulation increasing further the perfusion of brain and head region where most of the time controlled hypotension is required. OFA includes intra and post operative use of α -2 agonists: clonidine, dexmedetomidine who used as analgethics beside coping with the sympathetic response of the surgical pain, they also have certain sedative effect. In this multimodal approach in coping with surgical pain, other techniques are also used - local wound infiltration with long-acting local anesthetics, Mg, ketamine, lidocaine.

1. Lidocaine: Lidocaine has analgesic, anti-inflammatory, and anti-hyperalgesic properties. Analgesic effects are thought to be mediated by the suppression of spontaneous impulses generated from injured nerve fibres and the proximal dorsal root ganglion. This occurs by the inhibition of Na channels, NMDA, and G-protein-coupled receptors. The anti-inflammatory effects are attributable to the blockade of neural transmission at the site of tissue injury, resulting in the attenuation of neurogenic inflammation, and to the intrinsic

anti-inflammatory property. His perioperative use, provides better control of the postoperative pain, reduces opioid use, reduces nausea and vomiting in the postoperative period and bowel function restoration is faster. Dosage in OFA-bolus 1-2 mg/kg.

2. α -2 Adrenergic receptors are present in both presynaptic and postsynaptic neurons in the central and peripheral nervous system. Activation of presynaptic receptors results in the propagation of negative feedback loop inhibiting the release of norepinephrine. Activation of postsynaptic receptors in the central nervous system inhibits sympathetic activity. Clonidine and dexmedetomidine are two commonly used drugs in this class. They give analgesia, sympatholysis, sedation, hypnosis and anxiolysis. They activate the G1-protein-gated K channels in the neurons, resulting in membrane hyperpolarization. They also reduce calcium conductance into cells via G0-protein-coupled N-type voltage-gated calcium channels. Because of these effects, they not only prevent neuronal firing but also prevent the local signal propagation.

3. Magnesium: Nociceptive stimuli activate NMDA receptors causing calcium entry into the cell and triggering central sensitization. NMDA receptors control ion channels and depolarization of 2nd order neurons. Magnesium acts as a non-competitive antagonist of NMDA glutamate receptors. It leads to a voltage-dependent block of NMDA receptors by blocking entry of calcium and sodium into the cell (the ketamine receptor prevents efflux of potassium). This prevents depolarization and transmission of pain signals.

4. Esmolol: Esmolol is an ultra-short acting cardioselective beta1 adrenergic receptor antagonist that is rapidly hydrolyzed by red blood cell esterases. It has a short clinical duration of effect of about 9min. The benefits of beta-blockers in cardiovascular diseases are well established and it can be targeted to attenuate unwanted autonomic responses. It has analgesic effects and benefits beyond its beta-blocking qualities and has been suggested as an alternative to intraoperative opioids.

5. Ketamine: Ketamine is a unique intravenous anaesthetic with analgesic properties. It fell into disfavor in the late 1980s because of its side-effect profile. Ketamine in small doses of 0.1- 0.2mg/kg appear to have an opioid-sparing effect with greater patient and physician acceptance because of the less frequent incidence of side-effects. Studies show mixed results with regard to benefit, but none show harm. Multiple studies have described the use of small-dose ketamine as adjuvant to opioid analgesics. There is a statistically significant decrease in pain intensity at 6, 12, 24 and 48hours post-operatively with the use of ketamine. Morphine consumption is significantly decreased but opioid related side-effects are not affected. Side effects of ketamine: hypertension, vomiting, arrhythmia, confusion, vertigo... In combination with benzodisepins this side effects are minimised.

Conclusion: Opioid free anaesthesia seems to be the new buzz phrase in anaesthesia but there is still a cloud of uncertainty hanging over it. The goals of optimal peri-operative analgesia is to reduce pain scores and enable earlier mobilization with enhanced rehabilitation, faster discharge and improved patient satisfaction. By reducing opioid related adverse effects, opioid free anaesthesia aims to enhance these goals. The use of new therapeutic modalities should be considered on an individual basis and the risk-benefit ratio should be borne in mind. More research is needed to fully elucidate the role of opioid free anaesthesia in every day anaesthetic practice as well as the important role it may have in the prevention of chronic pain.

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OP-44

TRANSESOPHAGEAL ECHOCARDIOGRAPHIC MONITORING (TEEM) DURING CARDIAC SURGERY IN ELDERLY PATIENTS IS INCREASINGLY BECOMING A NECESSARY PART OF THIS SURGICAL INTERVENTION

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Purpose: To present the experience of intraoperative TEEM during cardiac surgery in elderly patients.

Materials and methods: TEEM was used in 112 patients aged 60 to 88 years in aorta-coronary bypass surgery – CABG (33), mitral (28), aortic (38) valves replacement, and their combination (13). Anesthesia - isoflurane, fentanyl, benzodiazepines and muscle relaxants in recommended doses was performed. Artificial circulation 86 ± 18 min., cross-clamping of the aorta - 68 ± 16 min., anesthesia - 222 ± 17 min. Intraoperative cardiosurgical monitoring was supplemented by TEEM, probe was inserted immediately after induction of anesthesia and removed at the end of the operation before transferring patients to the intensive care unit.

Results: Using TEEM, was performed precise evaluation zones of hypo- and akinesia of the ventricles as a result the operation plan was expanded, the number of CABG increased in 16 patients. In six cases of mitral stenosis intraoperative was additionally diagnosed the presence of left atrial thrombosis. During post-perfusion period TEEM were controlling the efficiency of cardiac surgery, air prophylaxis, volume status in 15 patients with combined pathology of the mitral valve and coronary vessels and after combined aortic valve replacement and CABG, in 17. Correction of parameters of ESV, EDV by TEEM eliminated the volume overload of the heart. According to the TEEM data, in 60% of cases, a selection of inotropic substances, their doses with subsequent control of the effect on myocardial contractility and an increase in the ejection fraction. In 10 patients by TEEM were determined indications for mechanical support of the heart: extracorporeal membrane oxygenation - 2, intra-aortic balloon counterpulsation - 8. For this patients TEEM was prolonged until stabilization of hemodynamic.

Thus: The use of TEEM in cardiac surgery in elderly patients allowed the entire perioperative period to constantly receive early and reliable information about the state of local myocardial contractility, intracardial changes, the effectiveness of surgical intervention, the degree of heart failure with an assessment of the adequacy of the elimination of hemodynamic disorders.

OP-45**MANAGEMENT OF DIFFICULT VASCULAR ACCESS BY ULTRASOUND IN ELDERLY PATIENTS DURING ANESTHESIA**

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RSSPMC of surgery named after academician V.Vakhidov

Difficult vascular access (DVA) during planned and emergency operations in elderly patients is often found in practice. Ultrasound (US) assisting during catheterization procedure is used for improving safety and success.

Goal of Study: Optimizing the safety of vascular access with US during anesthesia in elderly patients with DVA.

Materials and Methods: 87 elderly patients aged 65 to 78 years, 51 women and 36 men during planned and emergency surgical interventions (abdominal - 47, thoracic - 12, vascular - 28) were examined. Vascular catheterization was performed using GE Logiq P6 US-machine, equipped with linear probe 11L. The US-assisting was performed under sterile conditions in dynamic mode. Peripheral catheters 24G-18G and one-,two-lumen central venous catheters 5.5Fr-7Fr were used.

Results: Main cause of peripheral DVA in 52 patients was obesity, in 9 patients - edema. After entering the operating room under premedication and monitoring applying, these patients underwent US vascular scanning in short and long axis views to determine sonoanatomy and choice of venous vessel to cannulate with appropriate size of a catheter. Then vein was punctured under the US control in dynamic mode (v.basilica in 30 patients , v.cephalica – in 27, vv.metacarpalis dorsalis – in 23, v.brachialis – in 7) and catheter was installed, followed by a control US examination. In 45 patients, after induction and intubation of the trachea, a radial artery was catheterized using US with 99.85% success, for invasive monitoring of blood pressure. The use of US during cannulation of internal jugular vein with DVA in 38 elderly patients increased the success to 100%, completely eliminating complications. In 8% of cases, we were able to identify various anomalies (pathological kinking in 2 patients, 7 patients due to hypovolemia and low central venous pressure, have a significant decrease in the diameter of the internal jugular vein) in the presence of which successful puncture and catheterization without US were much more difficult.

Conclusion: Due to its simplicity and convenience ultrasound-assisting of blood vessels puncture and catheterization in elderly patients with DVA, undergoing surgical intervention, ensures the safety of the performed procedures, reduces the likelihood of complications and the time of manipulation.

OP-46**THYROID STORM-POTENTIALLY LIFE THREATENING CONDITION, A TRUE MEDICAL EMERGENCY**

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Background: The thyrotoxic crisis is a medical emergency caused by an exacerbation of the hyperthyroid state characterized by decompensation of one or more organ systems. Thyroid storm is a life-threatening syndrome caused by excessive amounts of thyroid hormone that requires rapid diagnosis and emergent treatment [1].

Case Report: A 30 year old man has a history of hyperthyroidism, Graves disease diagnosed 2-3 months ago. Since last one month he was on therapy with Thyrozol. After two weeks therapy he had allergic reaction with urticaria, nausea, fever, vomiting, sweating (disconnected from therapy for 4 days). He did not take any medication after allergy, for 2 weeks leading up to this admission. On admission in ICU he was tremulous, nervous, relatively anxious, worsening palpitations and sweats. His vital signs were 184/106 mmHg blood pressure, heart rate of 110 beats per minute, respiratory rate of 22 breaths per minute, and temperature of 40°C. EKG revealing an irregular rhythm in atrial fibrillation with a fast ventricular rate. His thyroid function tests confirmed severe hyperthyroidism TSH < 0.07 (0.25-5.0pmol/L). His serum free FT4-35.3 (9.0-20 pmol/l), FT3-16,7 pmol/L (4,2-8,1) and AntiTPO 664 (<60 U/ml). He was managed in the intensive care unit with beta blocker (Esmolol 500µg/kg TT), Propylthiouracil 300-400 mg, Lugols' iodine 36 mg/day, Urbason 100mg, Lasix 2x10mg, Heparin 5000IE and IV fluid resuscitation (5000ml/24h). The clinical course was one of gradual recovery both clinically and biochemically and since discharge, he continues to remain euthyroid on maintenance therapy with PTU.

Discussion: Thyroid storm is a life-threatening condition, which should be part of the differential diagnosis in patients with multiple organ dysfunction of unknown etiology. Thyroid storm is a severe variant of thyrotoxicosis that is clinically characterized by multisystem involvement and systemic decompensation. Classic features include high fever, tachycardia, heart failure, nausea, vomiting, diarrhea, severe agitation, psychosis, delirium, and coma (2) Patients should be monitored in ICU in the early phase. These critically ill patients require emergent resuscitation to reverse the severe dehydration and adrenal crisis as well as to control the common clinical symptoms such as arrhythmias and congestive heart failure[3].The current case highlights the challenges and reminds the clinicians that early diagnosis and therapy through a highly suspicion, careful physical examination and laboratory testing are important.

Conclusion: Recognition of life-threatening thyrotoxicosis and prompt use of the arsenal of medications aimed at halting the thyrotoxic process at every level is essential to successful management.

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OP-47**OUTCOMES OF CARDIAC SURGERY IN ELDERLY IN UNIVERSITY MEDICAL CENTRE
LJUBLJANA IN 2015**Dora Mahkovic, MD, Assoc. Prof. Maja Šoštarič, MD, PhD

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Background and Hypothesis: Cardiovascular diseases are the leading cause of death in octogenarians and an important cause of disability and need for longterm care in this group (1). Elderly patients tend to have many chronic conditions. Cardiac surgery in this age group is associated with increased risk of perioperative complications (2,3). Our aim was to determine the results of cardiac surgery in elderly in one year in our hospital.

Methods and Materials: We performed a retrospective data collection and analysis on outcomes of cardiac surgery in patients aged 80 and older who were treated at University Medical Centre Ljubljana in 2015. The data we included was age, chronic conditions, type of surgery, intraoperative and perioperative complications, length of stay in the intensive care unit and full length of hospital stay. The data collection was approved by the National Medical Ethics Committee of Republic of Slovenia.

Results: We included 122 patients in our study. Mean age of included patients was $82,9 \pm 2,1$ years. The conditions most commonly treated were aortic stenosis (65 patients), coronary artery disease (17 patients), combined aortic stenosis with coronary artery disease (29 patients) and other pathology (11 patients). Mean length of stay in the intensive care unit was $4 \pm 0,7$ days. Mean length of stay on surgical ward was $5 \pm 4,5$ days. Most common complications were need for inotropic and vasoactive drugs, acute kidney failure, cardiac arrhythmia, pneumonia, pulmonary edema, surgical wound infection and central nervous system impairment. 30-day mortality was 13,1% (16 patients).

Conclusions: Our results were comparable to similar studies on octogenarians and can contribute to further knowledge on cardiac surgery in elderly patients. However, more prospective studies are needed to better determine risks and complications of cardiac surgery in octogenarians.

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OP-48**TREATMENT BREATHING OF INFANTS WITH RESPIRATORY DISTRESS SYNDROME**Usmanova G.M, Yusupov AS, Fayziev O.Ya, Tohirov Sh.M

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Aim of our study was to evaluate the effectiveness of the drug Surfactant composite in the treatment of acute respiratory disorders in the newborn respiratory distress syndrome.

Materials and methods: We observed 30 children: 15 children a basic group and 15 control group. All infants were treated with the treatment of RDS (antibiotic, infusion and symptomatic therapy, enteral or parenteral nutrition). In the study group received the drug, as well as Surfactant composite premature 1st day of life, with a gestational age ≤ 36 weeks, body weight ≥ 900 g at birth. The drug is used pulmonary, every 12 hours for 2 days. Hemodynamic monitoring, chest x-ray pulse oximetry (HR, A /D and SpO₂): laboratory data (complete blood count, blood gases and CBS). After the treatment was evaluate: duration of mechanical ventilation and the duration of mechanical ventilation with hyperoxic gas mixtures (FIO₂ $\geq 0,3$).

Results: The results showed that the main group of children during treatment with the drug Surfactani composite were quickly reduce the value of the maximum inspiratory pressure (Pin) and frequency -controlled ventilation (VR), and the significant difference was noted already from 2 days up to and transfer of children at weaning. Baby's core group quickly noted the positive dynamics in the clinical picture, and in some patients in the first, 3 - minutes after administration of the drug improved chest and holding of breath in the lungs, skin color, or disappear minimum marbling

Discussion: When analyzing these indicators statistically significant reduction in the duration of the main group ventilator ($69,71 \pm 9,38$ h) and time using mixtures hyperoxic ($7,33 \pm 7,34$ h). When mechanical ventilation compared to the control group ($108,67 \pm 16,81$ h and $74,33 \pm 16,49$ h, respectively) . It should be noted Composite use of surfactani in the complex treatment of RDS significantly reduced the duration of treatment in the intensive care unit compared with the control group: In the study group , the figure was ($8,58 \pm 0,72$ days), and in the control ($12,33 \pm 0,91$ days).

Conclusions: Use of the drug Surfactani composite in the treatment of respiratory distress syndrome leads to a more dynamic performance improvement respiratory biomechanics allows faster start falling Pin, VR and 2 times quickly reach the level of nontoxic FIO₂.

OP-49**GASTROINTESTINAL BLEEDING IN ELDERLY PATIENTS
UNDERGOING ORTHOPEDIC SURGERY:
CASE REPORT**

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Background: Acute upper gastrointestinal bleeding in elderly patients may occur due to peptic ulcer disease, adverse drug effects, gastric tube lesions, acute renal failure, liver failure or stress-induced gastric mucosal lesions. Gastrointestinal stress-ulcer bleeding is frequent complication with a high case-fatality rate particularly in elderly patients. The aim of this study is to discuss risk factors and underlying illnesses that have a role in the pathophysiology of stress-related mucosal disease (SRMD) and to evaluate the evidence of SRMD prophylaxis [1].

Material and Methods: 79 patients, 70 years and older, underwent hip fracture surgery in our University clinic for a period of 5 months. Admitted in trauma department for preoperative evaluations, most of them were classified as high-risk group patients. Analgesia was performed with paracetamol, NSAIDs and tramadol. H2 receptor antagonists were used as stress ulcer prophylaxis.

Results: 5 patients represented gastrointestinal bleeding (melena and haematemesis) on the third to fifth postoperative day. Gastroscopy was performed to all 5 of them and the findings were: bleeding ulcers in duodenal bulb at 2 of the patients and multiple gastric erosions at the other 3 patients. Two of the patients had lethal outcome. Those two had many comorbidities such cardiomyopathy, diabetes mellitus, cardiac arrhythmias and were on oral anticoagulant therapy.

Discussion: Preoperative care of elderly is very important as they are at higher risk of adverse postoperative outcomes. The process of ageing limits the physiological response to stressors, including acute illness, anaesthesia and surgery. Therefore gastrointestinal bleeding is considered as a serious complication that should be prevented using SRMD prophylaxis, adequate analgesia, fluid resuscitation and preoperative management of important comorbidities.

Conclusion: Based upon the limited clinical evidence to date, Proton Pump Inhibitors appear to reduce gastrointestinal bleeding when compared to H2 receptor antagonists; however, there is insufficient evidence to prove they improve survival. NSAIDs should be used with caution, at their lowest doses and for the shortest duration, with gastric protection and routine monitoring for gastric and renal damage [2].

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OP-50**THE ULTRASONOGRAPHIC EVALUATION OF DIMENSIONS AND POSITION OF RIGHT INTERNAL JUGULAR VEIN IN LOW-BIRTH-WEIGHT INFANTS: CASE REPORT**Filiz UzumcugilHacettepe University, Faculty of Medicine,
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Background: Ultrasonographic evaluation and guidance during central venous catheterization has proven useful in infants. There are few studies on small sample sizes of LBW infants describing the diameter and position of the RIJV (1-3). Our aim was to share our assessments of RIJV in LBW infants.

Cases: We present three newborns with birth-weight of <2500 gr. The weights were 2040, 2488 and 2475 gr. The RIJV catheterizations were indicated to provide long-term use in ICU. All the patients were already intubated and mechanically ventilated. The position for catheterization included a roll under the shoulders, rotation of the head 30-40° contralaterally and trendelenburg position. Ultrasound probe was used in short-axis-view, between cricoid cartilage and clavicle level. The transverse and anterior-posterior (AP) diameters of RIJVs were 4.5, 4.8 and 4.6 mm, and 3.9, 3.7 and 3.8 mm, respectively. The depth from skin was measured 4.6, 4.5 and 5.8 mm. The position of the RIJV was lateral to the carotid artery in each of the newborns. Catheter placement was successful at 1st attempt in each patient.

Discussion: AP diameter of the RIJV and its distance from skin were previously reported as 2.7 (1.3-4.5) mm and 4.1 (1.8-6.8) mm, respectively. It was reported to be lateral to carotid artery in 69%². In a study by Neto et al. infants at 0-1 month of age (n=9) were reported to have IJV position to be mostly lateral or anterior to carotid artery³. In a similar study, the internal diameter of IJV was reported to be 4.2±0.9 mm, whereas, the IJV and CA were reported to overlap in 72.9% of term infants (n=24) weighing 2.8±0.5 kg¹. We observed similar diameters, but the position was different. The position of the IJV may differ according to the position given during catheterization or the weight of the infant. Low-birth-weight, very-low-birth-weight and extremely-low-birth-weight infants should be addressed in large series to determine the position of IJV and the factors that optimize it.

Conclusion: The position of the IJV can be improved by positioning of the newborn, which should be investigated prospectively to describe the optimum position in large number of infants.

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OP-51**ANESTHETIC MANAGEMENT OF AN INFANT WITH POMPE DISEASE FOR ORTHOPEDIC SURGERY**

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Background: Pompe disease (Glycogen Storage Disease type II) is a rare, progressive and fatal disorder resulting from a deficiency of the acid α -glucosidase (GAA) enzyme.¹

Case Report: We present a case of general anesthesia for bilateral achilles tendon lengthening surgery of a four years old girl with pompe disease. She was on enzyme replacement therapy and could not walk because of bilateral tight achilles tendons. Our main concerns about patient were pulmonary function loss caused by the myopathy of respiratory muscles, risk of malignant hyperthermia, malignant arrhythmias and haemodynamic instability due to cardiac muscle involvement of the disease. Volatile anesthetics were not used because of malignant hyperthermia risk and even though there are reports that argue against propofol use in these patients we have used propofol successfully as induction agent and with infusion in Total Intravenous Anesthesia (TIVA), titrating the drug properly according to the patient's weight.² We did not encounter any haemodynamic instability nor any sign of malignant hyperthermia on our monitoring during the one hour operation in supine position. After the operation the patient was transferred to Pediatric Intensive Care Unit in intubated state. She was extubated after two hours with no problems and then transferred to Orthopedic Service Line within the same day.

Discussion: With the new and promising enzyme replacement therapy and prolonged life expectancy of the infants with pompe disease, more patients are being reported to be in need of surgical and anesthetic interventions.³ Due to rare nature of the Pompe Disease the data on the subject is limited and further research should be made about the anesthetic management of the patients with pompe disease.

Conclusion: We have experienced that propofol can be used in these patients when there is minimal cardiac involvement and drug is titrated properly.

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OP-52**AIRWAY MANAGEMENT IN TWO PEDIATRIC CASES WITH
DIFFICULT/IMPOSSIBLE MASK VENTILATION**

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Background: Awake fiberoptic intubation is usually the choice of airway management in adult patients with predicted difficult mask ventilation. However, the airway management of small children with predicted difficult/impossible mask ventilation may be more challenging due to the need for sedatives. The aim of this case report is to discuss airway management of two children with predicted difficult mask ventilation.

Case report: First patient was a 1,5 year-old child with an enormous tumor on the right side of his face making mask-ventilation difficult. Following anesthesia induction with sevoflurane inhalation by protecting spontaneous ventilation, high-dose rocuronium was used for neuromuscular blockade and mask-ventilation was managed by two-hands technique and lifting up the tumor simultaneously. Endotracheal intubation was performed with acute-angled videolaryngoscope easily. Second patient was a 2 year-old child with a teratoma covering all the nose and half of his face making mask ventilation impossible. However, endotracheal intubation was predicted easy due to normal mouth opening and neck movements. Following appropriate preoxygenation, anesthesia induction was performed with midazolam and high-dose rocuronium and the child's trachea was intubated immediately without mask ventilation. High dose sugammadex, supraglottic airway devices (SAD) and all difficult airway equipment including emergency front of neck access were kept ready in both cases for the possibility of unsuccessful intubation.

Discussion: Awake intubation can hardly be an option for pediatric population, therefore airway management of children with difficult/impossible mask ventilation becomes a challenging issue for anesthesiologists. A SAD might be a good choice for predicted pediatric difficult airway, however it was not our first choice in these cases in order to avoid unnecessary airway interventions. Airway management should be directed specifically for each patient and the condition causing difficult airway. High dose rocuronium and sugammadex might be kept in mind as an option in cases of difficult mask ventilation and predicted easy intubation as in our cases definitely with a good back-up plan.

OP-53**HOW DOES BEING PARENT OF A SICK CHILD AFFECT INFORMATION AND THOUGHTS ABOUT BRAIN DEATH AND ORGAN-TISSUE DONATION?**

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Background: Our aim is to enlighten how people should be educated by determining the knowledge and thoughts of sick children's parents about BD and organ-tissue donation (OTD).

Materials and Methods: After getting approval from the ethics committee, participating parents of patients who are admitted to the anesthesia and general pediatric polyclinic and who are in the general pediatric inpatient service were asked to answer a questionnaire including 17 questions about BD and OTD. Chronic disease history and demographic data of sick children and parents were recorded. Illiterate, noncommunicable parents, parents with visual, hearing and psychiatric disorders were excluded.

Results and Discussion: A total of 248 parents completed our survey. The majority of the participants (63.7%) (n=158) were mothers. The number of outpatients was 146. Of all the parents, 54.8% (n=136) knew the definition of brain death and 52.4% (n=130) knew that their religion allowed organ transplants. A total of 77.4% (n=192) accepted the donation from another donor when their first degree relative needed organs, nevertheless only 52% (n=128) accepted to donate their organs when they are BD. The parents of the inpatients wanted to be live donors significantly more (p = 0.037). In the survey, 44.5% of the parents (n=94) answered the most important reason for being a living donor as a family member in need of donation., while 32.7% (n=48) answered the most important reason for not becoming a living donor as not having enough information. Participants with a chronic illness and college graduation thought that OTD should be encouraged, more significantly (p <0.05). Of all, 59.3% (n=147) did not watch the public service ad on OTD. Results also showed that 57.1% (n=140) wanted reliable information from their doctors and 60% (n=147) from organ donation units.

Conclusion: It is observed that parents have information about OTD but this information was inadequate. Increasing the educational activities in formal and informal educational institutions will make an important contribution to the acquisition of correct information. Public service ads should feature frequently in television, hospital polyclinic and waiting rooms. We think that supporting with banners will positively affect OTD.

OP-54**THE EFFECTS OF SURGERY STRESS ON POSTOPERATIVE PAIN LEVEL IN CHILDREN AND PARENTS**Yeliz Şahiner, Serhat Özçiftçi, Güvenç Doğan

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Background: Children's perception of pain may vary depending on defenselessness, negative and exaggerated behavior, level of persuasion, personality characteristics and previously experienced negative experiences. The response of parents to the pain of the child plays an important role in pain perception. This study was designed to investigate the relationship between anxiety and postoperative pain perception of children. At the same time, the family's anxiety about the child's pain and negative attitudes on the effects of the pain were investigated.

Materials and Methods: This study includes 35 patients undergoing appendectomy between August-December 2017. 7 patients were excluded from the study because they were not suitable. In all patients, FLACC preoperative anxiety scale of Yale and Post-Anesthetic Delirium scale were applied. In the postoperative period, parents and children were asked to complete a pain and pain interpretation questionnaire. All patients were recalled to the control postoperatively two months later and their views on pain were questioned again. Pain questionnaires were prepared and interpreted according to Likert's scale.

Results and Discussion: Total 28 patient who contributed study were included. The children's mean age was found as 11.64 years(min:6,max:17). As family education level increased, the anxiety of both children and parents decreased ($p=0.033$). There was a significant difference between 0-minute VAS scores in children who received opioids for postoperative analgesia, and no significant difference between the VAS scores in other hours ($p>0.05$). It was found that mothers were more anxious, than fathers and 30-minute VAS Score of the children of mothers thinking negatively were higher ($p<0.05$).As the children's pain scores fell, it was found that the anxiety of the families decreased by showing a correlation. It is important to note that parental anxiety was the peak when the post-operative pain of the children increased. In particular, the mother's negative thoughts felt by the children caused an increase in the pain level.

Conclusions: The increase in the children's perception of pain is correlated with parental stress. In the long term, the experience of pain is not permanent in children throughout the healing process but remains a bad-memory for their parents that they would not want to live again.

OP-55**EVALUATION OF BEHAVIORAL CHANGES AND SCHOOL ACHIEVEMENT IN CHILDREN RECEIVING GENERAL ANESTHESIA UNDER 2 YEARS OLD**Deniz Güncel Tural, Feray Gürsoy

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Aim: Based on studies showing that neurotoxic effects may be present in children of general anesthesia, the aim of this study is to investigate the relationship between anesthesia exposure under 2 years old children and the school achievement and behavioral problems in the later period.

Method: In the study, case group consisted who received general anesthesia under 2 years old between 2000-2010 years. The control group consisted who had never been anesthetized before the same demographic characteristics. After ethical committee approval, the Eyberg Child Behavior Inventory (ECBI) and school success evaluation questions were evaluated to the children 's parents. We used SPSS 18.0 and applied Kolmogrov-Smirnov, Chi-square, Student-t and Mann Whitney U tests.

Results: Demographic characteristics were similar in both groups in terms of age and gender distribution. There was no difference between two groups in terms of school success and frequency of behavior problems and did not change depending on the age at operation time or duration of operation.

		Case group (n)	Control group (n)	Total (n)	P
Behavioral problems	Yes	15	13	28	0,703
	No	42	43	85	

		Case group (n)	Control group (n)
General success	Week-Average	20	20
	Good-Very good	37	36
Turkish	Week-Average	12	8
	Good-Very good	45	48
Social studies	Week-Average	11	7
	Good-Very good	46	49
Science	Week-Average	15	17
	Good-Very good	42	39
Mathematics	Week-Average	17	23
	Good-Very good	40	33

Conclusion: In our study, it was determined that the general successes and the incidence of behavioral problems of children exposed to anesthesia during minor urogenital surgery under 2 years of age did not differ compared with children who had not previously undergone did not have anesthesia. The success level and behavior problems of children can be affected by many factors such as family structure, ethnic origin, socioeconomic status, environment, the school they are attending and additional diseases. For this reason, especially in our country, we think there is a need for prospective cohort-style clinical trials with a larger sample of subjects.

OP-56**THE USE OF DISTENSIBILITY INDEX OF THE INFERIOR VENA CAVA IN PEDIATRIC PATIENTS**Nilgün Şahin¹, Cihan Döğür¹, Eyüp Sarı²¹Anesthesiology and Reanimation, Dr. Sami Ulus Education and Research Hospital, Ankara, Turkey.²Pediatrics, Dr. Sami Ulus Education and Research Hospital, Ankara, Turkey.

Background: Echocardiography is a non-invasive method in assessing cardiac function(1). Respiratory changes in the diameter of the IVC [Inferior Vena Cava Distensibility Index(dIVC)] is an important indicator of fluid deficit especially in patients on mechanical ventilation(2). We evaluated the efficacy of the use of dIVC for fluid management in the pediatric population.

Materials and Methods: ASA I-III risk status children who underwent dental surgery with general anesthesia were included in the study. Medical history, additional diseases and weights of the patients were recorded. Endotracheal intubation was performed following standard induction. The patients were ventilated in volume control mode (Tidal volume: 8.5 ml/kg without PEEP; I:E=1:2). dIVC values(%) were calculated by transthoracic echocardiography at the beginning of the operation (dIVC₁). The crystalloids infusion was performed according to the following conditions. dIVC₁ ≤10; 2 mlkg⁻¹; dIVC₁ >10; 4 mlkg⁻¹ crystalloids infused. At the end of the operation, dIVC value was calculated (dIVC₂) again while the patient was under mechanical ventilation. Complications were recorded.

Results: A total of 64 children, 40(62.5%) male and 24(37.5%) female, were included in the study. The mean age of the patients was 65.7 ± 23.5, and the BMI was 15.7 ± 3.2. Six of the children had neurological, 5 had cardiac, 8 had lung disease. The mean duration of the procedure was 74.4 ± 23.4 min, and BMI was 15.7 ± 3.2. The mean duration of the procedure: 74.4 ± 23.4 min, dIVC₁: 11 ± 2.8 and dIVC₂: 4.0 ± 1.5.). None of the patients had any fluid-related complications.

Discussion: The dIVC was calculated based on the respiratory changes in the IVC diameter [dIVC = (maximum diameter of IVC – minimum diameter of IVC)/minimum diameter](1,2). dIVC is influenced by respiration, right heart function and blood volume. In some of the cases, the use of conventional fluid calculation methods may result unintended complications such as fluid loading even pulmonary edema (e.g. cases with valve regurgitation or heart failure). In our study, none of 13 children with pulmonary and cardiac disease had any fluid-related complications.

Conclusion: In pediatric cases, we believe that fluid management with dIVC will provide effective fluid management and reduce fluid related complications.

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OP-57**ANESTHETIC MANAGEMENT OF SUCCESSFUL CARDIAC PACING OF A NEWBORN WITH CONGENITAL COMPLETE ATRIOVENTRICULAR BLOCK DUE TO MATERNAL SYSTEMIC LUPUS ERYTHEMATOSUS**

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Background: Systemic lupus erythematosus (SLE) is an autoimmune disease. Miscarriage, premature delivery, and preeclampsia, as well as heart problems in the baby are the major complications. Congenital heart block (CHB) especially complete atrioventricular block is manifestation of neonatal lupus syndrome (NLS). CHB presents as fetal bradycardia and cardiac failure, pericardial effusion and hydrops after 16 to 24 weeks of gestation. We present our anesthesia experience in a newborn with CHB undergoing cardiac pacing.

Case: 28-year-old women with SLE, 36 weeks of pregnancy, was admitted for delivery. Fetal bradycardia and ventricular slow contraction was revealed on fetal USG. The baby (2950g) was born by C/S (Apgar score=8) HR=53/min. In operation room CHB was observed in ECHO and ECG. He was intubated, PPV was initiated and 0.01mg/kg adrenalin was given , he was intubated and transferred to the theatre. Anesthesia induction was performed with pentothal sodium 4mg/kg, rocuronium 1mg/kg, fentanyl 3mcg/kg via umbilical catheter after ECG, SpO₂, NIBP monitorization. Sevoflurane (2-3%) was used for maintenance. Pace lead was fixed to the right ventricle and permanent pace maker was inserted on abdominal wall with a rate at 130/min. He was extubated postoperative 2nd day.

Conclusion: Multidisciplinary approach is needed for parturients with SLE to cope with possible medical issues of the newborn. Experienced anesthetists and pediatric cardiac surgeons are required for newborns with antenatal CHB diagnosis.

OP-58**ANESTHETIC MANAGEMENT OF EXTREMELY LOW WEIGHT BIRTH PREMATURE INFANT WITH TWIN TO TWIN TRANSFUSION SYNDROME UNDERGOING AORTIC COARCTATION REPAIR AND PATENT DUCTUS ARTERIOSUS LIGATION**

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Background: Multiple pregnancies represent 2% of all pregnancies but account for 20% of admissions to NICU. Twin to twin syndrome (TTTS) have increased mortality and morbidity due to vascular anastomoses on the chorionic plate and joining the two fetal circulations. The morphologic spectrum of aortic coarctation (AoC) extends from discrete isthmic obstruction to tubular hypoplasia of the entire aortic arch. Neonates with AoC frequently present with congestive heart failure and critically reduced perfusion of the descending aorta following ductal closure. Primary end-to-end anastomosis (EEA) is more adequate and safe strategy for very small premature low birth infants. We report anesthetic management of an extremely low weight birth premature infant with TTTS undergoing AoC repair and patent ductus arteriosus (PDA) ligation.

Case Report: The babies were born by normal vaginal delivery at 33th week gestation (body weight, 1st baby:1120g and 2nd baby:2340g.) as twins. The Apgar scores were 3 points at first and fifth minute for first baby. After delivery the 1st baby was intubated and transferred to the NICU. The twins' diagnosis was TTTS. In NICU polycythemia, hypoglycaemia and blood pressure difference between arm and leg were observed in the first baby. AoC and PDA were observed in ECHO and than blood lactate levels increased gradually. Anesthesia induction was performed with pentothal sodium 4mg/kg, rocuronium 0.5mg/kg, fentanyl 3mcg/kg via iv. catheter after ECG, SpO₂, NIBP monitorization. Sevoflurane (2-3%) and air-O₂ 50-50% was used for maintenance. Right femoral vein (4F-2 lumen) and right femoral artery (20G) catheterization were performed. Right side position was given to the patient, thoracotomy was performed and the AoC was corrected with EEA and PDA clipped. He was transferred to the NICU, extubated at 8th hour, oral feeding started at postoperative 2nd day.

Conclusion: Cardiac disease in donors of TTTS is generally less common than in recipients, coarctation appears to be more associated with donors. Low birth weight premature infants are considered as high-risk group for both surgical and anesthetic interventions. Adequate and emergency preoperative diagnosis and than early surgical treatment are important for survival. Anesthetic applications, surgical approach and postoperative care must be experienced hands.

OP-59**ANESTHESIA MANAGEMENT IN A PREGNANCY WITH NIEMANN-PICK DISEASE TYPE B**

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Background: *Niemann-Pick disease* (NPD) is a lipid storage disorder affecting many body systems with a wide range of symptoms. It has 3 types; type A (severe form with hepatosplenomegaly (HSM), mental disability, interstitial lung disease and early death), type B (mild form interstitial lung disease, thrombocytopenia, nonneuronopathic form), types C (wide phenotypic spectrum). In this case report, we present a patient undergoing C/S who covered up her NPD disease.

Case Report: Emergent C/S was performed a 23-year-old ASA I patient with spinal anesthesia uneventfully. A splenectomy scar was observed due to a history of trauma. She declared no co-existing disease. At postoperative 20th hour she complained about dizziness, sweating and weakness. Her blood pressure was 94/46 mmHg, heart rate 130/min, Hb:4,4 g/dL, PLT:252000/mm³. Intraabdominal blood was detected and relaparotomy performed under general anesthesia. Massive blood transfusion, 2gr fibrinogen, 1gr tranexamic acid was administered. Cardiac arrest occurred and CPR was performed. At that time SPO₂ was 80 %, pulmonary edema was diagnosed. During the intraoperative period 8U ES, 8 U FFP, 2U pooled trombocyte was transfused, dopamine infusion and furosemide was given. After the pulmonary edema SPO₂ improvements, she was transferred to ICU with blood pressure: 125/60 mmHg, heart rate:92/min, SO₂: % 89. Her relatives confessed that she has NPD and she didn't want to tell her husband her disease.

Discussion: Thrombocytopenia, HSM, interstitial lung disease are common in NPD type B patients and they usually survive until adulthood. To our knowledge, there are only 2 surviving pregnant patients with NPD in the literature. Our patient developed postpartum hemorrhage and pulmonary edema postoperatively and unfortunately she couldn't survive.

Conclusion: Preoperative evaluation of detailed patient history and physical examination are important. We should encourage patients to give detailed information about their medical histories. As she hid her disease from us, we didn't suspect her NPD which kept us from taking some preventive measures.

OP-60**EFFECT OF DIFFERENT ANESTHESIA METHODS ON NEAR-INFRARED SPECTROSCOPY LEVELS IN PATIENTS UNDERGOING CAROTID ENDARTERECTOMY UNDER GENERAL ANESTHESIA**Zeynep Cura¹, Ates Duman¹, Bahar Oc¹, Oguzhan Arun¹, Mehmet Oc²Selcuk University Faculty of Medicine, Department of ¹Anesthesiology and Reanimation, ²Cardiovascular Surgery

Background and Goal of Study: The most significant perioperative risk for patients undergoing Carotid endarterectomy (CEA) is stroke secondary to an embolism or carotid cross-clamping. Several cerebral monitoring techniques are available for detection of cerebral hypoperfusion and ischemia during the carotid cross-clamping. Near Infrared Spectroscopy (NIRS) monitoring has been used besides electroencephalography, somatosensory evoked potentials, transcranial doppler in which cerebral blood flow is directly assessed. In this study, NIRS changes and neurologic damage relationships during carotid clamping were investigated in patients undergoing CEA under different anesthesia techniques such as sevoflurane and TIVA with propofol + remifentanyl.

Materials and Methods: After Institutional Ethics Committee approval, retrospective data from a 33 patients undergoing CEA between January 2011 and December 2016, under general anesthesia with sevoflurane (n=17) and TIVA (n=16) were analysed. NIRS data from patients were assessed graphically and numerically by minute and hourly records with the INVOS Monitoring System Analysis Program. Data obtained from the study were analyzed using kolmogrov simirnov, Mann Whitney U and t tests were as appropriate. $p < 0.05$ = significant.

Results and Discussion: Demographic data was similar between the groups ($p > 0.05$). Cerebral oximetry values in both groups were higher after de-clamping (5th, 10th and 15th minutes) compared to before clamping ($p < 0.05$) (Table 1). Cerebral oximeter values were not different in terms of cerebral perfusion and oxygenation between TIVA and sevoflurane groups ($p > 0.05$).

General anesthesia has advantages such as airway and blood pressure control as well as comfort for the patient and surgeon, and cerebral protection with sodium thiopental. Proper monitoring provides information on cerebral state and provides early detection of neurologic deficits. Our results shows that cerebral oximetry values in both groups were higher in both groups after de-clamping compared to before clamping and cerebral oximeter values were not different in terms of cerebral perfusion and oxygenation.

Conclusion: Although the study was retrospective and included a limited number of cases, our results showed that sevoflurane or propofol-remifentanyl anesthesia have similar effects on NIRS levels in patients undergoing CEA surgeries.

Table 1: NIRS values (%) before clamping and after de-clamping of carotid artery

Group		NIRS Values (%)				
		Before	After CC-5 th	After CC-10 th	After CC-15 th	p
Right	Sevoflurane(n=17)	62.5±5.7	65.5±8.1	65.3±7.5	64.4±6.8	p<0.05
	TIVA (n=16)	63.8±9.7	67.6±10.5	67.1±10.4	66.6±10.4	p<0.05
Left	Sevoflurane	64.6±5.8	67.1±6.5	67.0±6.1	67.1±6.4	p<0.05
	TIVA (n=16)	64.3±7.2	67.4±6.5	65.8±6.2	66.1±6.0	p<0.05

CC: Carotis clamping

OP-61**EVALUATION OF THE EFFECTS OF PERIOPERATIVE HEMOGLOBIN ON ACUTE KIDNEY INJURY IN CARDIAC SURGERY**

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Background: Acute kidney injury (AKI) is the most serious, prognostic and general complication after cardiac surgery (1). Even if AKI is moderate, it increases mortality and morbidity independently of other factors (2-4). However, there is still no clinical evidence to prevent or treat AKI associated with cardiac surgery at present. Thus, the identification and prevention of the factors that cause AKI have become important.

Most of the causes of AKI are detected, but only perioperative hemoglobin levels and blood transfusion given are preventable risk factors (5). Therefore, mainly the effects of perioperative hemoglobin and blood transfusions made; we aimed to determine the risk factors that cause AKI in cardiac surgery.

Materials and Methods: We retrospectively evaluated 862 patients who underwent cardiac surgery and cardiopulmonary bypass between August 2016 and August 2017 in our hospital. Patients who had <18 years of age, reoperations, intraoperative exitus, complex congenital anomalies, cardiac transplantation, LVAD, aortic dissection and preoperative renal failure were excluded. Continuous variables were analysed by t-Student's test, and U-Mann Whitney tests. Categorical variables were analysed by chi-square test. Multivariate and univariate analysis was performed. Statistical analyses was performed using SPSS for Windows.

Results: 440 patients were included in the study. In the postoperative period, it was observed that AKI developed in 146. It was also found that there was more AKI in the presence of preoperative hypertension, in the presence of preoperative anemia (in Hb <13 mg/dL in man, <12 mg/dL in women), in longer periods of cardiopulmonary bypass and in intraoperative anemia (Hb <8 mg/dL).

Conclusion: We conclude that perioperative hemoglobin levels are independent risk factors after cardiac surgery. We believe that the identification and elimination of perioperative factors affecting AKI complications may help to reduce mortality and morbidity after cardiac surgery in these patients.

OP-62**ASSESSING THE LEFT VENTRICULAR MYOCARDIAL FUNCTION IN ELDERLY SEPTIC PATIENTS USING THE STRAIN METHOD**Fethi GülMarmara University Pendik Education and Research Hospital,
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Background: Myocardial dysfunction in sepsis is a complex entity and has multifactorial pathophysiology which includes systemic, cellular, and extracellular mechanisms(1). Aging may further aggravate myocardial depression leading to a poorer outcome in elderly septic patients (2). The aim of this study is to compare left ventricular global longitudinal strain (LV-GLS) and ejection fraction (EF) between elderly and young sepsis patients.

Materials and Methods: 35 patients who were admitted to intensive care unit (ICU) with sepsis prospectively included according to 2016 consensus report after ethics committee approval. Patients with LV myocardial abnormality, valve disease, and atrial fibrillation were excluded. All studies were performed with EPIQ 7 echocardiography device (Philips Healthcare, USA). Standard 2D and Doppler analysis of systolic and diastolic function, as well as 2D Strain measurements, were performed at the 24th and 48th hour of ICU stay. Hemodynamic parameters, SOFA scores and total vasopressor amount were recorded. Data Paired Sample t-Test method was used. Pearson and Spearman correlation tests were used for correlation evaluation, $p < 0.05$ was considered significant.

Results and Discussion: 18 elderly (>65 years old) and 17 young patients (<65 years old) were assessed. SOFA scores, daily total vasopressor amount, mean arterial pressure values during the echocardiographic measurements weren't different between the groups. There was no difference between the two groups considering LV EF at the 24th ($46,8 \pm 14,5\%$ vs. $46,5 \pm 15,4\%$, $P > 0.05$) and 48th hour ($45,4 \pm 11,7\%$ vs. $52,8 \pm 14,2\%$, $P > 0.05$). There was no difference between LV-GLS measurements at the 24th hour ($-14,9 \pm 4,7\%$ vs. $-14,6 \pm 5,9\%$, $P > 0.05$) but it was significantly lower in elderly patients at the 48th hour ($-13,4 \pm 3,8\%$ vs. $-17,5 \pm 5,2\%$, $P = 0.03$).

Conclusion: GLS has superiority in detecting early subtle cardiac dysfunction before clinical manifestations compare to conventional echocardiography (3). In this study, 2D EF did not vary among the patients, but in elderly patients significant deterioration was observed for the strain at the 48th hours of ICU stay. These data suggest that LV-GLS can reliably detect regional changes of myocardial function before LV EF changes in elderly septic patients.

Keywords: sepsis, myocardial dysfunction, strain, echocardiography

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OP-63**EFFECT OF MELATONIN ON THE DAYTIME SLEEPINESS SIDE-EFFECT OF GABAPENTIN IN ADULT PATIENTS WITH NEUROPATHIC PAIN**

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Background and Goal of Study: Gabapentin is an antiepileptic drug which is widely used for the management of neuropathic pain. Although it is known to be well tolerated, somnolence and dizziness are the most frequent adverse effects leading patients to discontinue the treatment. Melatonin is a circadian hormone with analgesic and antidepressive effects. It has been used in many clinical studies with no reported serious adverse effects. In this study, we aimed to evaluate the effect of melatonin on daytime sleepiness side effect of gabapentin, sleep quality and pain intensity of patients with neuropathic pain.

Materials and Methods: After the institutional ethical committee approval, patients suffering from “neuropathic pain” and planned to receive gabapentin therapy were randomly divided into two groups. Group 1 (melatonin+) received melatonin 3 mg and gabapentin 900 mg orally, while group 2 (melatonin -) received matching placebo capsule and gabapentin 900 mg. The Epworth sleepiness scale (ESS), the Pittsburgh sleep quality index for assessment of sleep quality (PSQI) and Verbal Rating Scale (VRS) were completed at the 0th, 10th and 30th days of treatment. Additive analgesic drug requirements were recorded.

Results and Discussion: Eighty patients were enrolled to the study; age, gender, ratio of additive analgesic consumption, baseline ESS, PSQI and VRS scores were similar between the groups.

ESS scores, PSQI scores and VRS scores in Group 1 were significantly lower than group 2 at the 10th day of treatment (p=0.002, p=0.003, p=0.002 respectively). At the 30th day of treatment, ESS scores and VRS scores were significantly lower in Group 1 (p=0.002, p=0.008 respectively). However, PSQI scores did not significantly differ between the groups (p=0.0566).

In the current study, melatonin supplementation rapidly and significantly improved daytime sleepiness side effect of gabapentin, however sleep quality of the patients with neuropathic pain was similar between groups. Melatonin has also successfully attenuated pain scores of the patients throughout gabapentin treatment.

Conclusions: We suggest melatonin supplementation to attenuate daytime sleepiness of patients with neuropathic pain.

OP-64**MANAGEMENT OF ACUTE HERPES ZOSTER PAIN BY
ULTRASOUND GUIDED ERECTOR SPINAE PLANE (ESP) BLOCK**

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Background: In 75% of the patients, when the acute pain of herpes zoster left untreated, it becomes postherpetic neuralgia. Erector spinae plane (ESP) block is described as injection of the local anesthetics around the erector spinae muscle at the level of the 5th thoracic vertebrae in order to relief pain. Considering this issue we evaluated the ESP block in the management of acute herpes zoster pain having painful vesicles at the level of 5th and 6th thoracic vertebrae.

Case report: A 66 year old woman consulted to our clinic for extremely painful vesicles (9/10 NRS) on 5th and 6th thoracic dermatomes for five days. She had extensive neuropathic pain characterized electric shock-like sensations, and paresthesia. Physical examinations revealed hyperesthesia and allodynia at the painful region. 37,5mg Tramadol HCl+ 325 mg paracetamol 3×1 and pregabalin 2×150 mg daily administered for 3 months. On the effectiveness of the treatment performing ESP block to provide pain relief and to interrupt the pain cycle was decided.

ESP block performed via ultrasound (Esaote MyLab® US) with 18 Hz frequency linear probe with the patient in the prone position. The USG probe was installed 3 cm lateral of the spinous process at the level of T5 in the longitudinal parasagittal orientation. The latissimus dorsi, erector spinae muscle and transverse processes were visualized respectively and 10-cm sonovisible block needle advanced in the direction of cephalad to caudal in-plane technique. ESP block was administered by injection of 20 ml% 1 lidocaine into the fascial planes of the transvers process and erector spinae muscle. The pain passed 10 minutes after the procedure and the patient was pain-free at the 24th hour of the procedure. Pregabalin 2×75mg for the neuropathic component of the pain prescribed while discharging. On the follow-ups during the three months after the procedure, the patient was still pain-free.

Conclusion: In case of posterior and lateral thoracic wall pain syndrome when the medical treatment is not tolerated or inefficient; ESP block is a promising alternative analgesia technique of management of acute zoster pain.

OP-65**MANAGEMENT OF ACUTE AND CHRONIC HERPES ZOSTER PAIN USING ULTRASOUND GUIDED ERECTOR SPINAE PLANE BLOCK**Tayfun Aydin , Onur Balaban

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Background: Herpes zoster is caused by reactivation of latent varicella zoster virus. Neuronal destruction causes neuropathic pain, which may interfere with daily activities and reduce quality of life in older adults.¹ Ultrasound guided erector spinae plane (ESP) block is a recently described regional anesthesia technique.² Our aim was to demonstrate the efficacy of ultrasound guided erector spinae plane blocks for management of pain in adults having herpes zoster.

Materials and Methods: We performed ultrasound guided ESP blocks in patients with complaints of pain in dermatomal area of herpetic vesicles. Single injection was performed for patients having a new-onset pain or continuous block was applied by placing a catheter for patients having chronic pain. The intensity of pain was evaluated by asking the patients to give a score between 0 and 10 using a numerical rating score (NRS).



Figure: Performance of ESP block under ultrasound guidance

Results and Discussion: Among 9 cases, 4 patients were male and 5 patients were female. ESP catheter placement was performed in 6 patients and single injection ESP block was performed in 3 patients. All patients reported remarkable and rapid resolution of pain immediately after the block procedure. Median (25%-75%) NRS value before block procedure was 9,0 (6,5-9,0). Median (25%-75%) NRS score was 1,0 (1,0-3,0) after block procedure. The difference was found statistically significant ($p=0.08$).

Interventional methods may be necessary especially to prevent developing neuropathic pain in acute phase of herpes zoster.² Advantages of ESP block technique are achievement of extensive analgesia with a single injection and possibility of prolonged analgesia with catheter placement. ESP block is technically easier to perform with less potential risk of mechanical complications such as nerve damage, pleural puncture or vessel puncture than its alternatives; paravertebral or intercostal blocks.⁴

Conclusion: Our preliminary experience demonstrated that ESP block provided sufficient analgesia in acute herpetic pain and post herpetic neuralgia. ESP block is easy to apply under

ultrasound guidance with an easy sonoanatomy to understand. ESP block is a promising method for pain management in herpes zoster.

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OP-66

ADDUCTOR CANAL BLOCK VERSUS FEMORAL NERVE BLOCK WITH INTERMITTENT BOLUS DOSES FOR TOTAL KNEE ARTHROPLASTY

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Background: Total knee arthroplasty is often associated with severe pain. In this study, we compared postoperative pain management, opioid consumption, quadriceps strength and early mobilization after ultrasound guided femoral nerve block or adductor canal block in patients undergoing total knee arthroplasty under spinal anesthesia.

Materials and Methods: In our prospective, randomized, double blinded study; 50 patients who underwent total knee arthroplasty in Kecioren Education And Training Hospital were randomized into two groups (n = 25); Femoral Nerve Block (Group 1) or Adductor Channel Block (Group 2). Spinal anesthesia was induced with 2,5 ml 0.5% hyperbaric bupivacaine at the L3/4 interspaces (alternatively at the L2/3 or L4/5 interspaces). Both groups were performed a peripheral nerve block catheter and then administered 0.25% bupivacaine during 48 hours, 20cc with 6 hours intervals. Both groups were treated with PCA with morphine as patient controlled bolus administration. VAS, morphine consumption, straight leg raising test, time up and go test, 30m mobilization and quadriceps muscle strength tests were recorded by certain intervals. The time to attain four discharge criteria (VAS \leq 5 in the last 12 hours, no opioid requirement in the last 12 hours, time up and go test and 30m mobilization) were evaluated.

Results: The demographic findings between two groups were similar. There was no significant difference between two groups in terms of VAS values and opioid consumption. Straight leg raising test, time up and go test, 30m mobilization and VAS values with mobilization of two groups were similar. It was seen that the quadriceps muscle strength was significantly more conserved in Group 2 compared to Group 1. The length of hospitalization of two group was similar.

Conclusion: ACB seems to be more advantageous compared to FNB due to the fact that ACB provides less quadriceps weakness with similar analgesic efficacy.

Keywords: Adductor canal block, femoral nerve block

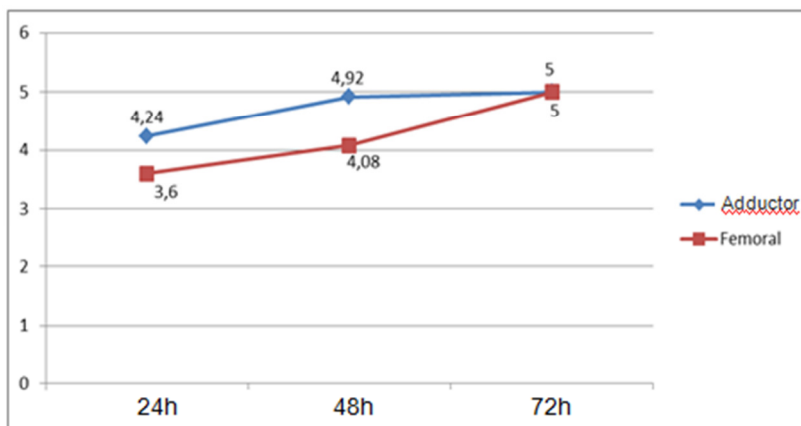


Table1. Quadriceps muscle strength at 24-48-72 hours

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OP-67**THE EVALUATION OF METHOGLOBINEMIA AND HEMODYNAMIC PARAMETERS ON PATIENTS WHO WERE APPLIED RETROCLAVICULAR AND AXILLARY BLOCK TECHNIQUE BY USING ULTRASONOGRAPHY ON UPPER EXTREMITY OPERATIONS**

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Introduction: Retroclavicular and axillary blocks are commonly used regional anesthesia methods on upper extremity surgeries. Local anesthetic drugs which are used in these methods can cause methoglobinemia. Our targets in this research are; measuring the changes on hemodynamic parameters and methemoglobin levels non-invasively by using pulse co-oxymeter (Radical 7 Masimo USA), early diagnosis of methemoglobinemia which can be due to local anesthetic substance and preventing its complications, evaluation of changes on hemodynamic parameters due to methemoglobinemia on patients who were applied retroclavicular and axillary blocks on upper extremity surgeries.

Method: 40 patients at the age of between 18-70 who will have a surgery of hand, wrist, forearm and elbow in ASA I-III groups are taken into this research after the patient's and Ethics Committee's approval are taken. Ultrasound guided retroclavicular or axillary block was applied to all patients with local anesthetic solution (LA) which was prepared as; bupivacaine 0.5% 1mg/kg + prilocaine 2% 5mg/kg + NaCl 0,9% until reaching the solution limit of 40 cc. Basal values of heart rate, diastolic blood pressure, systolic blood pressure, mean arterial pressure, peripheric oxygen saturation, sensorial and motor block durations, perfusion index (PI), and methemoglobin values and these values at the minutes of 10th, 20th, 30th were recorded.

Results: When we compare the PI values of the patients in research in both groups which were measured at different times; the difference between groups was insignificant on basal and 30th minute values but the difference was significant on 10th and 20th minute. Pin-prick test (sensorial block) was positive in 100% of patients in each groups on 30th minute and motor block was occurred in 100% of patients in each groups on 30th minute. When the measurements of SBP, DBP, MAP, HR and SpO2 on different times were compared; the difference between groups was insignificant. When the measurements of SBP, DBP, MAP, HR on different times were compared within each group; there was no clinically significant changes in each groups. In axillary block patients, the difference in methemoglobin levels which were measured on different times was significant. When the measurements were compared as in double, differences between basal and 10th minute, basal and 20th minute, basal and 30th minute, minutes of 10 and 20, minutes of 10 and 30 were significant. Methemoglobin levels that were measured at other times were found insignificant.

Discussion and Conclusion: Changes in hemodynamic parameters were recorded but there was no significant change to interrupt our research. There was increase in methemoglobin levels that were measured by pulse-oxymeter in retroclavicular and axillary block patients but, we thought that, this increasing was not enough to cause complication. Sensorial and motor block were established in all patients in each groups on 30th minute. We think that, using USG contributed to our block success in this research.

Keywords: Retroclavicular block, Axillary block, Perfusion Index, Block Success, Methemoglobinemia

OP-68

THE EFFECTS OF ULTRASOUND-GUIDED PERIPHERAL NERVE STIMULATION ON PERFUSION INDEX AND HAEMODYNAMIC PARAMETERS COMPARED TO LEAN NERVE STIMULATION IN INTERSCALENE BLOCKS

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Background: We aimed to compare the differences between traditional methods and perfusion index on evaluating the block success and sufficiency of interscalene block that we applied to shoulder and arm surgery cases by using USG and peripheric nerve stimulator (group 1) or peripheric nerve stimulator only (group 2).

Materials and Methods: After ethics committee and patients' relatives' approval are taken; ASA I-III, 50 adult patients (18-70 ages) that have shoulder and arm surgery are chosen for this research. Our research is prospective. Interscalene block was applied to all patients by using usg and peripheric nerve stimulation or peripheric nerve stimulation with bupivacaine 0.5% 1mg/kg + prilocaine 2% 4mg/kg and NaCl 0.9% to complete the anesthetic solution to 30 ml. We recorded heart rate, dyastolic blood pressure, systolic blood pressure, mean arterial pressure, peripheric oxygen saturation, perfusion index and pin-prick test values of the patients on basal, 10th, 20th, 30th and postop 30th minutes.

Results and Discussion: When the perfusion index values of the patients that were measured on different times were compared, the difference between the groups was insignificant ($p>0.05$). When measurements were compared binary, the differences on basal, 10th, 20th, 30th and postop 30th minutes were insignificant ($p>0.05$). Loss of cold sensation time was 14.24 ± 3.76 minute in group 1 and 16.17 ± 4.35 minute in group 2 ($p=0.134$). Pin-prick test time to be positive was 16.38 ± 3.84 minute in group 1 and 17.66 ± 5.14 minute in group 2 ($p=0.321$). Motor block onset time was 10.38 ± 3.96 minute in group 1 and 11.35 ± 4.30 minute in group 2 ($p=0.144$).

Conclusion: In this research we concluded that pulse oximeter perfusion index is more sensitive, objective and simple method than traditional methods on evaluating the success of interscalene motor block and also pulse oximeter perfusion index can rapidly reveal the increase on perfusion.

Keywords: Interscalene block, perfusion index, ultrasonography, regional block

OP-69**GENERAL VERSUS REGIONAL ANESTHESIA IN PATIENTS OVER 100 YEARS OLD: A RETROSPECTIVE COHORT STUDY**

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Background and Goal of Study: Along with aging, functional and anatomical changes occur in cellular, tissue and organ structure (1). Therefore, it is inevitable that the anesthesia and surgery in elderly patients are required differentiation. In addition to recent advances in anesthesia and surgical techniques, regional and general anesthesia applications have increased in elderly patients. Many complications have been described in elderly patients, but patients aged 100 years or older has not been investigated sufficiently (2). Therefore, the goal of the study was to analyze and compare general versus regional anesthesia in patients over 100 years old in different surgical procedures.

Materials and Methods: We retrospectively analyzed anesthesia records of patients over 100 years who underwent different surgical procedures in our hospital during 2007-2017. Thirty-eight patients with ASA status I-IV, over 100 years old and surgical operation with high risk were included. Patients were divided into two groups: Group G: General anesthesia (n: 20), Group R: Regional anesthesia (n: 18). Demographic data, operation characteristics and hemodynamic data were recorded at identified time points.

Results: The mean age of 38 patients was 103.52±2.74 years. Demographic characteristics were similar in both groups (Table 1). Need of invasive arterial monitorizasyon, central venous catheter and nasogastric tube were significantly higher in Group G. The duration of anesthesia and surgery was significantly higher in Group G. Indication of postoperative ICU, heart rate, mean arterial pressure, peripheral oxygen saturation and consumption of total crystalloid and colloid were similar in both groups.

Discussion and Conclusion: Elderly patients especially over 100 years old with comorbidities are at higher risk for complications. Anesthetic agent preferences, choosing regional or general anesthesia, long duration of anesthesia and surgery, hemodynamic instability (especially bradycardia, hypotension) can cause serious complications that may be life threatening. Therefore, careful considerations are required with regard to the surgical indication and procedure in extremely elderly patients.

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OP-70**ULTRASOUND-GUIDED BILATERAL GREATER OCCIPITAL NERVE BLOCK**Orhan Binici

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Background: We present an ultrasound-guided bilateral greater occipital nerve block in a patient with a mass behind his neck and general anesthesia is risked due to the age and concomitant diseases.

Case: With a mass behind his neck, patient's operation was planned by plastic surgery department. The patient had chronic obstructive pulmonary disease for approximately 5 years, limited neck extension, body mass index 30,2. The mallampati score Class II and ASA III risked patient was brought to operation. Intravenous (IV) 0.025 mg kg⁻¹ midazolam was applied as a premedication. Noninvasive blood pressure, electrocardiogram, heart rate and peripheral oxygen saturation were monitored. The patient was lying in the prone position, the region of behind the neck was prepped widely with antiseptic solution. A linear transducer of ultrasound was puted on superior nuchal line at medial of occipital artery. Picture of greater occipital nerve was obtained. Three ml of %1 Lidocaine was bilaterally given around greater occipital nerve. Approximately ten minutes later IV 0.025 mg kg⁻¹ midazolam was reapplied. After pain control of the region where mass excision would be done, the attempt was started without doing any additional anesthetic agent. The surgery proceed approximately forty minutes. The patient was discharged from the hospital approximately twenty four hours later after the end of the attempt.

Discussion: Greater occipital nerve have sensory fibers from C2 and C3 of medulla spinalis and innervate dorsal medial part of scalp. Our patient was at high risk for general anesthesia because he previously had heart bypass surgery and was using treatment for coronary artery disease. He had limited neck extention, and had the possibility of being sent to intensive care unit postoperatively. To our case we applied greater occipital nerve block which have shorter anesthesia recover period and less hemodynamic and respiratory side effects.

We are thinking that in high risked patients, while anesthesia application is planning (if time and region of surgery is available) ultrasound guided bilaterally greater occipital nerve block is a good alternative to other anesthetic methods.

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OP-71**CHOLECYSTECTOMY UNDER REGIONAL ANESTHESIA IN ELDERLY PATIENTS**Sedat Saylan

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Background and Goal of Study: Elderly patients have a higher incidence of morbidity and mortality due to the interaction of various factors, such as reduced physiological reserves, associated comorbidities, multiple drug use, cognitive dysfunction and fragility. Epidural anaesthesia-analgesia in abdominal operations may reduce the complications of general anaesthesia such as mechanical ventilation, myocardial depression and prolonged ileus. While general anaesthesia is applied traditionally in cholecystectomy operations, regional anaesthesia techniques are also successfully used today. We aimed to present our experiences of regional anaesthesia in cholecystectomy interventions of elderly patients with high comorbidities.

Materials and Methods: Six open cholecystectomy patients (80 years and older) in 2017 were retrospectively studied. All patients underwent thoracic epidural anaesthesia procedure with intervention performed through thoracic 7-10 intervertebral spaces with divided doses of bupivacaine and lidocaine for epidural anaesthesia. Patients' demographic data, ASA scores, additional diseases, intraoperative and postoperative complications, drugs and their sedoanalgesia doses were analysed from the records.

Results: Patients' demographic data, ASA risk scores, systemic diseases, intraoperative and postoperative complications were as shown in the table. The average operation time was 60-90". Midazolam, propofol, fentanyl were used for sedoanalgesia. All the patients maintained spontaneous breathing and no desaturation was observed. Postoperative delirium developed in one of the patients. One patient died on the 9th day of multiple organ failure and 5 patients were discharged.

Discussion and Conclusion: The ideal approach for the elderly is to be as noninvasive as possible, thus reducing the changes in homeostasis to minimum. Regional anaesthesia does not require instrumentation of the respiratory tract and allows patients to maintain spontaneous respiration and pulmonary function, while reducing hypoxemia risk to minimum. Although most of our patients had respiratory system related pathologies, they maintained spontaneous breathing during the operation and desaturation was not observed (1).

Regional anaesthesia is an acceptable technique for patients with cardiovascular disease. Only one of our patients developed hypotension, bradycardia, and improved after the intervention but others were hemodynamically stable (2,3).

As a result, regional anaesthesia can be applied as an alternative to general anaesthesia in cholecystectomy operations of elderly patients with high comorbidity.

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	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age (year),Gender (M/F)	84, M	81,F	91,F	98,F	86,F	90,F
ASA	III	III	III	III	III	III
Systemic Disease	Anemia, HT, ARF	PE, DM Type 2, COPD	HT, CAD	HT, DM Type 2, Chronic Bronchitis	HT, ARF, CAD	HT, COPD
Spontaneous respiration	+	+	+	+	+	+
Bradycardia	-	-	+	-	-	-
Hypotension	-	-	+	-	-	-
Desaturation	-	-	-	-	-	-
Nausea and vomiting	-	-	+	-	-	-
LA used	B+L	B+L	B+L	B+L	B+L	B+L
Sedative Medicine	M+P+F	M+F	M+P+F	M+F	M+F	M+F
Postop. Complication	Mortality	-	-	-	-	Delirium
Mortality	+	Discharged	Discharged	Discharged	Discharged	Discharged

(HT: Hypertension, ARF:Acute Renal Failure, PE: Pulmonary Embolism, CAD: Coronary Artery Disease, DM: Diabetes Mellitus, KOAH: Chronic Obstructive Pulmonary Disease, B: Bupivacaine, L: Lidocaine, M:Midazolam, F:Fentanyl, P:Propofol)

OP-72**EFFECTS OF SPINAL AND GENERAL ANESTHESIA WITH DESFLURANE ON COGNITIVE FUNCTIONS OF PATIENTS UNDERGOING UROLOGIC ENDOSCOPIC SURGERY**Bilal Şengü, Fatma Ertuğrul, Emel Gündüz, Bilge Karslı

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Background and Goal Of Study: Postoperative cognitive dysfunction (POCD) is a complication that may cause serious problems for the patient and patient relatives. The amount of time spent in the hospital increases and this may result in additional hospitalization cost. The decline in long term cognitive functions leads to a decrease in quality of life. In this study, we aimed to compare the effects of desflurane and spinal anesthesia on cognitive functions in the cases above the age of 50 undergoing urologic endoscopic surgery.

Materials and Methods: One hundred and six patients scheduled for elective surgery were enrolled in the study. The patients were separated into two as general anesthesia group and spinal anesthesia group. The age averages were similar in the groups of spinal anesthesia and general anesthesia (65 yr and 67 yr). Anesthesia induction was provided with tiopenthal sodium, vecuronium, fentanyl and continued with desflurane (group general, n=53). Spinal anesthesia (group spinal, n=53) was performed with levobupivacaine 0.5%. Cognitive functions were evaluated preoperatively and postoperatively at 1st and 24th hours with the MMSE (Mini- Mental State Examination) test. Haemodynamic parameters, intra-postoperative complications, blood biochemistry, the length of stay in the postanesthesia care unit and postoperative pain scores were recorded.

Results and Discussion: Demographic parameters were similar. The length of stay in the postanesthesia care unit was 26.34±11.29 min in Group General and 15.51±7.21 min in Group Spinal (p<0.001). The MMSE test scores decreased significantly from baseline at postoperative 1st and 24th hours without showing significant differences among the two groups. We have seen that according to preoperative MMSE score of 2 or more falls in terms of the number of patients in groups, the general anesthesia group was significantly greater than spinal anesthesia group, at postoperative 1st and 24th hours.

Conclusion: Early postoperative cognitive functions in terms of the effect of spinal anesthesia seem to be more advantageous. Especially in patients undergoing general anesthesia with desflurane, a long-term monitoring would be appropriate in terms of cognitive functions.

OP-73**HEMODYNAMIC MONITORING WITH PULSE CONTOUR VIGILEO FLOTRAC CARDIAC OUTPUT SYSTEM DURING TRANSAPICAL OFF-PUMP MINIMAL INVASIVE MITRAL VALVE REPAIR**Ümit Karadeniz¹, Havva Sayhan¹, Burak Kaya¹, Ali Fuat Erdem¹, İbrahim Kara²¹Sakarya University, Medical Faculty, Department of Anaesthesiology and Reanimation, Sakarya, Turkey²Sakarya University, Medical Faculty, Department of Cardiovascular Surgery, Sakarya, Turkey

Background and Goal of Study/Background: Minimally invasive transapical off-pump neochord implantation has many special features for anesthesiologists such as tachycardia, arrhythmia, blood loss and sudden hemodynamic changes while the device is moving in the left ventricle and in the atrium. In this observational study, we presented our anesthesia experience and hemodynamic improvement revealed by cardiac output measurement after mitral valve repair (1).

Materials and Methods: After obtaining Sakarya University's Faculty of Medicine Review Board (71522473/050.01.04/181), perioperative anesthesia records of 13 patients who underwent mitral valve repair with Neokord DS1000 system were retrospectively reviewed. Hemodynamic measurements recorded from the Vigileo Flotrac invasive arterial cardiac output device were evaluated.

Results and Discussion: Thirteen patients were included in the study. A total of 2 U erythrocytes and 11 U fresh frozen plasma were transfused. Esmolol HCl and amiodarone infusion was initiated in patients who developed tachycardia and arrhythmia during neochordae placement. The mean cardiac output after neochord implantation was statistically significantly higher than that measured after induction (4.18 ± 0.8 L/min vs 5.9 ± 1.7 L/min, $P < 0.05$), (Table 1).

Table 1: Hemodynamic variables of patients

	T1	T2	T3	T4
SVV, %	8±2*	11±6+	19±8ε	11±5
CO, L/min	5.5±1.7*	4.18±0.8#	4.17±0.9ε	5.9±1.7
SVR, dyn.sn.cm ⁻⁵	-	1525±215	1080±160	1108±291

T1: Before ind. T2: After ind, T3: Neocord imp, T4: End of surgery, *T1 compared to T3, $p < 0.05$, +T2, compared to T3, $p < 0.05$, #T2 compared to T4, $p < 0.05$, εT3, compared to T4, $p < 0.05$, SVV: Stroke volum variance, SVV: Stroke volum variance, CO: cardiac output, SVR: Systemic vascular resistans

Conclusion: In our study, close hemodynamic monitoring and goal directed therapy, replacement of blood loss in a short time are factors that increases the success of the prosedure. Measured cardiac output values after placement of the neochords increased as an indication of early hemodynamic improvement.

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Key words: mitral valve prolapsus, chorda tendinea, cardiac output

OP-74**THE EFFECT OF DIFFERENT VENTILATION STRATEGIES ON LUNG MECHANICS IN THE PATIENTS WITH ONE LUNG VENTILATION**

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Background and Goal of Study: We compared the effect of different tidal volume (VT) applications on lung mechanics during one lung ventilation.

Materials and Methods: Patients scheduled for elective Video-Assisted Thoracoscopic Surgery, ASA I-II, age between 18-65 years (n=46) were included in this study. Patients divided into 3 groups by computerized randomization method. All the patients were intubated with double lumen tube and confirmed by fiberoptic bronchoscopy. During double lung ventilation, all patients were ventilated as VT 6-8 ml/kg, FiO₂ %21-70, PEEP 5 mmHg, and frequency 10/min. During one lung ventilation patients were ventilated as follows;

Grup I: FiO₂ %21-70, VT 8 ml/kg, frequency 10/min, PEEP 5 mmHg

Grup II: FiO₂ %21-70, VT 6 ml/kg, PEEP 5 mmHg, frequency set to be PaCO₂ 35-45 mmHg

Grup III: FiO₂: %21-70, VT 4 ml/kg, PEEP 5 mmHg, frequency set to be PaCO₂ 35-45 mmHg.

Arterial blood gas values were obtained at certain periods. Hemodynamic data (HR, MAP, SpO₂), respiratory pressures (Ppeak, Pplateau, PEEP), arterial blood gas values (PaO₂, PaCO₂, pH, BE) and FiO₂, minute volume, EtCO₂, frequency were recorded. Patients were followed up daily until they were discharged in terms of intensive care need/duration, postoperative complications, discharge time and 28 days mortality.

Results: There was no statistically significant difference in arterial oxygenation between the groups as the primary outcome of our study. Although PaCO₂ values of entry and the onset of one lung ventilation were significantly higher in the Group II than the other groups, however they were clinically acceptable values (35-45 mmHg). There were no significant differences between the groups in terms of postoperative oxygenation, the length of stay intensive care unit, discharge time, postoperative complications and 28 days mortality.

Conclusions: In video assisted thoracoscopic surgery, 4 ml/kg, 6 ml/kg and 8 ml/kg tidal volume applications have similar effects on hemodynamics and pulmonary mechanics provided that the appropriate minute volume is maintained and double lumen tube's location is confirmed with FOB during one lung ventilation. They have not negative effects on hospital stay, intensive care need, mortality and postoperative complication so they can be used safely during one lung ventilation.

OP-75**THE RELATIONSHIP OF PDW AND POSTOPERATIVE OUTCOME IN
TYPE A AORTIC DISSECTION**

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Goal Of Study: Acute aortic dissection (AAD) is a life-threatening emergency situation associated with high rates of morbidity and mortality. AAD may provoke acute aortic injury that causes systemic inflammatory reaction. Mean platelet volume (MPV) and platelet distribution width (PDW) are morphometric indices of size distribution and variability of platelets and were enrolled as decision making in SIRS in recent years. However, the relationship between MPV or PDW and Type A Acute Aortic Dissection has not been comprehensively studied. We aimed to explore the associations between MPV or PDW and surgical modalities, perioperative blood transfusions, postoperative organ dysfunction in intensive care and hospital stay times and mortality in patients with AAD in this report.

Materials And Methods: This retrospective study was performed in Cardiovascular Surgical and Intensive Care Unit of Turkey Yüksek İhtisas Education and Research Hospital. The records of AAD patients who underwent surgical treatment between 2016 January and 2017 April were reviewed. Thirty-seven patients met inclusion criteria.

Clinical variables included the baseline characteristics such as age, gender, the timing of the surgery (emergency/elective). MPV, PDW values at the time of hospital admission, operation, perfusion, cross-clamp, selective cerebral perfusion times were collected.

Results And Discussion: We evaluated relationship between PDW and demographic properties, duration of selective cerebral perfusion, CPB perfusion time, prolonged mechanical ventilation, perioperative mortality, length of ICU stay and outcomes of the patients. There were statistical difference between PDW and CPB perfusion time, prolonged mechanical ventilation, perioperative mortality, length of ICU stay only in the on-pump time and the mechanical ventilation time variables ($p < 0.05$).

Conclusion: PDW is an important inflammatory marker and preoperative high PDW values may have significant relationship with prolonged ventilation time and length of stay in ICU in aortic dissection patients.

Key words: aortic dissection, mortality, hospital stay, intensive care

OP-76**ALLOGENEIC BLOOD TRANSFUSIONS IN TRAUMATIC VERTEBRAL FRACTURE SURGERY**

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Background and Goal of Study: Intraoperative blood loss is one of the most important problems in traumatic vertebral surgery (TVS) and usually allogenic blood transfusion is needed. In this study, we aimed to determine the factors that affect intraoperative allogeneic blood transfusions (IOABT) and the effects of IOABT on the short-term postoperative outcome.

Materials and Methods: In this retrospective study 203 patients that underwent TVS between 2011-2015 were determined and 58 with missing data were excluded. The effects of pre and intraoperative variables on the incidence of IOABTs and the relation of IOABT and postoperative mechanical ventilation times, length of ICU stay and discharge times were evaluated. Statistical tests were performed using SPSS version 22. Descriptive statistics were presented as mean±SD, number (percentage) and median(range). Categorical variables were determined with Fisher's exact test or Pearson's chi-squared test. Shapiro-Wilks or Kolmogorov-Sömironov Tests were used for normality. Independent samples T-test and Mann-Whitney U test was used to compare categorical variables. The one-way analysis of variance (ANOVA) and Bonferroni test were used to determine differences between the means of two or more independent groups. Wilcoxon Signed-Rank Test was used to compare pre and post-op hemoglobin differences.

Results and Discussion: 145 patients were evaluated. There was no significant difference between IOABT+ (n=25) and IOAB- (n=120) patients regarding gender, 49 (%33,8) woman and 96 (%66,2) male (p=0,471). Preoperative hemoglobin levels were 12,25 ±SD 1,78 g/dl ve 12,97 SD±1,84 g/dL respectively (p=0,076). IOABT+ patients had significantly long operation times (p < 0,022). The number of vertebral levels operated and (p= 0,435) osteotomies performed (p=0.068) were not different between groups. IOABT+ group had significantly longer (14 vs 9 days, (p<0.001) discharge times while, MV times (p=0.555) and ICU stay (p=0.624) were not significantly different between groups.

Conclusion(s): Allogenic blood transfusion may be an independent risk factor for a longer hospital stay that is not related to preoperative hemoglobin levels and the invasivity of the operation. Strategies to prevent blood loss and blood transfusions may result in decreased costs.

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Key Words: Transfusion, Complications, Spinal cord, Vertebral interspace

OP-77**PROGNOSTIC PERFORMANCE OF THE SYNTAX SCORE IN THE OCTOGENERIAN UNDERGOING CORONARY ANGIOGRAPHY**

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Background and Goal of Study: The mean age of patients presenting with coronary artery disease (CAD) and acute coronary syndrome (ACS) has been increasing, so managing very old patients has become common practice. Even though older patients have a higher prevalence of ACS, data regarding elderly is scarce. SYNTAX (Synergy between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery) score quantifies coronary lesions with respect to their location and anatomical complexity. The identification of factors related to poor prognosis of this fragile population presenting with CAD/ACS is of importance. We aimed to evaluate the prognostic performance of the SYNTAX score and other potential markers in a population of patients aged 80 years or more undergoing coronary angiography.

Materials and Methods: We performed a retrospective, single-centre (Gaziantep University, Department of Cardiology) prognostic study including patients aged 80 years or more who underwent coronary angiography for elective or ACS in 2017. Follow up clinical data included all causes of mortality. The calculated SYNTAX scores and also presumed potential prognostic markers such as glomerular filtration rate, uric acid level, hemoglobin level and left ventricular ejection fraction were compared between survivors and patients who died at follow up.

Results and Discussion: In total, 36 patients were included (19 men), average age 82.6 ± 2.3 years. 8 (%22) patients died at follow up. Average SYNTAX score was $20,4 \pm 13,9$ (Table 1).

Table 1 Characteristics of Study Population

Variable	All (N=36)
Age (years)	82.6 ± 2.3
Men/women, n(%)	19/17 (52.8/47.2)
Diabetes Mellitus, n(%)	9 (25)
Hypertension, n(%)	22 (61)
SYNTAX score	20.4 ± 13.9
Left Ventricular Ejection Fraction, (%)	44.4 ± 12.4
Diagnosis	
STEMI, n(%)	5 (13.9)
NSTEMI, n(%)	14 (38.9)
UAP, n(%)	11 (30.6)
Non-ACS, n(%)	6 (16.7)
GFR (ml/dk/1.73m ²)	70.9 ± 25.2
Uric acid (mg/dL)	6.9 ± 1.9
Hemoglobin, (g/dL)	12.5 ± 1.8
ALT (U/L)	21.3 ± 13.6
LDL (mg/dL)	117.1 ± 29.5

GFR, glomerular filtration rate as calculated by Modification of Diet in Renal Disease formula; UAP, unstable angina pectoris; NSTEMI, non-ST segment elevation myocardial infarction; STEMI, ST

segment elevation myocardial infarction; Non-ACS, Non acute coronary syndrome; ALT, alanin aminotransferase; LDL, low density lipoprotein.

Patients who died had a higher SYNTAX score compared to survivors (32.7 ± 12.0 vs 16.9 ± 12.4 , $p=0.007$, respectively). The other searched parameters did not show statistically significant difference (Table 2). In literature, a high SYNTAX score has been shown to be a reliable marker of poor prognosis in elderly presenting with CAD/ACS.

Table 2 Comparison of patients who died and survived at follow up

	Died (n=8)	Survived (n=28)	p
Age (years)	84.2 ± 2.6	82.1 ± 2.0	0.06
Sex			
Male [n (%)]	4 (50)	15 (53.5)	1
Female [n (%)]	4 (50)	13 (46.5)	
SYNTAX score	32.7 ± 12.0	16.9 ± 12.4	0.007
LVEF (%)	38.5 ± 11.8	46.0 ± 12.3	0.172
GFR (ml/dk/1.73m ²)	69.3 ± 29.3	71.3 ± 24.5	0.863
Uric acid (mg/dL)	7.6 ± 1.9	6.8 ± 2.0	0.415
Hemoglobin (g/dL)	12.1 ± 0.9	12.6 ± 1.9	0.361
LDL (mg/dL)	109.5 ± 26.9	119.0 ± 30.3	0.47
Diabetes Mellitus			
Yes [n (%)]	5 (62.5)	4 (14.3)	
No [n (%)]	3 (47.5)	24 (85.7)	0.013
Hypertension			
Yes [n (%)]	6 (75)	16 (57.1)	
No [n (%)]	2 (25)	12 (52.9)	0.431
Diagnosis			
STEMI, [n (%)]	3 (37.5)	2 (7.1)	
NSTEMI, [n (%)]	3 (37.5)	11 (39.3)	0.114
UAP, [n (%)]	2 (25)	9 (32.1)	
Non-ACS [n (%)]	0 (0)	6 (21.4)	

LVEF, left ventricular ejection fraction; GFR, glomerular filtration rate as calculated by Modification of Diet in Renal Disease formula; LDL, low density lipoprotein; UAP, unstable angina pectoris; NSTEMI, non-ST segment elevation myocardial infarction; STEMI, ST segment elevation myocardial infarction; Non-ACS, Non acute coronary syndrome;

Conclusion: High SYNTAX score seems to be an indicator of poor prognosis in very elderly patients with CAD/ACS.

OP-78**EVALUATION OF GRANISETRON'S EFFECT ON SPINAL ANESTHESIA-INDUCED HYPOTENSION USED FOR NAUSEA AND VOMITING**

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Background: This study assesses the effect of intravenous granisetron, commonly used as an antiemetic, on spinal anesthesia-induced hypotension and bradycardia.

Materials and Methods: Our study including 120 ASA physical status I-II patients scheduled for elective surgery under spinal anesthesia was performed following the ethics committee approval with the number of 39/03. Patients were randomly assigned to two groups as Group G (granisetron; n=60) and Group P (plasebo; n=60). Five minutes before spinal anesthesia, Group G received 1 mg intravenous granisetron diluted in 10 ml of isotonic sodium chloride solution and Group P received 10 ml of isotonic sodium chloride solution. Spinal anesthesia with hyperbaric bupivacaine 0.5%, 15 mg at the level of L4-5 was applied for both groups. Hemodynamic, sensory and motor block parameters were recorded before and after spinal anaesthesia every 5 minutes during 20 minutes of surgery.

Results and Discussions: There was no difference in the demographic data of both groups. Although hemodynamic data showed a decrease in both groups according to initial values, blood pressure measurements in group G were significantly higher than the first measure values. There was no significant difference in heart rate values between the groups.

Conclusion: Granisetron reduces hypotension after spinal anesthesia, but there is no significant effect on heart rate.

Table 1. Mean blood pressure measurements by follow-up times.

Follow-up times	Control (n=60)	Granisetron (n=60)	p-value †
0.min	98,33±11,54	97,75±11,59	0,783
5.min	90,85±11,77	92,30±12,39	0,512
10.min	88,55±13,04	90,55±11,29	0,371
15.min	81,92±11,73	91,27±12,82	<0,001
20.min	80,73±10,21	89,77±11,39	<0,001
p-value ‡	<0,001	<0,001	

Table 2. systolic blood pressure measurements by time.

Follow-up times	Control (n=60)	Granisetron (n=60)	p-value †
0.min	134,32±12,90	134,45±15,59	0,959
5.min	125,27±14,75	127,50±15,80	0,425
10.min	121,73±13,93	125,25±14,39	0,176
15.min	111,12±13,48	124,90±15,60	<0,001
20.min	108,25±12,62	124,08±14,39	<0,001
p-value ‡	<0,001	<0,001	

Table 3. heart rate measurements by time.

Follow-up times	Control (n=60)	Granisetron (n=60)	p-value †
0.min	77,63±15,56 ^a	77,57±15,59	0,981
5.min	75,47±16,66	78,10±14,21	0,353
10.min	73,08±15,51	77,98±13,01	0,063
15.min	71,95±14,00	75,38±13,38	0,172
20.min	70,73±13,69	73,32±12,66	0,285
p-value‡	<0,001	<0,001	

OP-79**COMPARISON OF THE EFFECTS OF ACETAMINOPHEN AND IBUPROFEN ON POSTOPERATIVE ANALGESIA IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY**

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Background and Goal of Study: Effective postoperative analgesic treatment is an essential in anesthesia practice. Paracetamol and NSAIDs are frequent constituents of multimodal analgesia (1,2). The aim of our study is to compare the postoperative analgesic effects of intravenous(iv) paracetamol and ibuprofen in repeated doses during the perioperative and postoperative period of laparoscopic cholecystectomy.

Materials and Methods: After ethical committee approval and informed consents, 40 patients with ASA I to III were randomized into Group-P and Group-IB using the sealed envelope method. Under routine monitorization 2-2.5 mg/kg of propofol, 2 mcg/kg of fentanyl and 0.6mg/kg of rocuronium were applied for induction, and %1.5 sevoflurane and 0.2-0.5 mcg/kg/min of remifentanyl for maintenance. Upon initiation of surgery Group-P patients received 1 gr of paracetamol iv while Group-IB patients received 800 mg of ibuprofen in 200 ml of saline, both as 30 minute infusions. At skin closure 1,5 mg/kg of tramadol and 0.1 mg/kg of ondansetron were given intravenously. For postoperative analgesia; patient controlled analgesia (PCA) pump was programmed for 15 mg bolus and 15 min lock-out periods of tramadol. In the first 24 hours postoperatively Group-P patients received 1gr of paracetamol and Group-IB patients received 400mg of ibuprofen iv q6h. Postoperative VAS, HR, MAP, N/V, pruritus, headache and urinary retention were recorded after awakening in the OR, postoperative 30th minute, at 6th, 12th and 24th hours postoperatively. Patients with VAS \geq 3 received 20mg iv meperidine as additional analgesia. Groups were compared for PCA demand, total tramadol dose, additional analgesic requirement and amount. Continuous variables were compared using Student t-test and Mann-Whitney U test when the data were not normally distributed. A p-value <0.05 was considered as significant.

Results and Discussion: HR, MAP and SpO₂ trends and postoperative side effect profiles were similar at all intervals. In our study ibuprofen resulted in a decrease in pain scores and additional analgesic requirement (Table I). Gago Martinez A. et al in their study on patients undergoing abdominal surgery, and Singla N et al in their study on patients undergoing orthopedic surgery reported a decrease in postoperative morphine use and pain scores with perioperative use of iv ibuprofen repeated every 6 hours (2,3).

Table I: Comparison of postoperative rescue analgesic and PCA usage data

Variables	Grup P(n=20)	Grup IB(n=20)	p
Rescueanalgesic at PACU	14(%70)	5(%25)	0.010
Rescueanalgesic in service (6,12 and 24 Hours)	5(%25)	0(%0)	0.047
Rescueanalgesic total	15(%75)	5(%25)	0.002
PCA demand	21.05 \pm 28.15	16.85 \pm 12.78	0.718
PCA supply	9.70 \pm 6.13	9.15 \pm 5.71	0.799
Total Amount of Tramadol(mg)	144 \pm 93.91	136 \pm 83.61	0.820

Conclusions: When compared to paracetamol, ibuprofen substantially decreases pain scores as well as additional analgesic requirement within postoperative 6 hour.

Keywords: ibuprofen; postoperative analgesia; laparoscopic cholecystectomy

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OP-80**THE EFFECT OF INTRAOPERATIVE BODY TEMPERATURE MANAGEMENT ON THE POSTOPERATIVE PEAK EXPIRATORY FLOW RATE (PEFR) AND CRITICAL RESPIRATORY EVENTS**

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Background and Goal of Study: Hypothermia is a common problem, but it can be avoided. Anesthesia can affect respiratory functions multifactorially.

We aimed to analyze the effect of intraoperative body temperature management on postoperative respiratory complications and postoperative PEFR.

Materials and Methods: 90 patients who are ASA I- III, aged between 18-60 years old with a minimum of 90 minutes operation time under general anesthesia.

Patients with and without hypothermia were compared in terms of parameters; PEFR and body temperature of measured preoperatively, 1 hour, 6 hours, 24 hours postoperatively.

Results and Discussion: 21 (23.3%) of the patients had hypothermia. In comparisons between groups: Group I (Normothermic patients)/ Group II (hypothermic patients) there was no difference in terms of sex, age, height, weight, BMI, ASA and additional disease ($p>0.05$). It was found that there was no difference ($p>0.05$) in terms of operation time, duration of anesthesia, respiratory rate, vomiting, additional complications, duration of discharge from recovery room to clinical service and duration of discharge from hospital ($p>0.05$); there was a significant difference in terms of critical respiratory event and nausea ($p<0.05$). There was no difference ($p>0.05$) between the groups in terms of predicted, preop, postoperative 6th and 24th hour PEFR values and it was found that there was a significant difference in postoperative 1 hour values ($p<0.05$). There was a difference between postoperative 1st hour PEFR/ preop PEFR, postoperative 6th hour PEFR / preop PEFR and postoperative 24th hour PEFR / preop PEFR ratios ($p<0.05$). It was found that there was a significant difference in terms of SpO₂ values measured in recovery room at 15th and 30th minutes ($p<0.05$). SpO₂ values of Group I patients were also found higher.

Conclusion: Mild hypothermia, even in small surgical procedures, may increase development of critical respiratory event by reducing PEFR and delaying the awaking. Monitorizing the temperature and using heating methods can reduce the incidence of hypothermia and the respiratory adverse events.

Key words: peak expiratory flow rate (PEFR), hypothermia, critical respiratory event, laryngeal mask

OP-81**WHICH ANESTHETIC AGENT IS PROTECTIVE FOR HYPERTENSION AFTER REPAIR OF COARCTATION: SEVOFLURANE OR DESFLURANE**Bahar Oc¹, Oguzhan Arun¹, Ates Duman¹, Mehmet Oc²

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Background and Goal of Study: Hypertension is a major determinant of mortality after repair of coarctation of the aorta (AoC) and may be present in up to 75% of patients by childhood. Various potential mechanisms include local vascular bed pathology, local and systemic hemodynamic changes, altered geometric shape of the aortic arch and impaired mechanoreceptor sensitivity. Volatile anesthetics have a better profile (cardioprotective and neuroprotective) than nonvolatile anesthesia. We aimed to investigate the effect of sevoflurane and desflurane anesthesia on hypertension after surgical repair of AoC.

Material and Methods: With Ethics Committee approval, anaesthetic and CICU records of all children who underwent repair of AoC operation between 2010 and 2018 were analysed retrospectively. Anesthesia was standard with pentothal sodium (5 mg/kg), midazolam (0.3 mg/kg), fentanyl (5 mcg/kg) and rocuronium (1 mg/kg). Invasive blood pressure and central venous cannulation was performed. The children were ventilated with standard pressure control mode of ventilation using air oxygen 50-50%, with the inspiratory pressure set at 25cm H₂O and rate at 25-30 breaths per minute. Anesthesia was maintained with sevoflurane 2-3% (Group S, n=29) or desflurane 5-6% (Group D, n=22), fentanyl, midazolam and rocuronium. In the CICU standard mechanical ventilation support was reinstalled. The intraoperative (at after AoC repair, 5th, 15th, 30th min and end of operation) postoperative (arrive in CICU, 1st, 2nd, 6th, 12th, 18th, 24th, 30th, 36th, 42nd, 48th hours) variables: cardiac parameters (heart rate-HR, blood pressure-BP, CVP, SpO₂), drugs used, all complications and unstable postoperative respiratory course (UPRC), extubation and CICU discharge time were collected. Data were tabulated and analysed using SPSS version 15.

Results and Discussion: Fifty-one of the children (1-48 months) received repair of AoC operation. Demographic data were similar between the groups. There was no difference between the groups regarding intraoperative variables. Postoperative BP and heart rate at 18th, 24th, 30th and 36th hours were higher in group D than group S (p<0.05). Postoperative other parameters, UPRC, extubation and CICU discharge time were similar between the groups (p>0.05).

Conclusion: The volatile anesthetic choice may have impact on postoperative outcomes of children hypertension after undergoing surgical repair of AoC. Sevoflurane seems to be more effective than desflurane in reducing on postoperative blood pressure.

OP-82

ACCIDENTAL INTRA-ARTERIAL INJECTION OF ROCURONIUM BROMIDE

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Background-Aim: Accidental intra-arterial injection of drugs, may cause considerable morbidities.

The aim of this report is to underline the possible consequences of an inadvertent intra-arterial injection of drugs in a child undergoing congenital cardiac surgery.

Case: A 3-month-old, 4000 gr girl with complex single ventricle anatomy admitted to operation room with a pre-fontan bridge palliation plan.

Anesthesia induction was performed using 8% sevoflurane inhalation. Due to unsuccessful peripheral vein catheterization, central venous access via right femoral vein was performed and rocuronium bromide was administered. After intubating trachea, left femoral artery catheterization was performed and monitored. Arterial tension was 39/22 mmHg initially. Ephedrine was administered and arterial tension values gradually increased to 55/32 mmHg. After improving systemic arterial hypotension, pulsatile backflow through the right femoral catheter was observed revealing the possible inadvertent arterial catheterization. There was no sign of detrimental circulation (cold extremity, color changes etc).

The catheter was withdrawn, local external compression was performed and the right leg of the patient was draped with warm soft bandages, sympathetic blockade was performed. Circulation of the patient's right leg was closely monitored during the surgery. The patient was transferred to the intensive care unit for close observation and mechanical ventilation. The patient was discharged to service after two days without any complications.

Discussion: Anesthesiologists are occasionally confronted with difficult iv access especially in children. Landmark technique, hemodynamic instability and low hemoglobin saturation levels are the risk factors for inadvertent arterial catheterisation. Although guidance of ultrasonography reduces the risk of inadvertent arterial catheterizations, femoral catheterization is usually employed using visual and palpable landmarks especially in children (age ≤ 1) due to technical incapacities. Several anesthetic drugs have been injected intraarterially by accident and many serious morbidities are well described. The clinical picture depends on the drug properties and ranges from simple rashes to gangrene. In our patient due to inadvertent arterial catheterisation rocuronium bromide was delivered via femoral artery and none of these possible complications had occurred.

Conclusion: Correct placement of central lines should be clearly ascertained before the catheter is used for medical treatment even for an emergency procedure.

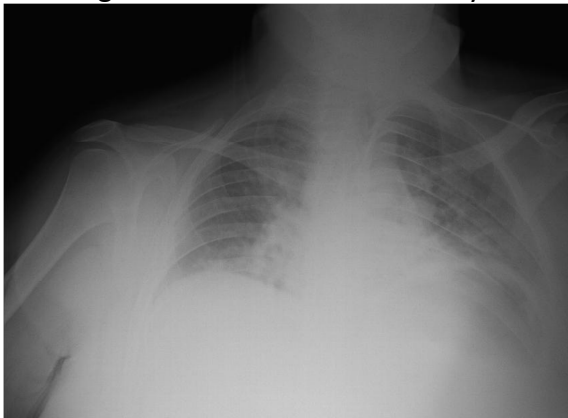
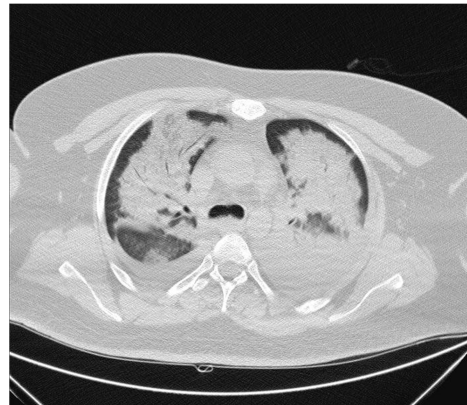
OP-83**HEMOPHILIA A INDUCED DIFFUSE ALVEOLAR HEMORRHAGE**

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Background: Hemophilia A is a rare X chromosome linked bleeding disorder due to Factor VIII deficiency. Diffuse alveolar hemorrhage is a mortal complication that usually occurs due to connective tissue disease or small vessel vasculitis. Uncommonly it may also be caused by coagulation disorders. In this report we aim to present a case with diffuse alveolar hemorrhage (DAH) induced by Hemophilia A.

Case Report: Thirty three years old male patient who had been diagnosed as Hemophilia A at 8 years old, was admitted to the emergency department with a complaint of melena. Patient was scheduled for endoscopic evaluation. Meantime he developed respiratory distress. In physical examination his blood pressure was 128/72 mmHg, heart rate was 112/min and SpO₂ was 80%. Chest radiography reveals perihilar infiltration (Fig 1). Hypoxia and hypocapnia was detected in arterial blood gas evaluation. Patient was admitted to the intensive care unit (ICU). Respiratory distress got worse and patient was intubated with suspected pulmonary embolism or pulmonary hemorrhage. Mechanical ventilation support was maintained with PRVC mode. Methylprednisolone and bronchodilator treatment was started. Diffuse pulmonary hemorrhage was detected in thoracic tomography (Fig 2). Three – days Factor VIII (2000U) replacement therapy and desmopressin 0.3 mg/kg treatment was initiated at 4 th day in ICU. Sedation was achieved with 4 mg/hr midazolam. After 3 days, mechanical ventilation mode was changed to CPAP (FiO₂:40%). At 8 th day in ICU patient was extubated and non invasive mechanical ventilation was continued. Patient was discharged from the ICU at 14 th day.

**Fig.1.** Anteroposterior Chest X-ray**Fig 2.** Pulmonary CT Scan

Discussion: DAH can appear as a result of an autoimmune disorder or a pulmonary infection. Diagnosis is commonly based on tomography, restrictive pattern of the pulmonary function test and bronchoscopy (2). DAH had been reported as a rare clinical complication of Hemophilia A. Prognosis varies due to the underlying clinical reason. In our case, clinical statement had been extremely recovered with factor replacement. Desmopressine, steroid and bronchodilator therapy as well as mechanical ventilation support is also recommended for the treatment.

Conclusion: Although DAH is an uncommon complication of Hemophilia A, it should be recognized and managed carefully.

OP-84

LOSS OF CONSCIOUSNESS ETHIOLOGY AFTER CEREBRAL ANEURYSM EMBOLISM: NON-CONVULSIVE EPILEPTIC SEIZURE

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Introduction: Increase in the follow-up of patients with cerebral aneurysm with or without hemorrhage emphasizes development in interventional radiology clinics. Close hemodynamic monitoring and neurological follow-up of the patients are among the primary tasks of intensive care units. In this case, the etiologic investigation of the patient with prolonged consciousness after the procedure and the interesting diagnosis are presented.

Case: A sixty-six-year-old female patient was admitted to Emergency Department of our hospital with the complaint of severe head-ache. After the first examination she was consulted with the Neurology Department. Seeing the normal brain CT, brain MR angiography revealed ACA and right MCA aneurysms. So that she was directed to Neurosurgery and Interventional Radiology Clinics on the same day. According to the council decision she underwent successful endovascular coil embolization with stent remodeling to ACA and MCA aneurysms. The procedure was performed under general anesthesia and patient was taken to Intensive Care Unit after extubation. On the admission to ICU, the overall situation was moderate and she was conscious. Anti-edema, anticoagulant, anti-epileptic treatment (Levetiracetam 2X500mg, iv) were applied. Fluid and electrolyte treatment was regulated. With the regression in right arm and leg motor functions, diffusion MR was requested for the patient. MR comment and control angiography showed normal results. On the third day of follow-up, neurology consultation and EEG were requested to the patient who had increased tendency to sleep. In the EEG report, "epileptiform character with common slow wave paroxysms" was noted. It was considered that the condition causing the patient's symptoms was associated with "non-convulsive epileptic seizures". Levetiracetamol dose was increased (2X1000mg). Two days later, all negative neurological findings were regressed and the patient was transferred to the ward.

Conclusion: We conclude that it would be appropriate to think about "non-convulsive epileptic seizure" and prove it with EEG, to the aneurysm patients whom are successfully treated but with the unexplained consciousness.

OP-85**ASSESSMENT OF THE EFFECT OF TOPICAL CHLORHEXIDINE-BENZYDAMINE ADMINISTRATION PRIOR TO LARYNGEAL MASK AIRWAY USE; A RANDOMISED CONTROLLED TRIAL**Savas Altinsoy, Gulden Utebey, Julide Ergil

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Background: Laryngeal mask airway (LMA) use is very common during anesthesia practice. In the absence of laryngoscopy and laryngeal/tracheal stimulation (e.g. endotracheal intubation), an increased hemodynamic response is not expected in patients. Sore throats, ear aches, hoarseness and swallowing difficulties may occur on LMA insertion. The aim of this study was to describe the effects of topical application of a spray formula of chlorhexidine gluconate and benzydamine hydrochloride on hemodynamic responses and post-operative sore throat, ear ache, swallowing difficulty, nausea and vomiting.

Materials and Methods: This randomized, placebo-controlled, single-centre, double-blinded study was done 100 patients who were scheduled for urological surgery. In Group C, four puffs of chlorobenzene were applied to the nasopharyngeal area 15 min before surgery. The patients swallowed after each puff. In Group S, 0.9% saline was applied, using the same protocol.

Results and Discussion: When both groups were compared, more patients in Group S had coughs, sore throats and swallowing difficulties 1th h after surgery ($p < 0.05$), but there was no statistically significant difference in 6th, 12th, and 24th h between the two groups ($p > 0.05$). The incidence of nausea, vomiting and ear aches was similar in both groups at all measurement times ($p > 0.05$).

Conclusion: Pre-emptive topical benzydamine hydrochloride and chlorhexidine gluconate in a spray formula may decrease the incidence of sore throats, cough and swallowing difficulties associated with LMA use.

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OP-86

TRACHEAL RUPTURE AFTER INTUBATION AND ITS SURGICAL REPAIR: A CASE REPORT

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Background and Aim of Study: In spite of all precautions, intubation can result in tracheal ruptures. It can be caused by many reasons ranging from iatrogenic ones to violence. In this case report, we aimed to convey our experience in our patient with tracheal rupture.

Case Presentation: A 58-years woman underwent surgery for a hernia of the lumbar disc. Approximately one hour after being extubated she presented with breathing difficulties and subcutaneous emphysema in her face. A thoracic specialist carried out a bronchoscopy revealing a 5cm laceration along the membrano-cartilaginous side located 5cm from the carina and 6cm from the vocal cords. Surgical decision was made for tracheal injury. The trachea was reached by means of a thoracotomy and the injury was then repaired. Painkillers were administered after the operation in the form of a Pec-1 block while an ESP block was applied at the thoracic 4-5 level on the right-hand side. Sugammadex was administered for recurarization. Once the patient began breathing on her own she was extubated and moved to ICU for monitoring and further treatment.

Discussion: Tracheobronchial rupture is the term given to injuries that occur in the bronchi and the trachea where the main bronchi branches into the lobar bronchi. Respiratory distress is typically seen in the physical examination. In our case, tracheal rupture was suspected due to subcutaneous emphysema and respiratory distress. The predisposing factors in our patient were old age, female gender and the use of stylet in intubation. We performed peripheral nerve block postoperatively because it does not cause respiratory depression and has a long-lasting effect. The patient was sent to ICU after surgery for monitoring and further treatment.

Conclusion: Tracheal rupture is a rare complication, but it can be fatal in a short time if it is not diagnosed at an early stage. For this reason, even if the case is urgent, we need to consider the predisposing factors for the patient and take precautions.

OP-87**INTUBATING CONDITIONS WITH ARTICULATING VS. INTUBATING STYLET DURING VIDEOLARYNGOSCOPE INTUBATION IN ANTICIPATED DIFFICULT AIRWAY PATIENTS**

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Background and Goal of Study: This study evaluates the intubation conditions and length of intubation duration of a conventional stylet and an articulating stylet during videolaryngoscopy in anticipated difficult intubations.

Materials and Methods: Fourty nine patients with 18-65 years of age, assigned for elective surgery with anticipated difficult intubation were randomized to intubation either a articulating stylet (Group AS, n=25) or intubating stylet (Group IS, n=24) during videolaryngoscopy. Anesthesia induction was managed with fentanyl 1 mcg/kg, propofol 2 mg/kg, and muscle relaxation was fascilitaed rocuronuim 0.6 mg/kg after assessment of mask ventilation. In all patients the same videolaryngoscope and angulated blade was used. ADA scores, tyromental distances (cm), maximum mouth opening, existance of buck-teeth, cervical spine range of motion, Mallampati scores, time to intubation (TTI), number of attempt were recorded. Mean arterial pressure (MAP), heart rate (HR), SpO₂, were recorded before anesthesia induction (T0), 1 minute after induction (T1), before attempt of intubation (T2), 1 min after intubation (T3).

Results and Discussion: The mean time TTI was significantly shorter in the AS group than in the IS group (51.8 ± 26.2 s vs 112.8 ± 84.7 s). Successfull intubation performance (per cent) in first attempt in AS group was 60% and 16% in IS group. It is not necessary to use a stylet for easy laryngoscopy but in difficult laryngoscopy settings, some previous studies recommended to angulate stylets before intubation with especially angulated blades such as C-Mac D blades [1,2]. Therefore, shaping the stylet according to the blade during intubation attempt, and reshaping it during advance to trachea may fascilitate intubation.

Conclusion: During intubation with highly angulated videolaryngoscopes in patients with anticipated difficult intubation, the use of articulating stylets which provide this angulation simultaneously, might fascilitate intubation.

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OP-88**COMPARISON OF THE MCGRATH VIDEO LARYNGOSCOPE AND MACINTOSH DIRECT LARYNGOSCOPE IN OBSTETRIC PATIENTS AND REVIEW OF THE LITERATURE:
A RANDOMIZED CONTROLLED TRIAL**

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Background & Goal of The Study: Airway difficulties are eight times more common in obstetric patients when compared to the general population. Although a better awareness of obstetric airway difficulties has been gained, a recent survey showed that the difficult intubation incidences and subsequent complications have not declined over time. Our aim was to compare the McGrath video laryngoscope (VL) and the Macintosh direct laryngoscope (DL) according to the intubation time and glottis visualization in patients undergoing cesarean sections. The secondary aim was to determine if there were any significant vital sign differences between the VL and DL with respect to the mean arterial pressure and heart rate.

Materials & Methods: Patients undergoing cesarean sections under general anesthesia over a period of 1 year were included in this research. This study had a prospective design, and the patients were randomized using a sealed envelope technique into 2 groups using either the Macintosh DL or the McGrath VL. During intubation, the times to obtaining a glottis view, tracheal tube placement, and confirming tracheal intubation as confirmed by CO₂ waveform observation were recorded. The mean arterial pressures and heart rates before intubation and after intubation were also recorded.

Results & Discussion: Of the 100 patients, there were no significant differences in the demographic data and airway evaluations between the two groups (Table 1). The VL group exhibited better glottis views at the time of tracheal intubation as assessed using the Cormack-Lehane and POGO scores (Table 2). The VL significantly reduced the times required to obtain the glottis view, place the tracheal tube, and confirm the correct placement when compared to the standard DL (Table 3). The baseline MAP and baseline HR were similar between the 2 study groups. The MAP and mean HR value following the tracheal tube insertion was higher in the DL group when compared to the VL group. In addition, the intragroup comparisons of the MAP and HR revealed significant increases after intubation (Table 4).

Conclusion: In conclusion, the use of the McGrath VL for tracheal intubation in obstetric patients improved the larynx visualization. Moreover, the McGrath VL significantly reduced the intubation time when compared to the standard DL, which is critical for a newborn baby.

Key words: Video laryngoscopy; Mc Grath; Direct Laryngoscopy; cesarean section; general anesthesia

Table 1. Demographic data and airway evaluation parameters.

	DL N=50	VL N=50	P
Age	28.2±5.2	28.2±6.9	0.65*
Weight (kg)	81.1±6.9	80.3±7.6	0.59 [#]
Height (cm)	165.9±6.1	165.6±5.8	0.81 [#]
BMI	29.6±2.2	29.3±2.5	0.45 [#]
ASA (I/II)	27/23	28/22	
Mallampati	1.86±0.4	1.98±0.6	0.21 [#]
Mallampati (I/II/III)	8/41/1	8/35/7	
Thyromental distance (cm)	6.3±0.3	6.4±0.4	0.35 [#]
Neck circumference (cm)	39.6±4.1	40.1±3.5	0.47 [#]

Results are expressed as the mean±standard deviation or as the number of patients.
DL: direct laryngoscope, VL: video laryngoscope, BMI: body mass index, ASA: American Society of Anesthesiologists
*Mann-Whitney U test
[#]Independent t test

Table 2. Glottic view assessment

	DL N=50	VL N=50	P
Cormack-Lehane grade			
N (I/II/III/IV)	3/34/9/4	16/32/2/0	0.003 [#]
% (I/II/III/IV)	6/68/18/8	32/64/4/0	
POGO (%)	89.1±5.1	93.4±2.9	<0.001*

Results are expressed as the mean±standard deviation or as the number of patients and %.
DL: direct laryngoscope, VL: video laryngoscope, POGO: percentage of glottic opening
*Mann-Whitney U test
[#]Independent t test

Table 3. Times following the initial insertion of the laryngoscope blade

	DL N=50	VL N=50	P[#]
To obtain glottic view (s)	19.5±3.9	17.7±4.4	0.028
To tracheal tube placement (s)	32.6±4.7	29.8±5.1	0.007
To confirm with CO₂ waveform (s)	40.1±5.4	34.7±5.2	<0.001

Results are expressed as the mean±standard deviation or as the number of patients.
DL: direct laryngoscope, VL: video laryngoscope
[#]Independent t test

Table 4. Hemodynamic parameters before blade insertion and 3 minutes after intubation.

	DL N=50	VL N=50	P[#]
Mean arterial pressure (mmHg)			
Baseline	79.3±8	77.9±7.4	0.3
Post-intubation	89.6±6.7	82.3±7.5	<0.001
Heart rate (bpm)			
Baseline	76.7±7.4	77.6±7.6	0.5
Post-intubation	93.4±8.5	88.7±7.5	0.005
Results are expressed as the mean±standard deviation.			
DL: direct laryngoscope, VL: video laryngoscope			
[#] Independent t test			

OP-89**INSERTION CHARACTERISTICS OF DIFFERENT TYPES OF LMA IN TOOTHLESS PATIENTS**

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Anesthesia and Reanimation

Summary: Background and Goal of Study: This study compares the clinical properties, and complications of classical LMA (c-LMA), proseal LMA and i-gel, in patients who have teeth and have complete prosthetic teeth (toothless).

Materials and Methods: After having received Ethicsl Committee approval and written informed consent, 180 ASA I-III patients aged between 18-85 years were divided into 2 groups according to teeth characteristics (90 have teeth, 90 toothless). Each group was sub-divided into 3 groups, to recieve c-LMA (n=30), proseal LMA (n=30), and i-gel (n=30) as supraglottic airway device during anesthesia. Time to settlement, first attempt insertion success, cuff leak pressure, peak-plateau pressures, ventilator-adjusted and tidal volumes reaching to patients, fiberoptic imaging scores, and complications were evaluated. Standard anesthesia protocol was applied for each patient.

Results and Discussion: There was no significant difference between groups and devices in terms of first-insertion placement success. The tidal volume difference in the i-gel group was found to be lower in the toothless group ($p < 0.05$) (Table 1). In the proseal LMA group, there were fewer cuff leak pressures patients without missing teeth (Table 2). There was no significant difference between the groups in terms of fiberoptic image scoring. There was no difference between the groups in terms of complications.

Conclusion: Although among the groups in toothless patients there is no significant difference in terms of leak pressure, peak airway pressure, i-gel was found superior in terms of reaching the desired tidal volumes.

Table 1: Comparison of c-Lma, proseal and I-gel in toothless patients

	Clasic	Proseal	i-gel	Toplam	p
Insertion time (sn)	30±24	24±8	30±23	28±20	0,38
Cuff leak pressure (cmH ₂ O)	33±41	22±29		27±36	0,2
Leak pressure (cmH ₂ O)	27±9	26±10	27±8	27±9	0,85
Peak airway pressure (cmH ₂ O)	14±4	14±3	15±5	14±4	0,83
Plato pressure (cmH ₂ O)	12±3	12±4	14±5	13±4	0,26
Tidal volum difference (ml)	26±25	22±25	9±10	19±22	0,008

Table 2: Comparison of c-Lma, proseal and I-gel in without missing teeth patients

	Clasic	Proseal	i-gel	Total	p
Yerleştime süresi(sn)	25±10	34±24	37±30	32±23	0,09
Cuff leak pressure (cm H ₂ O)	49±39	22±39		35±41	0,008
Leak presure (cmH ₂ O)	26±7	25±10	27±8	26±8	0,78
Peak airway pressure (cmH ₂ O)	14±3	15±5	14±2	12±3	0.55
Plato pressure (cmH ₂ O)	12±3	13±4	12±2	12±3	0,6

OP-90**A COMPARISON OF BLIND VERSUS DIRECT LARYNGOSCOPIC INSERTION TECHNIQUES IN I-GEL LARYNGEAL MASK AIRWAY PLACEMENT**Ayça Tuba Dumanlı Özcan

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Background: The laryngeal mask airway (LMA) is most commonly used supraglottic airway device; it is routinely inserted by blind technique (1). We planned to compare the placement of LMA I-gel using blind versus direct laryngoscopy technique.

Materials and Methods: A prospective randomized comparative study of 30 patients divided into two groups of 15 each as Group D (blind insertion) and Group L (laryngoscopic insertion). In the present study, demographic characteristics, vital parameters, mallampati score, and Wilson's score were comparable in both the groups. In addition, the insertion time, the number of insertion attempts and the complications that are bloodstaining, sore throat, dysphagia, bronchospasm were recorded.

Results and Discussion: There is no statistical difference between the groups in hemodynamic parameters, complications, and Wilson scores ($p > 0.05$). The time of insertion was statistically higher in Group L ($p < 0,001$). In addition, one of the components of Wilson scores, sliding mandibula, is statistically more frequent in Group L.

In a systematic review (2), I-gel was found to have fewer complications (blood staining, sore throat, dysphagia) than the proseal LMA and has advantages over the LMA-P in patients under general anesthesia. The usage of I-gel is caused the less complication rate in our groups. In literature, LMA placement scoring was similar in both blind and direct laryngoscopic techniques (1). By direct visualizing the whole process of LMA insertion, the visual stylet increases the success rate (3). In our study, we found that insertion time of laryngoscopy group is higher than the blind technic group but there is no difference first attempt success rate.

Conclusion: In conclusion, our study suggests that the blind method of insertion is easier and simpler than the laryngoscopic insertion.

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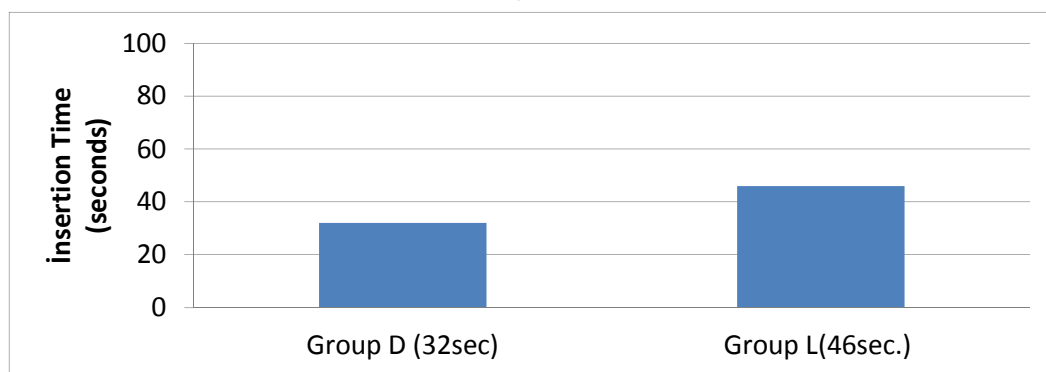


Figure 1: Insertion time of groups

OP-91

COMPARISON OF THE PREDICTIVE VALUE OF MODIFIED MALLAMPATI CLASSIFICATION AND UPPER LIP BITE TEST IN PREDICTING DIFFICULT LARYNGOSCOPY IN OBESE PATIENTS

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Background and Goal of Study: Difficult endotracheal intubation and laryngoscopy is more probable in obese patients than lean patients (1). The Upper Lip Bite Test (ULBT) has high specificity and sensitivity in predicting difficult laryngoscopy as compared to the Mallampati classification in general (2). In our study, we aimed to show the predictive value of ULBT for difficult laryngoscopy in obese patients.

Materials and Methods: Obese patients with BMI=25 – 39.9 (n:170) who underwent general anaesthesia were included in the study. Before anaesthesia induction ULBT and modified Mallampati scores (MMS) which are used for predicting preoperative difficult laryngoscopy and difficult intubation were assessed. Laryngeal view was assessed by Cormack-Lehane grading system by the attending anaesthetist after induction where Class I-II was accepted as easy laryngoscopy and class III-IV difficult. Sensitivity, specificity, positive and negative predictive values of the ULBT and MMS tests were calculated. ROC curve analysis was applied for the cut off value calculations and the highest Youden index value was considered as the cut off value.

Results and Discussion: The prevalence of difficult laryngoscopy and intubation was 4.7% (n = 8) in obese patients. Cut off values for difficult laryngoscopy were ≥ 2 ULBT and > 3 for MMS (Figure 1). ULBT is an easy and fast applicable test that can be done at bedside. Our findings are in concordance with Leopold et al.'s study in which BMI<30 patients were evaluated (3).

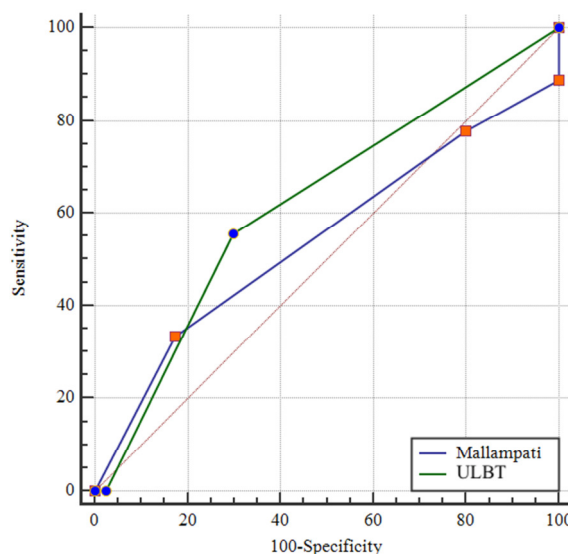


Figure 1. Summary receiver operating characteristic curve analysis of two different bedside screening tests for difficult laryngoscopy.

Conclusion: In obese patients both tests predictive value for difficult intubation was low. Our results showed that each test (ULBT and MMS) when used alone as a single screening test had poor predictability and that other supporting tests were needed.

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OP-92**COMPARISON OF NEW GENERATION BASKA MASK AIRWAY AND CLASSIC LARYNGEAL MASK AIRWAY FOR EASE OF USE AND PATIENT COMFORT**

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Aim: Baska mask airway is a new supraglottic airway device that is not well known in anesthesia practice. Instead of the inflatable cuff, there is a cuff membrane that spontaneously swells by positive pressure ventilation and covers the larynx. We aimed to compare this laryngeal mask, which is new to our country, with classical laryngeal mask in terms of patient comfort, clinical performance and ease of use.

Method: Sixty patients aged 18-65 years were included in the study in the ASA I-II group after approval of the ethics committee for the study. Except for airway surgery or laparoscopic surgery, patients scheduled to undergo operations not exceeding 90 minutes were taken into the study. Patients were randomly assigned to two groups, the new LMA group and the classic LMA group, by closed envelope method. Both groups were attempted LMA by the same anesthetist. The duration of LMA insertion in all patients, number of interventions, peak airway pressure (Ppeak), mean airway pressure (Pmean), leakage volumes and hemodynamic data; were recorded at 1, 5, 10, 15, 30, 45, 60, 75, 90 minutes after insertion. After the airway regressor was removed, blood on it and postoperative sore throat was evaluated.

Results: The LMA insertion time average was 4.5 seconds (min = 2.0; max = 18.0) in the conventional LMA and 7.0 seconds (min = 3.0, max = 60.0) in the new LMA. The duration of conventional LMA placement was significantly lower ($Z = 3.010$; $p = 0.003$). The distribution of the number of interventions among the groups was similar ($p = 0.741$). In conventional LMA group Ppeak and Pmean values were found to be significantly lower than those of the new LMA group ($Z = 2.213$, $p = 0.027$ and $Z = 3.289$, $p = 0.001$, respectively). We observed blood swabs in seven patients ($p = 0.012$) had applied to conventional LMA and blood was not observed in the new LMA administration. Sore throat pain was observed in 4 patients applied conventional LMA ($p = 0.118$) but the new LMA applied patients did not experience sore throat. Ventilation leakage volume was significantly lower in the new LMA than in the conventional LMA ($p = 0.510$).

Conclusion: While classic LMA is more advantageous in terms of ease of use, new LMA (BMA) has been found superior to in terms of patient comfort.

Key words: Baska mask airway, classical LMA, anesthesia

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Table. Comparison of the variable values in the groups that new and classical lma are applied

Variables	New lma		Classical lma		Test statistic	
	Median (min; max)	Med±SD	Median (min; max)	Med±SD	t; Z	p
Leak volüm(ml)	0 (0; 130)	20.4±34.9	5 (0; 150)	28.2±39.4	Z= 0.658	0.510
Ppeak	15 (9; 33)	15.5±4.6	12 (9; 30)	13.7±4.3	Z= 2.213	0.027
Pmean	7 (4; 11)	7.3±1.4	6 (5; 11)	6.4±1.5	Z= 3.289	0.001
Duration of anaesthesia (minute)	45.0 (20.0; 90.0)	48.7±19.1	37.5 (15.0; 120.0)	43.3±20.6	Z= 1.360	0.174
Duration of lma insertion (second)	7.0 (3.0; 60.0)	9.1±10.6	4.5 (2.0; 18.0)	5.3±3.1	Z= 3.010	0.003
	New lma n (%)		Classical lma n (%)		p	
Number of trials						
1	23 (85.2)		26 (81.3)		0.741*	
2 ve 3	4 (14.8)		6 (18.8)			
Blood contamination						
No	27 (100.0)		25 (78.1)		0.012*	
Yes	-		7 (21.9)			
Sorethroat						
No	27 (100.0)		28 (87.5)		0.118*	
Yes	-		4 (12.5)			

4. t: Independent two-sample test / Z: Mann Whitney U test

5. *Fisher exact test /**Pearson ki kare

OP-93**OVERLOOKED FOREIGN BODY ASPIRATION IN PATIENT WITH MULTIPLE TRAUMA**Ali Akdoğan

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Introduction: Foreign body aspiration can occur frequently in multitrauma patients. We present the aspiration of a tooth in patient with multitrauma.

Case report: A 27-year-old male patient who had a traffic accident was admitted to intensive care. He was intubated in emergency unit. He had maxillofacial fracture, cerebral and thoracic contusion. His cerebral magnetic resonance revealed diffuse axonal injury and brain edema. He had left third costal fracture and lung injury. He was sedated with midazolam and fentanyl. Because of prolonged ventilation, the patient underwent tracheotomy. Noradrenalin infusion was started to restoration hemodynamic. Thiopental sodium infusion was initiated to decrease cerebral metabolism and prevent cerebral damage for three days. Diuretic, antiepileptic and steroid treatments were added to patient's therapy. After the thiopental infusion he was beginning to open his eyes. Sedation level was decreased and ventilation was changed from controlled to supported mode. The patient suddenly started breathing effort after in-tube aspiration. At this point, it was seen that a foreign object came from the tracheotomy cannula with a big click into the breathing circuit. The foreign body fell into the respiratory filter at the end of the cannula. Carefully look showed that it was a tooth (Picture). Carefully looking at the patient's x-ray image again, it was seen two tooth on right main bronchial line (Figure). The patient underwent rigid bronchoscopy by the thoracic surgeon and the other tooth was removed from the lung. The follow-up treatment of the patient lasted 2 months and the patient was discharged from the intensive care unit.

Discussion: It is easy to diagnose foreign body aspiration in patients who are admitted to the hospital with acute complaints such as wheezing, chronic cough or vocal fold. These complaints do not occur in patients with endotracheal intubation. Therefore, it may be difficult to diagnose patients who do not have severe clinical course. The multidisciplinary and systematic approach to the examination of patients with multi trauma is very important to avoid overlook such an aspiration.



Picture: A tooth in filter

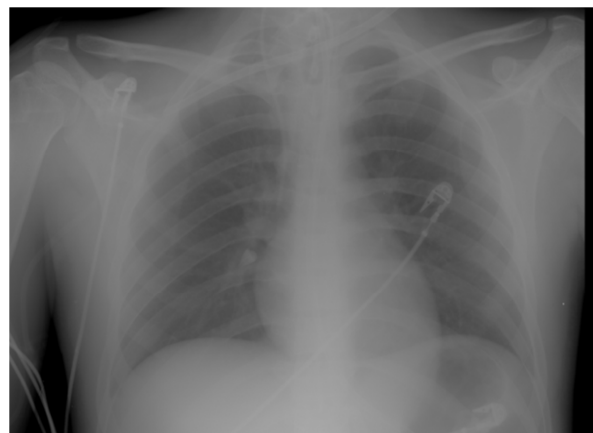


Figure: A tooth on X-ray

OP-94**EVALUATION THE AWARENESS OF ANESTHESIA AND EFFECTIVENESS OF PREOPERATIVE CONSULTATION AMONG THE PATIENTS IN OUR HOSPITAL**

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Background: Anesthesiologists are working not only in operating room anymore but also in intensive care units and pain clinics. Unfortunately, many people don't know the anesthesiology as a specialized department of medicine and even the anesthesiologist as a doctor. We aim to evaluate our patients' knowledge about anesthesia practice and role of anesthesiologists and also the effectiveness of preoperative anesthesiology consultation in improving awareness of anesthesia with this survey.

Materials and Methods: A total of 300 literate patients, ages between 18 and 70, who were undergoing elective surgery and referred to anesthesiology clinic were included for the study. Written approval was taken. Patients were asked to complete a survey of 22 questions before and after the anesthesiology consultation. The survey has three parts including questions about demographic data and role of anesthesiologists. Results was analysed by using Pearson's chi-square test and Fisher's exact test.

Results: Number of correct answers to the questions about anesthesia and anesthesiologists were increased after consultation with anesthesiologist. Anesthesiologists were recognized as a specialized doctor up to 88 % after preoperative anesthesiology consultation. Increasing percentage of correct answering was found to have a linear relationship with high education level. These findings were found statistically significant ($p < 0.05$).

Discussion: It is proved that preoperative consultation has an impact on improving awareness of anesthesia. An increase up to %88 in the rate of awareness of anesthesiologist as a specialized doctor showed that preoperative evaluation with an anesthesiologist is the most important step of this result. Rate of awareness of anesthesia practice vary from % 58 to % 95 in other surveys (1, 2, 3). Garcia-Marcinkiewicz et al. (4) reported that educational booklet is a preferable method to improve awareness. Yoldaş et al. (5) showed a relationship with education levels of patients and knowledge about anesthesia practice. Our results also support these findings. Our survey differs from other studies in Turkey by immediate evaluation of the effectiveness of preoperative consultation.

Conclusion: Face to face consultation with the anesthesiologist is very important. Surgeons have an important role in transferring the correct information about anesthesia to patients.

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OP-95

THE EFFECTS OF POSITIVE END-EXPIRATORY PRESSURE ON OPTIC SHEAT DIAMETER DURING LAPAROSCOPIC CHOLESISTECTOMY OPERATIONS

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Objectives: This study investigates the effects of 10 cmH₂O PEEP on optic nerve diameter in ASA I-II patients who underwent laparoscopic cholecystectomy, and also on hemodynamic parameters, airway dynamics.

Material and Methods: After approval of ethics committee and the informed consent, 80 patients ASA I-II who underwent laparoscopic cholecystectomy were randomly divided into two groups. Patients were ventilated in standart protocol except with no external PEEP in Group K (n=40), and with PEEP of 10 cm H₂O in Group P (n=40).

All patients received the same anesthesia protocol with propofol, fentanyl and rocuronium and with orotracheal intubation. Intra abdominal pressure was set to be maintained at 12-15 mmHg for pneumoperitoneum. After the pneumoperitoneum patients received 10 cm H₂O PEEP in Group P.

Optic nerve diameters were measured using ocular ultrasonography (USG) before anesthesia induction (t₁), and scheduled times after intubation. Also hemodynamic and respiratory parameters were recorded.

Results: There were no statistical differences between groups in demographic and hemodynamic parameters ($p>0.05$). However, P_{peak} levels, dynamic pulmonary compliance values were significantly higher in Group P ($p=0.012$) and ($p=0.001$) respectively.

Mean respiration rates at all time points after mechanical ventilation in Group K were significantly higher than those recorded in Group P ($p<0.05$). End-tidal CO₂ levels were similar between two groups ($p>0.05$). There was no statistically significant difference between groups in terms of mean optic nerve diameters ($p>0.05$).

Conclusion: A PEEP level of 10 cmH₂O during laparoscopic cholecystectomy did not result in increased optic nerve diameter which is an indirect indicator of increased intracranial pressure.

OP-96**PREEMPTIVE EFFECT ON HEMODYNAMIC CHANGES IN ANESTHESIA INDUCTION AND INTUBATION GRANISETRON'S**Savas Altinsoy, Gozde B. Aydin, Gulden Utebey, Julide Ergil

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Background and Goal of Study : Propofol is the most commonly used intravenous anesthetic agent for daily anesthesia due to its soft induction and fast recovery properties. However, hypotension that occurs in induction is the most common disadvantage. Several methods have been used to treat hypotension preemptively such as volume expanders, physical methods to increase venous return and vasopressors. This study is conducted to determine the effectiveness of granisetron (1 mg) in prevention of hypotension and bradycardia in general anesthesia patients.

Materyal and Methods: After Institutional Ethics Committee approval and written informed consent (Ref no: 28/19, 04/04/2016) were obtained, and the 140 patients, under general anesthesia were recruited in this study. Group G (n=70) received 1 mg granisetron diluted in 5 ml of saline and Group C (n=70) received 5 ml of saline before 5 minute from anesthesia induction. Systolic blood pressure (SBP), diastolic blood pressure (DBP), mean blood pressure (MBP), heart rate (HR) and peripheral oxygen saturation (SpO₂) are measured and recorded 3 minutes after induction and 1,5 minutes after intubation and every 5 minutes during operation.

Results and Discussion: There were no difference in demographic data (Table 1). There were no statistically significant difference in hemodynamic variables (SBP, DBP, MBP and HR) between the groups on 3th minute after induction (p>0.05). The mean blood pressure was decreased 22 patients in group C and 8 patients in group G which were compared to baseline values in 10th minute after intubation (Table 2).

Table 1 . Demographic data

		Grup C (n=70)	Grup G (n=70)	p
ASA	1	34 (48,6%)	35 (50%)	0,866
	2	36 (51,4%)	35 (50%)	
Sex (n)	Male	51 (72,9%)	48 (68,6%)	0,710
	Female	19 (27,1%)	22 (31,4%)	
Lenght (cm)		168,8±9,5	168,5±8,3	0,821
Weight (kg)		77,0±11,4	78,6±12,0	0,424
Age (yr)		47,5±14,9	51,2±11,2	0,099
BMI (kg/m ²)		27,2±4,6	27,8±4,3	0,491
Evans (PRST) score		1,64±1,38	1,57 ±1,35	0.758

ASA: American Society of Anesthesiologists Status, BMI: Body mass index, PRST: pressure, rate, sweating, tears

Table 2. Number of patients with a decrease in mean blood pressure

	Grup G (n=70)	Grup C (n=70)	p
3.min	7 (10%)	11 (10%)	0,449
10.min	8 (11,4%)	22 (31,4%)	0,007

Conclusion

Changes in mean blood pressure is prevented by granisetron after reverse trendelenburg position with CO₂ insufflation in 10th minute. Due to its beneficial hemodynamic effects, it can be used safely in laparoscopic cholecystectomy.

POSTER PRESENTATIONS

PP-01**90 – DAY MORTALITY AND REHOSPITALIZATION RATES OF AFTER SEPSIS IN INTENSIVE CARE UNIT**

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Background and Goal of Study: Sepsis is defined by life-threatening organ dysfunction resulting from a dysregulated host response to infection (1). Approximately 14 million patients survive from hospital discharge after sepsis with early diagnosis and treatment. But prognose about survival from sepsis changes due to sepsis related organ failure variability (2). In our study, we aimed to evaluate 90-d mortality, readmission and rehospitalization rates of patients after discharging after sepsis in intensive care unit.

Materials and Methods: Medical records of patients who were hospitalized for sepsis/septic shock at Muğla Sıtkı Kocman University Training and Research Hospital Intensive Care Unit between 01 January 2016 and 31 December 2017 were retrospectively analyzed. 90-d mortality, readmission and rehospitalization rates of sepsis survivors were evaluated.

Results and Discussion: 79 cases were included in the study and 45 (57%) of the cases were discharged from the intensive care unit after sepsis. 17.7% of the survivors were transferred to palliative care units, 55.5% of survivors were transferred to related departments and 26.8% were discharged to home. 20 (80%) of the patients who were transferred to related department and 9 (75%) of the patients who were discharged from hospital applied the medical center. 5 (62.5%) patients of who were transferred to palliative care units were applied to home care medical units. Rehospitalization rate to intensive care units amongst these patients is 22.2%. The patients exchanged from ICU to home never needed rehospitalization. According to 90-d survival after sepsis of mortality rate is 31.8% (n:14). Patients may apply to medical units because of physical problems, cognitive problems, recurrent infections and sepsis related organ failures after surviving from this heterogen syndrome of sepsis . In previous studies; applying to medical units within 90 days after sepsis is 42.1%, while this raito was 75.6% in our study. This high rate is thought to be because of high ages and comorbidities.

Conclusions: We use early diagnosis and treatment alorhytm in sepsis and aim to reduce organ dysfunction after sepsis. We think that 90 days of mortality can be reduced and quality of life can be increased with close follow-ups of the patients' health status after sepsis.

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PP-02

TOPICAL SEVOFLURANE FOR THE TREATMENT OF
PRESSURE ULCER IN INTENSIVE CARE UNITIşın Gençay

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Background: Sevoflurane is a common inhalation anesthetic that is mainly used for induction and maintenance of the general anesthesia. However its alternative beneficial effects has been currently used in clinical practice. Topical sevoflurane has become an alternative treatment for venous ulcers and surgical infections. In our report we aim to present a case in ICU (Intensive Care Unit) that have sacral pressure ulcer and treated with topical sevoflurane.

Case Report: Seventy-six years old female patient was admitted to the Intensive Care Unit (ICU) after cardiopulmonary arrest with a main diagnosis of chronic obstructive respiratory disease. Patient was followed with a GCS (Glaskow Coma Score) of 4 and mechanical ventilation support had been maintained for two months. After one month, a pressure ulcer had developed at the upper sacral region. Two months later, the ulcer was grade 3, measured as 5 cm x 7 cm (35 cm²) and necrotic fields were observed (Fig 1). At this time wound culture revealed as reproduction of *Pseudomonas aeruginosa* that was susceptible to colistin. After informing patient's relatives, topical sevoflurane irrigation was initiated at a dose of 1 ml/cm² and continued for 30 alternate days. Irrigation was done carefully at the wound site and contact of the sevoflurane to the healthy skin was avoided. After 30 days, wound culture evaluation was revealed clear. The wound size was measured as 4 cm x 5 cm (20 cm²) and epitalization with granulation tissue could be clearly observed at the edges of the wound. Further treatment of the pressure ulcer with sevoflurane were planned.



Fig 1. Sacral Grade 3 pressure ulcer, before the treatment



Fig 2. Sacral pressure ulcer after the treatment

Discussion: Topical sevoflurane administration had been studied previously for chronic venous ulcer treatment and for infected surgical wounds that was superinfected by *Pseudomonas aeruginosa*. Besides its antibiotic effects were demonstrated on pathogens that is resistant to the conventional antibiotics. The use of topical sevoflurane for wound care also provides analgesic effects that ensures comfort for the patients whose suffering from pressure ulcers.

Conclusion: Pressure ulcers have continued to be a complicated and a struggling problem in the ICU. Sevoflurane can be a good therapeutic alternative for especially infected pressure ulcers.

PP-03

THE PROCESS OF ANESTHESIA AND INTENSIVE CARE WITH GERIATRIC PATIENT HAVING FEMUR FRACTURES AND PULMONARY EMBOLISM

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S.B. Şehit Prof. Dr. İlhan Varank Sancaktepe Eğitim ve Araştırma Hastanesi

Background: Anesthetic approach to elderly patients with high risk factor needs more sensitiveness in the perioperative period.

Case Report: A 78-year-old man with history of ischemic heart disease and cerebrovascular occlusion admitted for proximal femur fracture surgery. Dyspnea, tachypnea and agitation were detected in preoperative evaluation of the patient and in the arterial blood gas analysis (ABG) the values were as follows: pH: 7.51 pCO₂: 24.1 pO₂: 54 SpO₂: 87%. An acute thrombus in the right pulmonary artery was detected on pulmonary CT angiography. The patient was followed up on intensive care unit and the respiratory system values were stable during ICU stay (SpO₂: 90-94%). Hemispinal anesthesia was performed (0,5% heavy marcain 1,5 ml +25 mq fentanyl). The sensory block level was T6. On the third day following the postop intensive care unit stay, chest pain and respiratory distress began. Troponin value was 1514 ng/ml. Considering acute myocardial infarction, emergency coronary angioplasty was performed and two coronary stents were placed. On the 5th day after the surgery, the patient had a pelvis ultrasound scan. Hematoma (8 cm) was identified inside the gallbladder and hematoma was emptied with a three-way urinary catheter. Prophylactic dose of low molecular weight heparin was administered. Because of the laboratory evaluation revealed hemoglobin 7,3 mg/dL, 2 units of PRBCs were transfused. On the 9th day after the surgery, his Hb was 9,1 g/dL. The patient was transferred to the ward. He was conscious, cooperative and his performance status was fine. His BP and HR were 138/77 mmHg and 85/min. Troponin value was 74 ng/ml. The patient was discharged from hospital in the 4th day of ward follow-up.

Discussion And Result: Despite developing pulmonary embolism and postoperative complications in addition to the diseases accompanied by preoperative period, we displayed a successful management over our high risk geriatric patient with careful, close follow-up and treatment approach. We should be careful with geriatric patients, knowing that we can encounter problems in all stages.

PP-04**IS PALLIATIVE CARE AN ADDITIONAL WORK AREA OR
AN ADDITIONAL BURDEN FOR ANESTHETISTS?**

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Background and Goal of Study: Palliative care is a field that WHO insists on, but whose organizations and practitioners are yet to be fully identified. Palliative care according to WHO; identify and evaluate pain and other symptoms early on, and to work to improve quality of life by alleviating pain by giving medical, social and spiritual support to the patient and his family, in those who are experiencing life-threatening illnesses.

Materials and Methods: Turkey Statistical Institute and Ministry of Health official data have been published on this subject by evaluating legislation was formed opinion. Results and Discussion: The data shows that other countries in the world such as increasing the share of the total population over 65 years in Turkey. While 71.4 life expectancy at birth in the world is 78 in Turkey. This increase in the elderly population will bring some economic, environmental and social problems, especially health. In addition, the transition from a large family to a core family in the family structure, the need for institutional care will increase as more women participate in the working life. When the causes of death in 2016 are examined, circulatory system diseases are the first (39.84%) and neoplasms are the second (19.71%). With the aging population, chronic disease burden and palliative/intensive care needs are also increasing. The elderly, aged 85-90 years, need to look after them. It is known that approximately 3% of the community needs close care. 148 palliative care centers are opened, with a capacity of 1672 beds. Palliative care expertise is an area of expertise that is not currently available, family physicians should be in charge of prehospital services, few oncologists and geriatricians, and anesthesiologists should be involved in pain treatment, opioids, palliative sedation, nutritional support, patient follow up in the ventilator, safe extubation.

Conclusion: In terms of success and sustainability, the team leader will be an expert in anesthesiology and reanimation, with appropriate legislation and the right to self-regulation.

PP-05**MULTI-DRUG-RESISTANT NOSOCOMIAL INFECTIONS IN INTENSIVE CARE UNIT: A RETROSPECTIVE COHORT ANALYSIS**Funda Arun¹, Mehmet Ali Yağlı²¹Selcuk University Faculty of Dentistry Anesthesiology Clinic, Konya, Turkey²Beyhekim State Hospital Anesthesiology and Reanimation Clinic, Konya, Turkey

Background and Goal of Study: Nosocomial infections are one of the leading causes of death in the ICU due to extremely vulnerable population of critically ill patients. Multi-drug-resistance pathogens (MDRP) increase morbidity, mortality, and healthcare costs. We aimed to identify the prevalence of predominant MDR pathogens in a tertiary hospital ICU.

Materials and Methods: A retrospective analysis was carried in patients admitted from November 2015 to February 2018 out based on the bacterial isolates in the anesthesia ICU. Infections that occurred 48 hours after admission were identified as nosocomial infections. Blood cultures were collected and incubated at 37°C in BD BACTEC™ 9120. Blood samples were obtained from 2 separate sites. Positive bottles were subcultured on blood, chocolate and MacConkey agar. All antimicrobial susceptibility tests were performed with VITEK®. Multidrug resistance was defined as being resistant to 3 or more antimicrobial classes among piperacillin (± tazobactam), ceftazidime, fluoroquinolones, aminoglycosides and carbapenems.

Results and Discussion: During the study period 1818 clinical samples were collected from 702 patients. MDRP existed in 242 patients (34.4%) and 191 patients (27.2%) were transferred to anesthesia-ICU from other ICUs after diagnosis of MDRP infection. 51 patients (7.2%) were initially infected with MDRP in anesthesia-ICU and data of these patients were evaluated. 61.2% were male and 38.7% female. The mean age was 68.7±19.7 years. Overall, the most common isolates belonged to the Acinetobacter (72.6%) followed by E. Coli (23.6%). MRSA (1.9%) and VRE (1.9%). The microorganisms isolated from the 4 different clinical specimens were 25 in blood samples (49%), 19 in pulmonary samples (37.3%), 6 in urine samples (11.8%) and 1 in cutaneous swabs (1.9%). Overall, common antibiotics used in empiric therapy were moxifloxacin (29.4%), ceftriaxone (19.6%), meropenem (15.6%), ciprofloxacin (9.8%), piperacillin-tazobactam (9.8%), and tigecycline (7.8%). Imipenem, colistin and vancomycin were the least preferred empiric antibiotics. Colistin-tigecycline and colistin-ciprofloxacin were the most sensitive and preferred antibiotic combinations due to susceptibility results.

Conclusion: Antimicrobial resistance is a progressively growing healthcare problem in all parts of the world. Infection prevention policies and constant evaluation and progression in antibiotic consumption patterns are crucial to battle against MDR pathogens.

PP-06**PANDRUG RESISTANCE ACINETOBACTER BAUMANNII INFECTION IN A PATIENT WITH MULTIPLE SCLEROSIS IN ICU: CASE REPORT**Funda Arun¹, Mehmet Ali Yağlı²¹Selcuk University Faculty of Dentistry Anesthesiology Clinic, Konya, Turkey²Beyhekim State Hospital Anesthesiology and Reanimation Clinic, Konya, Turkey

Background: Acinetobacter baumannii (A. baumannii) is one of the most successful pathogens in the modern healthcare system and become endemic in hospitals particularly in ICUs. We aimed to report a pan-drug resistant A. Baumannii infection in a patient with multiple sclerosis (MS) in ICU.

Case: 42-years-old, male patient with MS was transferred to ICU from neurology unit due to acute respiratory distress. The patient was intubated and mechanical ventilation support was initiated. Under the suspicion of aspiration pneumonia due to laboratory and clinical signs of infection, chest X-Ray with posterior-anterior view showed left lung opacity and empiric antibiotic treatment with Tazocin was started (Figure 1). Bedside percutaneous tracheotomy and percutaneous endoscopic gastrostomy (PEG) were performed. The patient's general condition was progressively deteriorated. In the 13th day of Tazocin treatment, antibiotic regimen was changed to colistin-imipenem combination due to the pan-drug resistance A. Baumannii result in blood culture and norepinephrine infusion treatment was started (Figure 2). In the 14th day of colistin-imipenem combination, antibiotic regimen was changed to colistin-tigecycline combination. The patient died in the 38th day of ICU follow-up due to sepsis.

Discussion: Pan-drug-resistant Acinetobacter spp. infections is a great challenge for physicians that can cause a wide spectrum of infections such as pneumonia, bacteremia, meningitis, urinary tract infection, and wound infection. In particular, high colonization rates have been observed in Intensive Care Unit (ICU) patients, especially of the respiratory tract. Efficient treatment options for A. Baumannii infections are extremely limited.

Conclusion: Because A Baumannii infections can be pan-resistant to antibiotics with high mortality, prevention of nosocomial infections in the ICU is more important than cure.

PP-07**FOUR YEARS' EXPERIENCE WITH GERIATRIC TRAUMA PATIENTS IN ICU**

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Background/Goal of Study: The percentage of elderly people in the Turkey is increasing. Therefore, in this patients group, post-traumatic admission to intensive care unit (ICU) is frequently seen. Both because of age-related changes and comorbidities, complications after trauma, maintenance costs and deaths are more common at geriatric age group.

The objectives of this study are to assess the clinical course and outcome of trauma patients who admitted to ICU aged 65 years and over.

Materials/Methods: This study was conducted in the 20-bed, third-level mixed type ICU between 2013 and 2017. We retrospectively collected the data of trauma patients, aged ≥ 65 years who were admitted to ICU after trauma and spent longer than 2 days. Their demographic data, comorbidities, APACHE II score, admission type, injury side and mechanism, transfusion and mechanical ventilation needs, vasopressor use and ICU mortality were recorded.

Results/Discussion: A total of 225 patients (age mean were 81.7 ± 7.7 , 63% of women) were included in the study. Mean APACHE II score was 20.4 ± 6.9 . The distribution of the diseases were; 14 (5.49%) malignancy, 90 (35.29%) metabolic-endocrine disease, 27 (10.59%) renal failure, 160 (62.75%) hypertension, 133 (52.16%) cardiovascular disease, 84 (32.94%) respiratory disease, 68 (26.67%) neurological disease, 2 (0.78%) rheumatologic disease and 2 (0.78%) had no disease. Ninety-four percent of trauma mechanism was fall and 84% of patients were admitted after trauma related surgery. Most common injury side was femur (76.89%) and % 10.2 patients had ≥ 2 trauma sides. Thirty-seven patients (16.44%) died and 173 (76.89%) of patients discharged before 10 days. Patients' blood transfusion, mechanical ventilation and vasopressor drug need were 37.78%, 40.00% and 15.11% respectively.

Our findings showed that fall was most common trauma mechanism and for the injury side femoral fractures were seen more common, like as literature. Our mortality rate is 16.44% and it is coherent with expected mortality rates in literature.

Conclusion: Since our hospital works like trauma center, the clinical features and mortality rate of geriatric trauma patients who admitted to ICU are consistent with the current literature. However before making a final comment, our results need to be confirmed with non-trauma center hospitals in Turkey.

PP-08**PALLIATIVE SEDATION FOR REFRACTORY DELIRIUM IN
A PATIENT WITH METASTATIC BLADDER CARCINOMA**

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Background: Delirium is one of the most common neuropsychiatric complications in advanced cancer patients (1). Although 30-50% of the cases occurring in palliative care settings are reversible, it's typically irreversible in terminal phase. Palliative sedation is an ethical and well-accepted medical intervention defined as the deliberately use of sedative medications to reduce patients' consciousness to manage end of life symptoms that have become refractory and intolerable(2).

We present a patient with metastatic bladder carcinoma who received palliative sedation for the control of refractory delirium in palliative care unit.

Case report: A 57year old male patient was admitted to palliative care unit with advanced metastatic bladder carcinoma.He had a history of smoking and alcohol misuse.He has undergone transurethral resection of bladder 3 years before and received chemotherapy.One year later, he had total cystectomy with pelvic-paraaortic lymph node dissection. He had progression with metastatic lesion in brain and multipl nodules in lungs despite chemotherapy. After cranial radiotherapy and chemotherapy,new metastatic lesions in adrenal gland, liver and bones were detected. He was presented to palliative care unit with cognitive disfunction, decreased oral intake and pain. Dexamethasone 16 mg/day, phenytoin 300mg/day and tramadol 200 mg/day were started for brain edema, convulsions and pain respectively. He was diagnosed with delirium and haloperidol 2.5 mg was given two times daily. Chlorpromazine and lorezapam were added,haloperidol dose was increased to 20 mg/day. On 3.day, continuous midazolam infusion was started (up to 10 mg/hr) and changed to propofol on 5.day because of uncontrolled delirium symptoms. After two days, the infusion was changed to midazolam again. The patient died on 9. day of hospitalization.

Discussion and Conclusion: Delirium is a complex disorder associated with increased morbidity and mortality as well as significant family and patient distress.In the present case, we applied palliative sedation to control delirium and improve quality of life of both the patient and caregivers.

Refractory agitated delirium in the terminal phase often necessitate the use of sedating medications to ensure patient symptomatic relief and comfort when other interventions have failed.An appropriate care plan should be made to meet the needs of patients and caregivers by informing and actively involving them in the decision making process.

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PP-09**THE MOST FREQUENTLY CITED 100 ARTICLES RELATED TO NUTRITION IN THE CRITICAL CARE LITERATURE**

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Background: We investigated most highly cited 100 articles related to nutrition in the critical care literature.

Materials and Methods: Using the advanced mode of the Web of Science(WOS), the words “WC=Critical Care Medicine AND TS=nutr* OR WC=Critical Care Medicine AND TI=nutr* OR WC = Nutrition & Dietetics AND TS=intensive care OR WC=Nutrition&Dietetics AND TI=intensive care OR WC=Nutrition & Dietetics AND TS=critical care OR WC=Nutrition&Dietetics AND TI=critical care”were used to scan articles on December 2017.

Results: From 1975 to date, it appears a total of 5182 articles related to nutrition in the critical care were published in the WOS.The most cited article had 806 citations, the least cited article had 120 citations.The mean citation number was 218.88 ± 131.46 . The mean annual citation number for the articles varied from 89.56 to 3.56 and the mean was 16.00 ± 13.83 .The most cited article was by McClave, Stephen et al. "Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (ASPEN)" published in“Journal of Parenteral and Enteral Nutrition”.Most three area’s of articles related to nutrition in critical care focused in; “Enteral Nutrition”, “Immuno-Nutrition”, and “Outcomes of the Nutrition” were conducted in 24%, 23%, and 20%, respectively.The three journals that appeared most frequently in the top 100 were Critical Care Medicine (51%), Intensive Care Medicine (14%), and Journal of Parenteral and Enteral Nutrition (7%).Of the articles, 96% were listed in the SCI and only 4% were listed in the SCI-E.The top three countries listed for authors were USA (36%), Canada (%14), England (9%), and Germany (9%). Of the authors, 37% on the continent of Europe and 63% outside the continent of Europe.There was no significant difference found between the continent of authors, index of journal and the total number of citations and mean annual number of citations.

Conclusion: This is the first study to investigate articles with most citations in the field of nutrition in critical care literature.The most cited article had 806 citations.The most frequently cited studies in the field of nutrition include “Enteral Nutrition” topics.There was no significant difference found between the continent of authors or index of journals and the total and mean annual number of citations.

PP-10**THE MOST FREQUENTLY CITED 100 ARTICLES RELATED TO EDUCATION IN THE ANAESTHESIA LITERATURE**

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Background: We investigated most highly cited 100 articles related to education in the anesthesiology literature.

Materials and Methods: Using the advanced mode of the Web of Science (WOS), the words "SU=anest* AND TS=teach* OR SU=anest* AND TI=teach* OR SU=anest* AND TS=educ* OR SU=anest* AND TI=educ* OR SU=anest* AND TS=residen* OR SU=anest* AND TI=residen* WC=Education & Educational Research AND TS=anest* OR WC=Education & Educational Research AND TI=anest* OR WC=Education, Scientific Disciplines AND TS=anest* OR WC=Education, Scientific Disciplines AND TI=anest* OR WC=Education, Special AND TS=anest* OR WC=Education, Special AND TI=anest*" were used to scan articles on December 2017.

Results: From 1975 to date, it appears a total of 6547 articles related to education in anesthesiology were published in the WOS. The most cited article had 41, the least cited articles had 43 citations. The mean citation number was 82.67 ± 53.45 . The mean annual citation number for the articles varied from 27.33 to 1.92 and the mean was 6.35 ± 3.69 . The most cited article was by Fletcher G et al Anaesthetists; non-technical skills (ANTS): Evaluation of a behavioural marker system; published in the British Journal of Anaesthesia. Most three areas of articles related to education focused in; "simulation in anaesthesia", "evaluation of education methods" and "learning process and curves" were conducted in 47.1%, 12.7%, and 11.8% studies, respectively. Only 8.8% articles focused of "Residency period". The three journals that appeared most frequently in the top 102 were Anesthesiology (26.5%), Anaesthesia and Analgesia (21.6%), and British Journal of Anaesthesia (15.7%). Of the articles, 86.3% were listed in the SCI and 13.7% in the SCI-E. The top three countries listed for authors were USA (52%), Canada (17.6%), and England (12.7%). Of the authors, 22.5% on the continent of Europe and 77.5% outside the continent of Europe. There was no significant difference found between the continent of authors, index of journal and the total number of citations and mean annual number of citations.

Conclusion: This is the first study to investigate most cited articles in the field of education and anesthesiology. The most frequently cited studies focused simulation in anaesthesia and only 9 articles focused of residency period, such as residency problems etc. There was no significant difference found between the continent of authors or index of journals and the number of citations

PP-11

DAMAGE CONTROL RESUSCITATION WITH SEQUENTIAL BILATERAL COMMON ILIAC ARTERIES (DCR-w-SCIACC) CROSS CLAMPING IN A NEARMISS ACTIVELY BLEEDING POST C/S CASE; SURGICAL AND MEDICAL APPROACH

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Aim; Can we minimalise brain hypoperfusion in still actively bleeding severe hemorrhagic shock post C/S patient with DCR-w-SCIACC and medical supportive care.

Presentation; Second emergent cesarean section was being performed in another center for 29 years old pregnant patient with diagnosis of active vaginal bleeding. Intraoperatively placenta percreata was being detected. After extraction of baby and closure of uterus the patient was referred to our hospital without any further procedure was being performed on uterus and placenta. When she was admitted to our hospital she had profuse ongoing vaginal bleeding and in severe hemorrhagic shock and her hemoglobin level was 2.8 mg/dl. She immediately was taken to operation theatre. She developed cardiac arrest while anesthetic induction and CPR was started. Intraoperatively diagnosis of percreata was confirmed. To minimalise brain hypoperfusion descending aorta was prepared and cross clamped at diaphragmatic level behind the esophagus. Normal regular tachycardic rhythm was attained and full dose NE, dopamine, dobutamine support were started. After 40 minutes while hysterectomy was being performed aortic clamp was released and damage control surgery was completed with bilateral common iliac arteries cross-clamping (clamping duration 2,5 hours) During bilateral common iliac cross clamping hysterectomy was completed and hemostasis was achieved. Sodium bicarbonate was iv pushed during common iliac declamping. 10 units of ES, 10 units of FFP and 2 units of platelets were transfused. Patient admitted to intensive care unit intubated and with NE-Dopamine_dobutamine support. Cardiac support drugs were decreased and stopped and patient was extubated at 10th hour postoperatively. In 3rd postoperative day she developed subileus and responded to neostigmine potassium and Mgso4 in short time. She was admitted to regular ward on 4th postoperative day. she was discharged at 5th postoperative day.

Conclusion; DCR-w-SBCIACC and appropriate medical supportive care can be a life saving approach in near-miss obstetric patients.

PP-12**NONOPERATING ROOM ANAESTHESIA OUTCOMES IN UNIVERSITY OF HEALTH SCIENCES
DIŞKAPI YILDIRIM BEYAZIT TRAINING AND RESEARCH HOSPITAL**

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Introduction and Aim: In parallel with today's technological and pharmacological developments, various invasive and noninvasive interventions have begun to be applied outside of the operating room. So In our study we want to share our non-operating room anesthesia unit's (NORA) overall experience, patients' characteristics and anesthesia risks.

Material and Method: 910 adult patients undergoing gastroenterologic, cardiologic and radiologic procedures and electroconvulsive therapy (ECT) between January 2015 and December 2017 in a teaching and training hospital were examined retrospectively. Demographic data, anesthesia time duration, type and protocols, ASA status, type of procedures and complications were recorded.

Results: Nine hundred ten patients were anesthetized in non-operating room (NORA).The mean duration of anesthesia was 33.7 ± 21.5 min (min 10-max 240 min).One hundred fifty patients (17%) were ASA 1, 610 (68%) were ASA 2 and 139 (15%) were ASA 3 patients. Monitorized anesthesia care (MAC) was applied for 680 (75%) patients and general anesthesia was applied for 188 (21%). Fourtyone (4%) patients were only monitorized without any sedation. The procedures were held in gastroenterology, in ECT, in radiology, in cardiology and in otherplaces (%45, %20, %19, %11, %5 respectively). Twenty-six percent of patients were sedatized with propofol, 27% with propofol + midazolam, 21% with general anesthesia and 26 % with other anesthetic agents. Complications occurred in 27(2%) patients, such as bradycardia in 20 patients, laryngospasm in 1 patient, aspiration in 1 patient, 1 patient was intubated due to desaturation, 1 patient had anaphilaxis and 2 patients had hypotension + dysrhythmia.

Conclusion: NORA must involve a multidisciplinary approach by working with anesthesiologist, proceduralists and hospital administrators. With the continued development of new technology and techniques in interventional cardiology, gastroenterology, radiology and pulmonary medicine as well as other areas, the core responsibilities of the anaesthesia provider will no longer be confined to delivering care in traditional operating rooms. NORA patients are medically complex, presenting with unique challenges in procedural settings that are often located far away from the main operating room and additional resources such as staff and equipment. The basic monitors of blood pressure measurement, ECG, oxygen saturation, exhaled carbondioxide and temperature (when appropriate) should be utilized.

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PP-13**ULTRASOUND-GUIDED SCIATIC-FEMORAL BLOCK FOR BELOW KNEE AMPUTATION IN A GERIATRIC PATIENT WITH PREOPERATIVE HIGH RISKS: A CASE REPORT**

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Background: Major lower extremity amputations are associated with considerable morbidity and mortality. Most older patients who lose a leg have vascular problems commonly associated with systemic arterial sclerosis or diabetes mellitus, and most have ischemic heart disease, stroke, or renal failure due to their basic disease.

Case Report: A 76-year-old patient was admitted with ischemia induced necrosis of the right leg and high-risk factors, including chronic obstructive pulmonary disease and diabetes mellitus. After venipuncture, monitoring with invasive blood pressure, electrocardiography, and pulse oximeter was instituted, and the patient was sedated with 2 mg of intravenous midazolam. Sciatic and femoral block were performed with the help of the ultrasound covered with a sterile plastic adhesive on the surface that gets in contact with the skin. For the femoral nerve block, a combination of 5ml of 2% lidocaine with 5ml 0.5% bupivacaine was used and for the sciatic block 20 mL of 0.5% bupivacaine were administered so it encircled the nerve completely. Ten minutes after the regional blocks, the patient no longer felt pain in the stump and he showed no pin prick sensitivity. In the recovery room, the patient did not complain of pain and supplementation of analgesia was necessary only 12 hours after the nerve blocks.

Discussion: Patients requiring this procedure as an emergency are usually either diabetics with uncontrolled sepsis of the leg or patients with peripheral vascular disease with gangrene. Neuraxial anaesthesia, rather than a general anaesthetic is often used but even this can be problematic as the patients may be septic with unstable cardiovascular systems and spinal/epidural anaesthesia may drop the blood pressure further. An alternative technique is to perform a regional block of the affected lower limb using a combination of a sciatic nerve block with either a femoral nerve block, a 3-in-1 block, or a psoas compartment lumbar plexus block.

Conclusion: The use of ultrasound-guided regional block for the treatment of chronic pain and in surgeries of the amputation stump widens the range for the use of peripheral nerve blocks in amputees, promoting high-quality analgesia.

PP-14**COMBINED SIATIC AND FEMORAL BLOCK (1IN 3) FOR HIP SURGERY IN THE PRESENCE OF SEVERE SCOLIOSIS: CASE REPORT**

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Background: Orthopedic surgery of hip in geriatric patients is high due to the limited physiologic capacity of the patients' and comorbidities associated with embolism. Vertebral deformities may cause difficulties with both spinal anesthesia and general anesthesia management. A high risk of difficult intubations and severe neurological complications may be observed during anaesthesia. We report in this case, the successful anaesthetic and postoperative analgesic management of hip fracture using a Combined Siatic and Femoral Block (1in3) in geriatric patient with a severe scoliosis.

Case report: A left closed intertrochanteric fracture reduction and internal fixation was scheduled for a 82-year-old female (weight 55kg and ASAIII). She had history of heart failure and scoliosis. We obtained informed consent and discussed the anesthetic technique with the patient and family. After providing consent, the patient was brought to the operating room and was asked to lie supine with her head supported by pillows. Routine anesthesia monitorization was performed. The femoral nerve was visualized in the US and the quadriceps motor response was confirmed with the help of a neurostimulator. 10ml of 0.5% levobupivacaine was administered with negative aspiration. Plantar flexion response of sciatic nerve was confirmed by neurostimulator and block were completed with LA (10 mL of 0.5% bupivacaine and 5mL of 2% lidocaine).

Discussion: Peripheral nerve blocks have limited sympathetic blockade and hypotension, and the awakening of the patients also allows for closer monitoring of the level of anesthesia. At the same time, hemodynamic changes are less common in patients. When central and peripheral nerve blocks are used in elderly patients, a number of problems with positioning can seriously affect both the application and success of the block. We first applied the sciatic block in the lateral position, which is already required for the operation, following the 3-1 block in the supine position, to minimize these disadvantages.

Conclusion(s): This case report suggested that a femoral Block (1 in 3) and sciatic nerve block might be a promising option for hip fracture surgeries in elderly patients with scoliosis and haert failure when both general anesthesia and central neuraxial blockade carry considerable risk.

PP-15**RESTLESS LEG FOLLOWING SPINAL ANESTHESIA**Gamze Talih, Çiğdem Ünal Kantekin

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Background: We reported a case that restless leg symptoms were postoperatively aggravated following knee arthroscopy under spinal anesthesia.

CaseReport: 59 years old female patient (85kg, 160 cm) on pramipexole (0,25 mg, 3X1) treatment for restless leg syndrome for 10 years underwent right knee arthroscopy under spinal anesthesia. Blood analysis, electrocardiograph and chest radiography were normal and there was no additional complaint. Blood pressure, heart rate and oxygen saturation were as follows; 140/72 mmHg, 78 bpm and 98%. No sedative agent was administered. Spinal anesthesia was performed by administering 12 mg hyperbaric bupivacaine in the sitting position. Surgery started when motor blockage reached to L1 dermatome area. The patient was stable during the operation that lasted for 90 min and transferred to recovery room following operation. She was followed for 10 min and transferred to service room. Involuntary rhythmical movements were observed in extremities especially on the left side when the spinal block ended. The patient was consulted to neurology department. It was asserted that the findings were triggered by the spinal anesthesia. All findings turned back to normal after 1 hour.

Discussion: Restless leg syndrome (RLS) is a common sensorimotor disorder with an unknown etiology that affects 10% of population (1). Högl et al (2) reported that the rate of RLS development was 8.7% following spinal anesthesia. In another study, the study of Högl et al was criticized and it was reported that RLS cannot be named as a new complication of spinal anesthesia but can be named as a temporary restless leg condition since the dose of local anesthetic agent was not standardized, a thicker spinal needle (22G) was used and metoclopramide was used for antiemesis (3). In our study; 25G spinal needle was used to administer 0.5% 12mg bupivacaine. Spinal anesthesia was achieved in the first attempt and free flow of cerebrospinal fluid was observed without causing any trauma. The patient didn't receive any medication besides postoperative antibiotics.

Conclusion: RLS may not be encountered as a new post spinal complication however it can aggravate preexisting RLS symptoms since it creates sensorimotor blockage.

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PP-16**AGE 107, HEPATOBILIARY SURGERY AND THORACIC EPIDURAL ANESTHESIA:
A SUCCESSFUL EXPERIENCE**

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Background: The anesthesia management of chronic obstructive pulmonary disease (COPD) patients in upper abdominal surgery is fairly difficult. The application of general anesthesia includes post-operative pulmonary and cardiac complications. We aim to share our experience of a good alternative to general anesthesia in a stage four COPD patient with thoracic epidural block.

Case Report: A 107 year old, male patient, with chronic atrial fibrillation and stage 4 COPD (ASA IV) was taken into the operating room without premedication for cholecystectomy and choledochoduodenostomy procedure. SpO₂ was 85% and 4 L/min of oxygen by mask was initiated. Routine monitorization was done together with arterial monitoring. Epidural block was with an 18 G Touhy needle through T9-10. Following confirmation of the epidural space, catheterization was performed. The tip of the epidural catheter was protracted cephalically, 8 ml of 0.5 % bupivacaine hydrochloride and 50mg fentanyl mixture administered. The pin prick test performed at the 15th minute revealed adequate sensorial block in T4 – T12 segments. With Surgical incision, 4mg/kg/hour Propofol infusion was started. During the operation, 4 L/min of oxygen by mask was given. Nasogastric tube was applied. About 20 minutes after epidural anesthesia, the heart rate of the patient fell to 42/min however with the application of 0.5 mg atropine, it normalized shortly after. One hour into the operation, an extra dose of bupivacaine hydrochloride was administered via the epidural catheter. The operation lasted 75 minutes with no intra-operative complications. Follow-up in the ICU 24 hours post-operatively was done. Five hours post-operatively, due to pain, 4 ml 0.5 % bupivacaine hydrochloride and 50mg fentanyl was administered. 24 hours later, the epidural catheter was retracted.

Discussion: TEA is protective against the specific side effects of general anesthesia being myocardial and respiratory depression. Pain control in the post-operative period and a shorter spontaneous respiration transition period are among its other advantages.

Conclusion: Thoracic epidural anesthesia provides sufficient anesthesia for upper abdominal operations. Due to the presentation of post-operative pulmonary and cardiac complications of general anesthesia, it is a good choice in geriatric and high risk ASA patients.

PP-17**PAROXYSMAL ATRIAL FIBRILLATION DEVELOPED AFTER SPINAL ANESTHESIA IN GERIATRIC PATIENT WITH NO COMORBID DISEASES -A CASE REPORT-**

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Background and goal of study: Geriatric patients are risky and specific for anesthesia practise. Postoperative atrial fibrillation is the most common cardiac arrhythmia that increase the possibility of both preoperative and postoperative mortality.

This study outlines the case of a geriatric patient who has no comorbid diseases, and who developed early postoperative paroxysmal atrial fibrillation (PAF).

Case report: Spinal anesthesia was planned to have the procedure of transurethral vesical resection for the patient who is 84 years old and had no comorbid diseases in preoperation anesthesia evaluation.

Patient was stable and had normal hemodynamic and electrocardiogram findings. The patient was placed in lithotomy position after the administration of 12 mg hyperbaric bupivacaine at L3-L4 interspace. During almost 1 hour operation, the block height didn't increase above T10 and IV fluids were given according to standard procedures and patient was stable.

When patient was placed in supine position at the end of the operation, he developed sudden hypotension, tachycardia and mild cognitive dysfunction. It has been observed that blood pressure (BP) was 74/46 mmHg, heart rate (HR) was 129 beats/min. and electrocardiogram showed PAF. An arterial way was obtained, arterial blood sample and full hematologic sample was studied and the results were normal. A cardioversion was preceded by the cardiologist because of the hemodynamic instability.

After 100J cardioversion the patient was in sinus rhythm and later removed to cardiovascular intensive care unit, while BP was 95/50 mmHg and HR was 82 beats/min. After 48 hours of intensive care unit stay, patient then removed to urology unit with clear consciousness and stable monitor findings

Discussion: It is widely accepted that the older age is the most important risk factor for AF in non cardiac non thoracic surgeries. The frequency is 3% among the people are older than 45 and this rate increases with age. All over the world, geriatric patients and procedures increases as well.

Conclusion: With patients who has comorbid diseases, preoperative risks can be evaluated. However geriatric patients with no comorbid diseases have also the risk of specially cardiac and pulmonary complications as in this case.

PP-18**ACUTE BRONCHIAL OBSTRUCTION AFTER ANESTHESIA INDUCTION: CASE REPORT**

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Background: Acute pulmonary collapse is common in postoperative period and ICU, but it may be seen after anesthesia induction and at the time of repeated positional changes of endotracheal tube. In this case, we presented the management of bronchial obstruction in an anesthesia induction prior to laparoscopic cholecystectomy.

Case: The patient planned for laparoscopic cholecystectomy was 72 years old, male, ASA 2 was taken to OR. The patient had hypertension and did not smoke. Neck extension and mouth openness were limited. 2 mg. IV midazolam was given for premedication. He was preoxygenated with 100 % O₂ for 3 min. In induction, 1 mcg/kg fentanyl, 1 mg/kg lidocaine, 3 mg/kg propofol and 0.6 mg / kg rocuronium were used. The first intubation trial caused esophageal intubation and he was reintubated. Both hemithoraxes were auscultated, while the lip level was 20 cm, lung sounds were not obtained on the left side. Considering right bronchial intubation, the tube was pulled back to 16 cm, but respiratory sounds were not taken. The patient was intubated again. Intraoperative direct chest X-ray was used to rule out the suspicion of left pneumothorax. Pneumothorax was not detected. Using left FOB, total obstruction was seen at the level of the left main bronchus about 1-1.5 cm distal to the carina. Mucus was detected at the proximal of obstruction and aspirated. To prevent edema and spasm, 1 mg/kg prednol, 200 mg theophylline were administered. Ventilation was continued with 100 % FiO₂, 2.5 % sevoflurane and 4 lt fresh gas flow. The operation was restarted, since obstruction was completely regressed. The patient was extubated and transferred to PACU with Nasal O₂.

Discussion: Acute bronchial collapse is a rare but important cause of hypoxemia. Although intraoperative bronchial complications are common, there is little published data for acute collapse (1,2,3). The most common cause is the obstruction of intubation tube with secretion, blood or cuff herniation.

Conclusion: Severe collapse may cause hemodynamic instability due to mediastinal shift and decreased venous return. FOB is a life-saving procedure recognizing the condition before it becomes complicated.

PP-19**RELATIONSHIP OF CIGARETTE DEPENDENCE AND HEALTH LITERACY AMONG
PREOPERATIVE PATIENTS TO COMPLIANCE
WITH ADVICE ON GIVING UP SMOKING IN ANESTHESIA POLYCLINIC**

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Background: Cigarette use in the perioperative period has critical significance in preoperative patient evaluation at anesthesia polyclinics (1).

Health Literacy (HL) evaluates the ability to reach and understand information on healthcare services, and on following instructions and taking decisions on health related issues (2,3). Lower HL is associated with difficulty of getting patient compliance with the given advice and instructions. The aim of our study was to evaluate the effect of HL level and smoking dependence of patients on their compliance with advice given by the physicians in anesthesia polyclinics on giving up smoking,

Materials and Methods: This prospective study included 165 patients consulting the preoperative anesthesia polyclinic, and a sociodemographic questionnaire. The participating patients were advised at the anesthesia polyclinics to give up smoking until the day of the surgery. The patients were also tested by means of the Fagerstrom Test for Nicotine Dependence (FTND). On the day of surgery, CO level in the expired breath (eBCO) was measured and the patients were queried on the time they had attended the preoperative anesthesia polyclinic, and whether they had smoked on the day of surgery and in the previous day.

Results and Discussion: Demographic details of the patients are presented in Table1. The number of patients smoking on the day of surgery was significantly higher among the females ($p=0.001$). As the HL were lower, the FTND ($p=0.006$), daily cigarette consumption ($p<0.001$) and the years of cigarette smoking ($p=0.002$) were found to increase significantly. Although a correlation between HL and smoking status was not found on the day of surgery and on the day before surgery, HL were low with increasing age. Less number of days between the polyclinic interview and the surgery date were positively correlated with compliance with advice to give up smoking ($p=0.011$).

Conclusion: Correlation between verbal advice for giving up smoking in anesthesia polyclinics and the patient HL was not observed. Since patient numbers continuing with smoking cigarettes was high, it was concluded that verbal advice on giving up smoking is not enough and that other more effective measures are needed to ensure patient compliance.

Key words: Health Literacy, anesthesia polyclinic, smoking

Table 1 Patient characteristics (N = 165)

Age, median (min-max), years	39 (22-73)
Male gender, n (%)	125 (75.8)
BMI, median (min-max)	25,2(16,6-20,6)
Starting age of smoking (years)	18 (7-43)
Cigarettes smoked per day n (%)	18(5-40)
Duration of smoking, median (min-max), years	18(1-65)
COppm	12(1-88)
FTND	3(0-10)
Smoking in Operation morning	56(33,9)
Smoking in previous day	156(94,5)

FTND: The Fagerstrom Test for Nicotine Dependence

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PP-20

ANALGESIC EFFECT OF AXILLARY AND SUPRASCAPULAR NERVE BLOCKS IN PATIENTS HAVING ARTHROSCOPIC SHOULDER SURGERY

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Goal of The Study: Successful pain management after arthroscopic shoulder surgery ease the rehabilitation of the patients and shorten the length of hospital stay. The aim of the study is to share our experiences obtained from 20 patients, to whom performed suprascapular nerve block (SSNB) and axillary nerve block (ANB) for arthroscopic shoulder surgery.

Method: Written informed consent was obtained from twenty patients aged between 18-63 (38) with ASA I-II class. After patients were admitted to the pre-operation room; suprascapular nerve was viewed in the supraspinous fossa with ultrasonography while the patient was in sitting position. Using the in-line technique with linear probe, 22G 100 mm block needle was inserted. After the observation of contractions of infraspinatus muscle, 10 ml %1 prilocaine and 10 ml 0.25% bupivacaine were injected. The axillary nerve block was also performed to all patients. Standart general anesthesia was provided for all patients. Before extubation, tramadol and paracetamol were administered intravenously. In two patients, patient control analgesia was applied with a catheter placed into the supraspinous fossa for SSNB.

Postoperative pain was assessed in the recovery room at 1st, 2nd, 4th, 6th and 24th hours using Verbal Analog Scale (VAS 0: no pain, VAS 10: worst pain). Additional analgesic requirement and patient's satisfaction were recorded.

Results and Discussion: In the recovery room, VAS values were 5 in 2, 2 in 3 patients and 0-2 in other patients. At postoperative 2nd hour VAS values were reported as 4 in one patient and 0-2 in other patients.

Tramadol and paracetamol was given to one patient and 2 patients at postoperative 2nd hour and 4th hour, respectively. VAS values of all patients were evaluated between 0-2 after postoperative 24th hour and patients were discharged the day after.

Conclusion: Most of the sensorial innervation of shoulder is supplied by suprascapular and axillary nerve. Since the blocks of these nerves are easy to perform and complication and side effect incidences are low; they might be preferred for pain relief in patients having arthroscopic shoulder surgery.

PP-21**ANESTHETIC MANAGEMENT OF A PATIENT WITH
ANTIPHOSPHOLIPID ANTIBODY SYNDROME**Ilkay Baran, Aslı Dönmez, Evginar SezerUniversity of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital,
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Introduction: Antiphospholipid Syndrome (APS) is an autoimmune disorder which progresses with many thromboembolic phenomenon. APS is a paradoxical disease which shows clotting defects in some coagulation tests, but also it causes thrombotic disorder *in vivo*. Both thrombophilia and thrombosis are seen in many systems of the body due to the pathologic effects of antiphospholipid antibodies over the primary (endotelium and thrombocytes) and secondary (coagulation and fibrinolytic systems) hemostatic elements. A careful observation is required during perioperative period about bleeding and thromboembolic attacks. In this case report the anesthetic management of a patient with APS is presented.

Case Report: 48 years old female ASA II patient who was planned to undergo cholecystectomy was diagnosed with Primary APS during the preoperative evaluation, and a low dose acetylsalicylic acid was started. During this period her laboratory findings showed low factor 11,12,8 levels, positive lupus anticoagulant and positive AntidsDNA levels, APTT level was 53.2 second. In the preoperative period acetylsalicylic acid was stopped and low molecular weight heparin (LMWH) was started, with a APTT level of 51.6 second her laboratory parameters were in normal ranges. A standart monitorization was applied to the patient and antiembolic stockings were dressed. LMWH of 0.6 ml was given subcutaneously. Anesthesia induction was made with fentanyl, propofol and rocuronium, and maintained with sevoflurane and 50% mixture of oxygen and nitrous oxide. Sufficient intraoperative hydration was made, and 50mg dexketoprofene and PCA with tramadole intravenously were given for postoperative analgesia. The patient was extubated and sent to the surgical ward without any problem. She was mobilized in 6th postoperative hour, and on the second day was discharged from the hospital.

Discussion: The changes during surgical interventions, infection or anticoagulation therapy cause risk for thromboembolic events peroperatively in APS patients. During the intraoperative period antiembolic stockings, devices for intermittent venous compression, sufficient hydration can reduce the frequency of these complications. It's mandatory to perform optimal analgesia to facilitate early mobilization, and this will also reduce the incidence of thrombotic events after surgery.

As result the anesthesia management of patients diagnosed with APS should include careful evaluation of both bleeding and thromboembolic risks. Therefore monitorization of coagulation and LMWH prophylaxis should be considered in patients with APS.

PP-22**A CASE REPORT OF ACCIDENTAL DURAL TEAR AND OVERDOSE OF INTRATHECAL OPIOID DURING EPIDUROSCOPY**

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Background: Minimally invasive epiduroscopy is a method which is commonly used for treatment of chronic low back pain and radiculopathy (1). Saline with or without local anesthetic addition was used to visualize epidural space structure during this procedure. Some of the surgeons also adds opioids for postoperative analgesia. However a dural tear during epiduroscopy may result to enter the opioids and other medications into intrathecal space. A case of accidental opioid overdose due to dural tear during epiduroscopy was reported.

Case report: A 63-year-old healthy woman (59 kg, 165 cm), classified as ASA II, was scheduled for *epiduroscopy* under sedation (2 mg midazolam, 50 mcg fentanyl) and monitored anesthesia care for chronic low back pain. During the procedure brain surgeon was used 5 mL of contrast agent and 35 ml saline for visualization. He also added 1 mg morphine sulfate, 15 mg bupivacaine, 3 ml betamethazon for postoperative analgesia. *Epiduroscopy* was finished in 20 minutes. Vital parameters and respiratorial functions were stable during the procedure. In the PACU, at 5 th minutes of arrive, the patients heart rate dropped from 71 to 57/min. Also her respiratory efforts decreased and the blood pressure dropped from 117/ 90 mmHg to 77/ 45 mmHg. Even though the IV ephedrine injection blood pressure did not increase. Suddenly after she developed anisocoria (left eye more smaller than right) and became unconscious. After bag-mask ventilation patient was taken to ICU. The patient's vital signs and respiratory parameters return to baseline after the administration of intermittent naloxone.

Discussion: Brain surgeons who added opioids to saline solution during epiduroscopic procedures should be knowledgeable about life-threatening consequences associated with dural tear (2) and also they must give information to anesthesiologist regarding medications.

Conclusion: Patients should be monitored closely after the epiduroscopic procedures especially when opioids added saline solution for postoperative pain.

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PP-23**IATROGENIC LEFT INTERNAL ILIAC ARTERY PERFORATION
DURING LUMBAR DISCECTOMY: CASE REPORT**

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Background: Lumbar discectomy is a common procedure for intervertebral disc herniation. We report a case of inadvertent left internal iliac artery perforation during lumbar discectomy via the posterior approach.

Case Report: A 50-year-old, 75-kg woman underwent an elective lumbar discectomy for disc herniation at the L4–5 intervertebral space. After standard monitoring, anesthesia induction and endotracheal intubation, surgical operation continued for 90 minutes uneventfully. A progressive decrease in NIBP from 100/70 to 65/35mmHg and the EtCO₂ from 32 to 25mmHg were noted within 5 minutes. Bolus iv colloid fluid was started at a maximum rate with iv 10mg ephedrine. Consecutive venous blood gas samples showed Hct=28.7%, Hb=9.3g.dL⁻¹ and Hct=25.8%, Hb=8.3g.dL⁻¹. Arterial cannulation from left radial artery and invasive arterial pressure monitoring were established. IV infusion of dopamine 5µg.kg⁻¹.min⁻¹ was started due to persistent hypotension. First arterial blood gas sample analysis showed Hct=15.2%, Hb=4.8g.dL⁻¹ and mild compensated metabolic acidosis. RBCs and FFP were given immediately. Surgical operation was terminated and a central venous catheter was inserted. Vascular injury was suspected and abdominal ultrasonography revealed suspicious retroperitoneal fluid accumulation. During this period 5 units of RBCs and 4 units of FFP were given. The patient's blood pressure stabilized. CT scanning revealed a rupture in the left iliac artery and iliac angioplasty with stenting was performed. Meanwhile abdominal compartment syndrome was diagnosed and surgical decompression and Bogota Bag closure was done. Abdomen was closed approximately 3 days later and the patient discharged 4 weeks later.

Discussion: Common iliac arteries, inferior vena cava and common iliac veins are very vulnerable to injury during lumbar disc surgery at L₄₋₅ or L_{5-S}₁ levels. Bleeding from a vascular injury at this site tends to be limited to the retroperitoneal space rather than operating space. Delayed diagnosis or lack of awareness of potentially fatal vascular injuries are due to the absence of bleeding from the surgical site.

Conclusion: Iatrogenic vascular injury related to lumbar disc surgery may be a fatal complication. Despite its low incidence anesthesiologists and surgeons should be aware of this complication. Aggressive fluid and blood replacement and vasopressors may be necessary until bleeding is controlled.

PP-24**A CASE OF HORNER'S SYNDROME FOLLOWING
INFRACLAVICULAR BRACHIAL PLEXUS BLOCK**

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Background: Horner syndrome results from an paralysis of the sympathetic nerve supply to the eye and is characterized by the classic triad of miosis (ie, constricted pupil), partial ptosis, and loss of hemifacial sweating (ie, anhidrosis). Horner's syndrome may appear after regional anesthetic techniques including stellate ganglion block and supraclavicular approaches to the brachial plexus (1,2). In this case report, we presented a case of Horner's syndrome after performing an infraclavicular brachial plexus block.

Case Report: A 28-year-old healthy man (80 kg, 178 cm), classified as ASA I physical status was scheduled for hand surgery. After the patient sedated with 2 mg midazolam ultrasound-guided infraclavicular brachial plexus block was performed using 16 mL of bupivacaine 0.5% and 14 ml of prilocaine %2. Block onset time was 10 minutes. There was no change in vital parameters. We did not observed pneumothorax, vascular puncture and symptoms of local anesthetic toxicity. However 50 minutes after block performance the Horner's Syndrome was observed. The patient did not have any respiratory difficulty. Surgery was completed without any complication. Horner's Syndrome vanished approximately three hours after the surgery.

Discussion: Horner syndromes after infraclavicular brachial plexus block is a very rare situation. It may be related to spread of local anesthetic solution. Although Horner's syndrome had no clinical results to this patient it may be described as an disagreeable side effect.

Conclusion: Horner syndromes due to infraclavicular brachial plexus block has the potential to cause patient anxiety, discomfort and dissatisfaction. For this reason anesthesiologists should be aware of this syndrome and if it occurs patients should be monitored closely.

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PP-25**ANESTHETIC MANAGEMENT OF A PEDIATRIC PATIENT WITH LEIGH SYNDROME**

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Background: Leigh syndrome (LS) is a rare disease caused by abnormalities of mitochondrial energy generation and characterized by a progressive neurodegenerative course, with subacute necrotizing encephalomyelopathy. It usually presents in infancy with developmental delay, seizures, dysarthria, and ataxia. These patients may also develop episodes of lactic acidosis that usually lead to respiratory failure and death. Due to the rarity of the condition, the most appropriate anesthetic plan remains unclear. We present our experience in the management of general anesthesia in a patient with LS, who underwent gastroesophageal reflux (GER) surgery.

Case Report: The patient was a 27-months-old boy with LS, weighing 10 kg and measuring 82 cm in height, who required anesthetic care for surgery to GER and gastrostomy. A diagnosis of LS was made 2 months ago by the characteristic clinical and radiological findings. On physical examination, psychomotor development was retarded, he understood simple words only, and did not talk, he had choreo-athetoid movements and dystonic posturing. His vital signs were within normal limits and his cardiovascular and respiratory examinations were unremarkable. There were mild metabolic acidosis and hyperlactatemia in blood gas sampling (pH: 7.27, lactate: 5.9 mEq/L, HCO₃: 18.2 mmol/L).

Discussion: Anesthesia was induced with midazolam (100mcg/kg). Midazolam and remifentanyl infusion were used for maintenance of anesthesia. Neuromuscular blockade was achieved with rocuronium bromide (0.5 mg/kg) followed by endotracheal intubation. No volatile anesthetic agents were administered. The procedure lasted 2.5 hours and the total fluid administration included 250 mL of 5% dextrose 0.45% sodium chloride. Following the procedure, 0.5 mg/kg sugammadex was applied for reversion and the patient's trachea was extubated and he was transferred to the intensive care unit with close observation. The postoperative course was almost uncomplicated.

Conclusion: For proper preparation of the patient with LS, complete preoperative assessment of respiratory, cardiovascular, and renal functions is necessary, prior to anesthetic care. Normocapnia, normothermia, and avoidance of lactate containing solutions are necessary. Although malignant hyperthermia has not been reported with LS, it may be best to avoid triggering agents as other myopathic conditions.

PP-26**ANESTHETIC EXPERIENCE IN A PEDIATRIC PATIENT WITH GRISCELLI SYNDROME**

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Background: Griscelli syndrome (GS) is a rare autosomal recessive disease. Children with this syndrome have phenotypic features such as partial albinism, silver gray hair. There are also subtypes of syndrome, which may have neurological and hematologic disorders, and immunodeficiency. Anesthesia management is unclear because of the rarity of the syndrome. In this presentation, we aimed to share our experience in a pediatric patient with GS undergoing frontal sinus fracture surgery with general anesthesia.

Case Report: The patient was a 10-months-old boy with GS, weighing 9.5 kg (25-50 p) and measuring 70 cm (10-25 p) in height. The parents of the patient were second-degree relatives and the patient had history of 2 sibling deaths. The reason of the death of his first brother had not been known, but his second brother had been diagnosed with GS. The vital signs of the patient were normal and the gray color of the hair drawn the attention on his physical examination. Hepatosplenomegaly was not detected and laboratory results did not show any abnormalities.

Discussion: Anesthetic induction and maintenance was provided with inhalational agent, sevoflurane. Rocuronium bromide (0.5 mg/kg) was used for neuromuscular blockage and endotracheal intubation was achieved. The procedure lasted 1 hour and the total fluid administration included 100 mL of 0.9% sodium chloride. Neuromuscular blockage was antagonized with neostigmine and atropine and the patient's trachea was extubated and he was transferred to the intensive care unit with close observation.

Conclusion: Since hemophagocytic syndrome can also be seen in these children with GS, laboratory results should be carefully examined preoperatively. Due to the lack of granules in the platelets, the bleeding risk should be considered during and after the operation. In addition, disinfecting of the environment and equipment should be emphasized in order to reduce the risk of infection and to avoid contamination.

PP-27**USE OF SUGAMMADEX IN CHILDREN FOR THE DURATION OF EXTUBATION**

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Purpose: Sugammadex is a cyclodextrin compound which provides complete recovery of residual neuromuscular blockade. In this study, we compared sugammadex and neostigmine in terms of time to achieve a train-of-four (TOF) ratio of 0.9 and extubation time (TE).

Methods: In this prospective observational study after the approval of the ethics committee we recorded all of the premedication, monitoring, induction, airway control, continuation and postoperative pain control during the anesthetic application. During the six month period, 200 patients records were collected. From these patients patients who were intubated the age, weight, height, methods of monitoring, duration of anesthesia and agents and doses used to recovery of residual neuromuscular blockade effect, TOF ≥ 0.9 reaching time (T_{0,9}) and time to extubation in the antagonist injection were evaluated and compared retrospectively . The results of the study are expressed in terms of arithmetic mean, standard deviation, number and percentage. The T test was used to compare groups.

Results: In this study, only 40 patients were found to be entubated with rocuronium to 0.6mg/kg. It was observed that all patients except two had TOF monitoring. Two patients who had surgery longer than two hours had no additional muscle relaxant medication and because of TOF ≥ 0.9 no antagonist medication was observed. The duration of extubation was $180,40 \pm 17,79$ seconds in the neostigmine group and $67,39 \pm 26,67$ seconds in the group of sugammadex ($p < 0,05$).

Conclusion: We observed that sugammadex was more rapidly and effectively reversed the neuromuscular blockade compared to neostigmine. There was no significant change in haemodynamic parameters and complications in any of the measurement times. However, there are limited studies in children to assess the safety and side effects of the drug sugammadex in pediatric patients and additional data are needed for the credibility of the drug in clinical practice.

Key words: sugammadex, neostigmine, children, extubation

PP-28**WHAT ARE WE DOING IN CHILDREN**

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Background and Goal of Study: The anesthetic management in the pediatric age group, shows many differences as anatomical, physiological and pharmacological compared to adults. Therefore, the equipment used in anesthesia, methods drugs vary. Surgical and anesthetic anesthesia required special strategies for pediatric patients because the age is inversely proportional to increase mortality and morbidity. In these reasons, clinical pediatric surgery should establish a certain standard. The purpose of this study is to investigate perioperative anesthesia records of pediatric patients having surgery in the Adnan Menderes University Hospital operating room and to see and identify what documentation and anesthesia practice need for better anesthesia.

Methods: In this prospective observational study after approval of the ethics committee, anesthesia registration form which provides the demographic characteristics of the patients and information about anesthesia management created by our clinic. The 200 pediatric patients which operated between september 2014 and march 2015 recorded on these forms. The preoperative, intraoperative and postoperative information of these patients recorded on these forms.

Results and Discussions: In our study the most frequent surgeries made by pediatric surgeons were (n=74; 37%) circumcision and hypospadias surgeries. Preoperative midazolam used more frequent (n=82) in our patients. The patients were often 3-12 age group in our study so the airway control was provided mostly by LMA (121 patients; 60.5%). In brief cases, such as circumcision use of face mask was more frequent (n=34). Sevoflurane more often used in pediatric patients (n=183) Sugammadex was more commonly used than neostigmine to reverse neuromuscular blockade. The regional anesthesia performed more frequently (n = 175; Caudal: 167 and epidural: 8). In regional anesthesia (n=156) bupivacaine was more frequently used.

Conclusions: In our study we analyzed that anesthesia method which used in pediatric patients in our clinic was similar to the literature studies. Our anesthesia method was also similar to commonly used methods in anesthesia clinics and practice. We believe in use of preoperative medication agents except midazolam our clinical experience will increase. Temperature control and neuromuscular monitoring can provide a safer anesthesia.

Keywords: pediatric patient, anesthesia management, midazolam, sevoflurane, sugammadex, caudal

PP-29

ANESTHETIC MANAGEMENT OF TWO BABIES WITH TRISOMY 18 UNDERGOING CLOSURE OF PATENT DUCTUS ARTERIOSUS AND PULMONARY ARTERY BANDING: REPORT OF TWO CASESOguzhan Arun¹, Bahar Oc¹, Ates Duman¹, Mehmet Oc²¹Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation, Konya, Turkey²Selcuk University Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey

Background: Edwards' Syndrome (Trisomy 18) is an autosomal chromosomal disorder with multiple congenital anomalies. We report the anesthetic management of two babies with this syndrome undergoing closure of patent ductus arteriosus (PDA) and pulmonary artery banding.

Case Report: First patient was 13-day-old girl, 1540 g body weight with dysmorphic facial features, hypotonia, atrial and ventricular septal defects (ASD, VSD) and PDA, bilateral hydronephrosis and hydro-ureter in the right kidney, and mega cisterna magna variation in the central nervous system. Anesthesia was induced with sevoflurane 8% in 50:50% oxygen/air. After obtaining peripheral venous access, 2 mcg.kg⁻¹ fentanyl and 0.5 mg.kg⁻¹ rocuronium were given intravenously. After intubation with a 3.0 mm uncuffed endotracheal tube (ETT), central venous and arterial accesses were achieved via femoral route. Anesthesia was maintained with sevoflurane 1.5-2%, 1 mcg.kg⁻¹ fentanyl, 0.2 mg.kg⁻¹ rocuronium as needed. Following PDA ligation and banding invasive blood pressure increased from 66/34 (45) mmHg to 84/48 (60) mmHg and SpO₂ decreased from 99% to 95%. Dopamine infusion was started at 5 mcg.kg⁻¹.min⁻¹ before transfer of the intubated baby to NICU.

Second patient was a 4.5 month-old girl, 3600 g body weight with dysmorphic facial features, VSD, ASD, PDA, Tetralogy of Fallot, and epilepsy. The intubated baby was transferred from tertiary hospital to our PICU. Anesthesia was induced with sevoflurane 8% in 50:50% oxygen/air and 0.4 mg.kg⁻¹ midazolam, 5 mcg.kg⁻¹ fentanyl and 1 mg.kg⁻¹ rocuronium were given intravenously. ETT was exchanged with 3.5 mm uncuffed tube with the assistance of ETT guide. Central venous and arterial accesses were achieved via femoral route. Anesthesia was maintained with sevoflurane 1.5–2%, 1 mcg.kg⁻¹ fentanyl, 0.2 mg.kg⁻¹ rocuronium as needed. Following successful PDA ligation and banding procedure the intubated baby was transferred to PICU without hemodynamic support.

Discussion: Airway management can be problematic due to dolichocephaly, micrognathia, and small mouth that may make mask ventilation and intubation difficult. To maintain intraoperative hemodynamic stability, volatile inhalational agents like sevoflurane with the least cardiac depressant effects can be a good option.

Conclusion: The complexity and severity of clinical presentation and high mortality rate make perioperative management of babies with trisomy 18 particularly challenging.

PP-30**ANESTHETIC MANAGEMENT OF A NEWBORN WITH CANTRELL'S PENTALOGY**

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Background: Cantrell's pentalogy (CP) is a rare congenital syndrome combining a defect of the supraumbilical abdominal wall, the agenesis of the lower part of the sternum and of the anterior portion of the diaphragm, the absence of the diaphragmatic part of the pericardium, and a cardiac malformation. We recently managed anesthesia of a patient with Cantrell's pentalogy and herein report our experience.

Case Report: The patient was a 3-day-old male neonate, who had been diagnosed with CP syndrome, including ventricular septal defect, patent ductus arteriosus, right arcus aorta, abdominal wall defect, omphalocele and sternal hypoplasia. He was born by C/S at 39 weeks gestation (body weight, 2795 g) at hospital. The Apgar scores were 5 points at first and fifth min. After delivery the baby was intubated and transferred to the NICU. In the operation theatre, after routine monitorization, blood pressure was 65/40 mmHg, pulse rate was 180/min and SpO₂ was 92%. Anesthesia was induced with midazolam (0.5 mg/kg), fentanyl (3 mcg/kg), rocuronium (1 mg/kg) for tracheal intubation, then maintained with air-O₂ 40-60%, sevoflurane, fentanyl and rocuronium. Arterial and central venous cannulation was performed. The omphalocele sac was dissected and hernial contents (intestine, colon, liver) were returned to their original compartment. The heart was above and adjacent to the liver. Sternum was closed ½ ratio with patch due to cardiac arrhythmia and hemodynamic abnormality. Dopamine infusion (5 mcg/kg/min) was started. Blood pressure was around 60/35 mmHg, heart rate was 140/min and baby was transferred to the NICU. Postoperative 7th day, abdominal distention occurred and his blood pressure and SpO₂ gradually decreased, indicating the occurrence of respiratory and circulatory failure. The patient died postoperative 8th day due to necrotising enterocolitis without any renal or cranial pathology.

Conclusion: Requiring particular attention during the management of anesthesia for this syndrome include, among others, complications of diverse cardiac malformations, pulmonary hypertension, pulmonary hypoplasia, and respiratory and circulatory failure associated with increased intra-abdominal pressure due to the primary closure of an omphalocele. Accordingly, extreme caution must be taken to restore respiratory and circulatory control.

PP-31**AORTOPULMONARY WINDOW SURGERY IN A BABY WITH ANOMALOUS RIGHT CORONARY ARTERY ARISING FROM THE PULMONARY ARTERY (ARCAPA) SYNDROME: CASE REPORT**

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Background: Anomalous origin of the right coronary artery from the pulmonary artery (ARCAPA) is a rare and potentially life-threatening condition. We aimed to report anesthetic implications of surgical correction of a case with the combination of ARCAPA syndrome and aortopulmonary window (APW).

Case: 4-months-old, 5100g infant was referred to the department of Pediatric Cardiology. Transthoracic echocardiography revealed 3-4 mm APW and ASD. Cardiac catheterization demonstrated ARPACA with increased pulmonary pressures in addition to the echocardiographic findings. Full surgical correction of APW and ASD was performed successfully with the transfer of right coronary artery from pulmonary artery to the native position at aorta with the cardiopulmonary bypass support. Anesthesia was induced with sevoflurane 8%. After obtaining arterial and venous access from femoral site, fentanyl iv 5 mcg.kg⁻¹ and rocuronium 1 mg.kg⁻¹ were given. After endotracheal intubation, mechanical ventilation was achieved with pressure control mode with oxygen in air 50-50% at 25-30 rpm. Anesthesia was maintained with sevoflurane 2-3%, fentanyl and rocuronium as required. Iv infusion of dopamine at 5 mcg.kg.min⁻¹ and milrinone at 0.5 mcg.kg.min⁻¹ were started before transfer of the baby to the PICU. The baby died due to sepsis in the postoperative 15th day at PICU.

Discussion: ARCAPA syndrome can be associated with other cardiac anomalies such as APW, TOF, VSD, ASD, double outlet right ventricle, PDA, coarctation of the aorta, pulmonary stenosis, and aortic stenosis.

Conclusion: Lowering pulmonary artery pressure and obtaining sufficient coronary perfusion after surgical correction are the most important targets that might affect hemodynamic stability and intraoperative anesthesia course.

PP-32**PRONE POSITION AND ANESTHESIA IN A PATIENT WITH SPINAL MUSCULAR ATROPHY**

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Background: Spinal muscular atrophy (SMA) is a neuromuscular disease characterized by weakness and atrophy of the proximal muscles resulting from progressive degeneration of spinal cord anterior horn cells. Respiratory failure, difficulty in airway management and gastroesophageal reflux are more common in SMA type II patients. Restriction of neuromuscular blockers (NMB) and prolonged follow-up in intensive care unit are the other problems for this patient group. In this case report, we presented a patient who had an adequate anesthesia depth without the use of NMB and performed operation by prone position.

Case Report: A 10-year-old male patient with SMA type II, weighing 15 kg, was planned to have an operation due to tissue defect in the lumbar region after scoliosis surgery. In physical examination, he had a weakness in the proximal muscles, a prominent scoliosis and his Mallampati score was III. 3 mg oral midazolam was administered for premedication. After adequate bispectral index (BIS) values reached (33), induction was performed by face mask inhalation with sevoflurane-oxygen mixture and fentanyl 60 mcg intravenously (IV). Intubation was performed with videolaryngoscopy. Anesthesia was maintained by 50% O₂ and 50% air mixture in sevoflurane and 0.04 mcg/kg/min remifentanyl IV infusion. After the patient was placed in prone position, the chest, neck, arms, legs were supported gently (Figure 1,2).

IV paracetamol 250 mg and tramadol 20 mg were used for postoperative analgesia. After the operation, the patient was extubated and transported to patient ward without complications.

Discussion: The reduction in acetylcholine densities on the last plate of the neuromuscular component in SMA patients leads to prolonged effects caused by decreasing amounts of cholinesterase, low secretion of acetylcholinesterase enzyme and having hypersensitivity to non-depolarizing NMB agents. In addition, the chronic weakness of respiratory muscles, the presence of spinal deformities and the tendency resulted in the restrictive lung disease in SMA patients. Respiratory problems induced by anesthesia may lead to prolonged intubation and may be required postoperative intensive care unit support.

Conclusion: In conclusion; adequate anesthesia depth can be achieved by performing BIS monitoring without using NMB in SMA patients and possible effects of NMBs can be avoided.

PP-33**ANESTHETIC MANAGEMENT OF A PATIENT WITH KARTEGENER SYNDROME**

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Background: Kartagener Syndrome is an autosomal recessive disease which is characterized by dextrocardia, sinusitis and bronchiectasis and is also entitled as “Immotile Cilia Syndrome”. Here, we present a patient with Kartagener Syndrome assigned for tympanoplasty. Pneumonia and chronic otitis media are often encountered these cases. Early diagnosis improves the quality of life by reducing complications. It is crucial to struggle against with respiratory system infections and remove secretions in treatment.

Case: A 10 year old, 30 kg male followed up for 8 years with diagnosis of Kartagener Syndrome, had chronic discharge from both ears with hearing loss. Tympanoplasty was planned under general anesthesia who had recurrent upper and lower respiratory infections. During the preoperative examination breath sounds were normal and heart sounds were at right side. In chest x-ray; heart and stomach were on the right side (Fig 1). In the paranasal sinus tomography, mucosal hypertrophy and secretion augmentation was observed which was concordant with diagnosis (Fig 2). Patient was scheduled for general anaesthesia with ASA II physical score. No premedication was given, the patient was monitored with EKG, pulse oximetry and noninvasive blood pressure. Propofol 4 mg kg⁻¹, 2% Lidokain, 2 mg kg⁻¹ and fentanyl 50 mcg were injected intravenously for anesthesia induction. No muscle relaxant was given. Sevoflurane 2-3% in 50% oxygen-air mixture and 0,03 mcg kg⁻¹dk⁻¹ remifentanyl was used for maintenance of anaesthesia. Antibiotics and H2 receptor blockers were also used. No complication was observed during the 90 minutes of operation and early postoperative period.

Discussion: In Kartagener Syndrome, recurrent respiratory system infections are frequent owing to deteriorating mucociliary clearance. Complications in general anesthesia could be decreased with a comprehensive evaluation of cardiac and respiratory system, with the selection of anesthetic drugs that enables fast compilation and by not using muscle relaxant.

PP-34**ANESTHETIC MANAGEMENT DURING THE COLOSTOMY OPENING OF
CONJOINED TWINS WITH ANAL ATRESIA**

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Background: Conjoined twins are joined from four different regions: chest (thoracopagus, xiphogus), sacral bones (pygophagus), heads (craniophagus) and pelvis (ischiophagus) (1). We described the anesthetic management during the colostomy opening of xiphagus conjoined twins prior to their separation.

Case report: Conjoined twins (both males) were delivered by emergency cesarean section at 34 weeks. The conjoined twins were named as B1 and B2 in the study (Figure 1). Total weight of babies was 3620 gr.



Figure 1.

Preoperative heart rate, non-invasive blood pressure, and SpO₂ values were 136/min, 57/39 mmHg, 100 % for B1 and 129/min, 54/31 mmHg, 97 % for B2, respectively. The anesthesia of conjoined twins were performed by two teams. For fluid replacement, 5% Dextrose - 0.02% NaCl was initiated, intravenously. Anesthesia induction was provided with the mixture of 2% sevoflurane, 50% nitrous oxide (N₂O) and %50 oxygen (O₂). Firstly, the B1 was intubated after performed rocuronium (0.6 mg/kg), and then the B2 was intubated after performed rocuronium (0.6 mg/kg) (Figure 2 and 3).



Figure 2.



Figure 3.

A size 2.5 uncuffed endotracheal tube was used to the intubation of both babies, and controlled ventilation was performed to each baby (Figure 4).

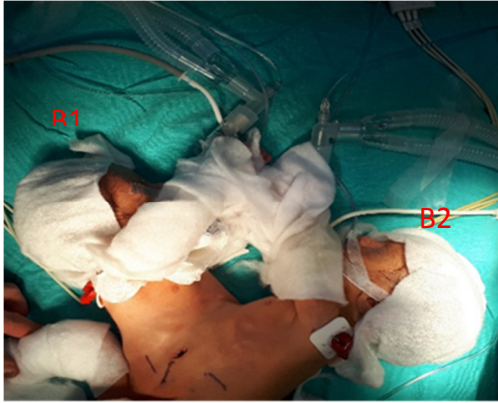


Figure 4.

The body temperatures of the babies were 35°C and 34.8°C at the beginning of surgery, respectively. Anesthesia was maintained with 0.2 - 1 % sevoflurane in 50 % N₂O-O₂ and the additional rocuronium when needed. As surgical procedure, cystoscopy and opening of colostomy were done. Hemodynamic stability was provided during anesthesia in the both babies. However, conjoined twins had hypothermia despite heating with warm blanket. Tramadol (1 mg/kg) was administered for postoperative analgesia. After the end of surgery, neuromuscular block was antagonized. However both babies were not extubated, and they were transferred intensive care unit.

Discussion: Conjoined twins are a rare congenital malformation, and its anesthetic management is a difficult task (1).

Conclusion: Anesthesia management for conjoined twins is important, and it requires comprehensive preoperative evaluation, accurate cardiorespiratory management.

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PP-35**A RARE CASE: ANESTHESIA MANAGEMENT IN A PATIENT WITH DESBUQUOIS SYNDROME**

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Background: Desbuquois Syndrome (DBQS), an otosomal recessive inherited rare skeletal dysplasia, presents with perinatal physical-mental retardation; osteopenia; joint luxation; dysmorphic face characterized by flat round face, flat saddle nose, microstomia, microretrognathia and long upper lip deformity; deviation of the fingers; narrow chest, vertebral anomalies. We present the anesthetic management of a patient with Desbuquois syndrome.

Case: A 17-years old male was scheduled for the fixation of a forearm fracture. Physical examination revealed: flat face, facial dysmorphism, short-thick neck, dwarfism (height <3rd centile), obesity (>50-75th centile), loose joints, joint deformities (Figure 1). His history revealed DBQS, gastroesophageal reflux disease (GERD) and recurrent fractures. Laboratory examinations were normal except for osteoporosis (Z score<-2.5 SS). His American Society of Anesthesiologist physical status was II and in consideration of anticipated difficult airway, obesity and GERD, an ultrasound guided axillary nerve block was planned. Standard-monitorisation was applied, blood pressure: 124/70 mmHg; heart rate: 76 beat/min; peripheral oxygen saturation: 98%. Pre-scanning (12 MHz linear-transducer, short-axis) revealed that in reference to the axillary artery the median, ulnar and radial nerves were located superior, superolateral and inferioposterior respectively. After appropriate cleaning and dressing a nerve-stimulator was used and the median, ulnar and radial nerves were identified at the inferiorposterior, superior and inferior of the axillary artery respectively. The block was commenced with a 5 cm needle with an inplane approach and 20 mL bupivacaine 0.25% was injected including the musculocutaneous nerve (Figure 2). Surgery was completed uneventfully. Parental consent was obtained.

Discussion and Conclusion: Patients with Desbuquois Syndrome have potentially difficult airway. Regional anesthesia may be preferred over general anesthesia in patient who are candidates for postoperative respiratory complications due to restrictive pulmonary disease as well as anticipated difficult airway. Regional anesthesia should be performed with USG guidance, since extremity anomalies, increased subcutaneous fat tissue and muscle atrophy may cause technical difficulties.

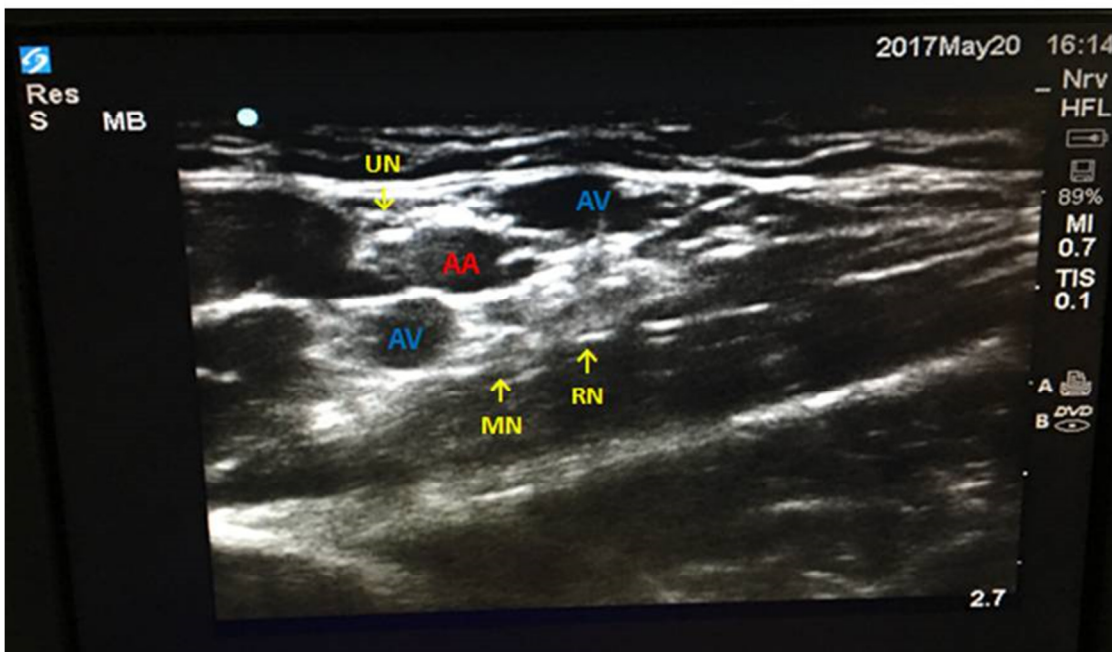
The brachial plexus variation detected in our case was thought to be a developmental anomaly due to DBQS. We conclude that USG-guided nerve blockade may not suffice in patients with such skeletal dysplasia, and nerve block should be performed with both ultrasound and nerve-stimulator guidance.

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Figure 1. Facial dysmorphism, short and thick neck and obesity in the patient with Desbuquois Syndrome.



PP-36**LAPAROSCOPIC LOW ANTERIOR RESECTION
WITH EPIDURAL ANESTHESIA IN GERIATRIC PATIENTS**

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Background and Goal of Study: The invasiveness and the duration of the surgery are crucial factors affecting morbidity in geriatric patients. The superiority of regional or general anesthesia in elderly patients should be discussed (1). We aimed to share our experiences by applying epidural anesthesia, which may be the least invasive anesthetic method for the patient with chronic obstructive pulmonary disease (COPD). Our aim was the early mobilization of the patient after the procedure.

Case Report: An 80-year-old patient diagnosed with rectal cancer who had chemotherapy and radiotherapy was planned to have laparoscopic low anterior resection. There was a restrictive loss in advanced respiratory function tests in patient with chronic obstructive pulmonary disease. Respiratory support treatment began before the operation. The outcome of the cardiology consultation for the patient was a moderate to high cardiac risk because of the age.

The operation performed under regional anesthesia with high risk and ASA III. 22 mL of 5 mg/kg articaine, 2 mL NaHCO₃ and 50 micrograms fentanyl, 0.9% NaCl were applied via epidural catheter. Sensory block level was reached at T4 level 6 minutes after drug administration. The sensorial and motor block lasted 3 hours.

Postoperative pain control was achieved with PCA prepared with 0.125% bupivacaine.

Result: The patient was transferred from the PCU the next morning with stable vital signs and mobilized.

Discussion: In our elderly patient with COPD, we preferred epidural anesthesia which does not impair respiratory functions and provides early postoperative mobilization. We were able to use safe and comfortable anesthesia by using articaine which is less cardiotoxic and fast acting compared to the other local anaesthetics.

In a retrospective study, general anesthesia and neuroaxial anesthesia techniques applied in hip fracture surgery in elderly population were investigated. Early mortality rates in the hospital were significantly lower in neuroaxial anesthesia than in general anesthesia (2). Epidural anesthesia provides a safe intraoperative period and a postoperative period in patients with chronic obstructive pulmonary disease (3).

Conclusion: In our geriatric patient with COPD, laparoscopic low-anterior resection surgery was performed successfully as we applied the regional method with articaine.

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PP-37**ANESTHESIA MANAGEMENT ON A 110-YEAR-OLD WITH CATARACT**

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Background and Goal of Study: In geriatric patients, there occurs some anatomical and physiological changes (1). Associated diseases increase anesthesia and surgical risk (2). Because of the reduced metabolic rate, it requires critical dosing of anesthetic drugs (3). We aimed to present our experience of anesthesia in a 110 years old patient, who is in very old category.

Case Report: Cataract was detected in both eyes of 110 years old patient and the operation was planned under general anesthesia. The patient had hypertension, hyperlipidemia, visual and hearing loss. There were chronic changes in PA chest X-ray. In the cardiologic examination, ascending aorta diameter was 40 mm, and ejection fraction was 55%. Anesthesia was planned with ASA III high risk.

The patient was given 1 mg midazolam for premedication. For induction of anesthesia, fentanyl 50 mcg, lidocaine 40 mg, pentothal 350 mg and rocuronium 30 mg were administered intravenously. O₂ / N₂O: 33/67% and a mixture of sevoflurane were used. The MAC value of sevoflurane changed between 1 and 2 to provide 40-60 values in BIS monitoring. During the operation, oxamen 20 mg was administered. Operation lasted for 2 hours. The mean arterial pressure was not lowered below 75. Saturation (S_pO₂) values were; 99-97%, end-tidal was CO₂; 29-33. The patient was extubated with 140 mg of bridion. The Aldrate collection score 10 of the patient who was transferred PACU to the service. The patient had no complication postoperatively and was discharged the next day.

Result: In our 110-year-old case, an anesthetic management was achieved by providing preoperative optimal conditions, simplifying intraoperative drug dosing, and providing early compilation and mobilization of the patient.

Discussion: Local anesthesia is often preferred in cataract operations of elderly patients. However, general anesthesia can be preferred when respiratory failure occurs or to make sure that patients with cognitive impairment remain immobilized. There are reduced drug dosage applications in anesthesia management in elderly patients in literature (3).

Conclusion: In our patient, we were expecting to encounter many clinical difficulties on the onset of anesthesia, but we managed to provide safe anesthesia and early mobilization with close monitorization and manipulation of drug titration.

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PP-38**UNINTENDED PERIOPERATIVE HYPOTHERMIA IN GERIATRIC AND OBESE PATIENTS**Süleyman Sarı¹, Ş.Mustafa Aksoy², Abdülkadir But³

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Background: Unintended perioperative hypothermia, defined as core body temperature less than 36°C, is closely related to many complications such as cardiovascular diseases, perioperative hemorrhagic diathesis, impairment of drug metabolism. Determination of the incidence of perioperative hypothermia and examination of risk factors may help preventing the hypothermia and its complications.

Materials and Methods: We conducted a prospective, observational study of 2015 patients who underwent various operations under general anesthesia and the risk factors of developing hypothermia were analysed.

Results and Discussion: The incidence of perioperative hypothermia was 78.6%. A statistically significant difference was found according to age, body mass index (BMI), ASA classification score ($p < 0,05$). The mean age of the patients was $49,36 \pm 16,10$ (min: 18-max: 90) years and 17,8% were over 65 years old. 87.7% of patients older than 65 years had hypothermia, while 76.6% of patients younger than 65 years old had hypothermia. Hypothermia was present in 82.4% of patients with a BMI of 25 kg/m² or more. Patients with ASA-I had a significantly lower percentage of hypothermic patients. 92.2% of ASA-III patients had hypothermia, while 83.1% of ASA-II patients and 74.9% of ASA-I patients had hypothermia.

"Incidence of Perioperative Hypothermia in Patients With Elective Surgery Under General Anesthesia in Turkey (GAPOHI)" research result was 79.9% . Our study were single-centered and the presence of chronic illness, which we found to be statistically significant in terms of hypothermia, had also been examined. Another difference was that the temperature measurements were made by the researcher, also anesthesiologist and the surgical team of the operating room were not informed about measurements to observe the study objectively.

Conclusion: Despite a known problem for decades, the incidence of perioperative hypothermia is still high. Incidence can be reduced by prewarming patients preoperatively, raising awareness, cooperating with the surgical team, training in the use of appropriate and effective heating methods, increasing the rates of active heating and considering the recommendations of the guidelines on prevention of perioperative hypothermia.

PP-39**PERIORBITAL HEMATOMA (RACCOON EYE) AFTER CAROTIS ENDARTERECTOMY
OPERATION IN THE GERIATRIC PATIENT**

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Introduction: We report the periorbital hematoma resulting from the removal of the protective eye band from the geriatric patient undergoing general anesthesia due to carotid endarterectomy. This case is unexpected for us because the patient has no bleeding disorder or a disease like amyloidosis .

Case Report: Carotid endarterectomy was planned by cardiovascular surgery to a 70-year-old man with chronic obstructive pulmonary disease and coronary artery disease (using Clopidogrel 75 mg and acetylsalicylic acid 300mg).

After anesthesia induction and intubation, the patient's eyes were closed with an elastic fixation band (BetafixR; Betasan, Izmit, Turkey) (5x5cm). After 60 minutes of skin incision, systemic intravenous 5000 U heparin was applied. One hour later the operation was completed. No active coagulation time (ACT) test was performed during the operation and no protamine sulphate was applied. After operation, the elastic fixation tapes were removed and then transferred to the Cardiovascular Surgery Intensive Care Unit (ICU). During delivery to the ICU, periorbital ecchymosis and diffuse edema (Raccoon Eye) were observed in the eyes of the patient.

At that time, the patient was evaluated by the department of ophthalmology and periorbital ecchymosis treatment was administered. The patient was discharged to the hospital on the fourth day postoperatively.

Discussion: In the literature, there is a case of periorbital purpura that develops after a proctoscopy procedure in a Trendelenburg position in a patient with amyloidosis. In our patient whose preoperative coagulation test values were within the normal limits but clopidogrel and acetyl salicylic acid usage continued until the operation day, intraoperative 5000 U heparin administration without protamine sulphate. The hematoma occurs after eye band withdrawal suggests that the active coagulation time (ACT) may be above normal values.

Conclusion: For each patient undergoing cardiovascular surgery and perioperative heparinization, it is important to evaluate ACT, active prothrombin time and INR values, and to evaluate the administration of protamine sulfate with the surgical team. Careful attention should be paid to the sensitive eye, the quality of the eye protection band will reduce the most complications.



PP-40**A PROSPECTIVE COMPARISON OF A CONVENTIONAL METHOD VERSUS ESOPHAGEAL DOPPLER MONITOR FOR GOAL-DIRECTED FLUID THERAPY AT FEMUR FRACTURE SURGERY IN GERIATRIC PATIENTS**Zeliha Ayhan¹, Mahmut Alp Karahan², Evren Büyükfirat²

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Background: In the geriatric patients, it is necessary to provide a precise fluid balance during surgery. The esophageal Doppler monitor (EDM) has been widely used as a less invasive method for assessing CO and intravascular volume status. We hypothesized that compare the EDM with conventional targeted liquid treatment at Femur Fracture Surgery in Geriatric patients

Method: 14 patients over 65 years of age to who femur fracture surgery to be applied will be included in the study. After obtaining the informed consent form from patients and their relatives, patients will be divided into two groups. In 8 patients, fluid management with EDM was performed while 6 patients were Conventional method. The first group is named as Group D, will be monitored by EDM and fluid management will be accompanied with EDM. After incision patients received a 250-mL bolus of colloid solution injected. If the SV increased >10% over a 15-minute period, the patient was considered “fluid responsive” and received another fluid bolus . Other groups named as Group C and fluid management provided with conventional methods (pulse, blood pressure, urine output). In both groups; patient outcomes, complications and length of hospital stay were compared.

Results: After 10th minute, the hearth rate was greater in EDM group until 150th minute (Figure 1) Systolic arterial pressure in control group is found statistically and significantly lower in the 10., 15., 20, 25., 30.,90., and 120. minutes than the Doppler group (Figure 2). Diastolic blood pressure is found statistically significantly lower in the 15. and 20.minute in the control group than in the Doppler group. The urine output was greater in control group than EDM group (p=0,029); it is probably a natural result of the fluid was given because the crystalloid that was given to control group was greater in control group (p=0,008). The lactate level of the Doppler group is statistically significantly found lower when surgery begins. There is no difference at other times statistically.

Discussion: In Femur Fracture Surgery in Geriatric patients, better results are obtained in the perioperative vital signs in targeted liquid therapy accompanied with EDM but it was not concluded that especially the lactate level which is considered important in terms of the mortality and morbidity is lower.

Conclusions: The EDM performs similarly to the Conventional Method in guiding GDFT and offers increased ease of use as well as fewer missing data points. The EDM may be a viable alternative monitor to guide GDFT in geriatric patients for femur fracture operation.

PP-41**OUR ANAESTHESIA PRACTICE IN THE ELDERLY POPULATION**

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Department

Background and Goal of Study: Aging is a progressive physiological phenomenon and is associated with increased demand for surgical interventions. Structure and functional capacities of the organs and tissues change with age. Safe perioperative management is of importance especially in extremes of age. We aimed to investigate our anaesthesia practice in elderly population.

Materials and Methods: We retrospectively evaluated our postoperative pain management follow up records of patients from May 2017 to March 2018.

Results and Discussion: Of the 1890 records we evaluated, 346 of them were from ≥ 65 years old (201 male, 145 female) patients. In the study group the majority of the patients had orthopaedics surgery (38%). Epidural analgesia in combination with general anaesthesia was used in 27% of the patients. (Table 1)

Table 1 Postoperative pain management methods

	IV PCA	GA+E	E	CSE	GA+P	P	S	Total	%
Orthopaedics	24	14	10	49	2	8	24	131	38
General Surgery	30	32	2				2	66	19
Urology	7	7	2				52	68	20
Thoracic Surgery	20	40						60	17
Gynaecology	2	2						4	1
Cardiovascular Surgery	2					5		7	2
Reconstructive Surgery					1	2	5	8	2
Neurosurgery	2							2	0,5
Total	87	95	14	49	3	15	83	346	
%	25	27	4	14	0,9	4	24		

IV PCA: intravenous patient controlled analgesia, GA: general anaesthesia, E: Epidural analgesia/ anaesthesia, CSE: combined spinal epidural anaesthesia, P: peripheral bloc, S: spinal anaesthesia

Effective pain treatment after geriatric surgery is essential to minimize the complications, and shorten the hospital stay. Although regional anaesthesia as compared to general anaesthesia has reduced early mortality and morbidity, the mode of anaesthesia is not the only factor in postoperative complications, the procedure itself, patient's comorbidities and the drugs he uses also play an important role (1).

Conclusion: Most of the central blocs performed in the elderly population are done in orthopaedics, urology, general Surgery operations. New studies focusing on effective and cost-effective peri-operative pain management methods herald that in the near future we will be discussing to change our practice in the elderly population (2).

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PP-42**EFFICIENCY OF CODE BLUE IN A TERTIARY CARE HOSPITAL: A LESSON WE LEARNED**

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Background and Goal of Study: Code Blue is a means of emergency call and management which provides action as soon as possible in order to take essential actions; that is, apply Cardiopulmonary Resuscitation (CPR) to individuals whose basic life functions are under risk or those functions has stopped. This research has been conducted to evaluate the efficacy, efficiency and application results of code blue which is used in our hospital.

Material and Method: Between 2014 and 2015 code blue call was made and 303 patients were examined retrospectively. Age, gender, code blue application date, hour, place, time for code blue team's reaching to patient, approximate CPR application time, code blue call forms, patient record documents, hospital quality meetings, patient security committee meeting reports were evaluated. The parameters for normal distribution were evaluated with the Kolmogorov-Smirnov test. The evaluation of data, descriptive statistical methods, as well as quantitative data were used to compare the parameters of a normal distribution. Student's t-test, a non-normal distribution of parameters between the two groups, and the Mann-Whitney U-test were used for comparisons. P values <0.05 were considered statistically significant. Survivals between the two groups were analyzed by log-rank test.

Results and Discussion: The average age of patients were 68.74±15.78 (range 24-97 years) , female patient number was 157 (51.81%), average time for code blue team's reaching patient was 2,83±1.15 (range 0.16-8.53) minutes and period of most often code blue call was between 13-15 o'clock (p>0.059). The most common units to call blue code were Neurosurgery intensive care unit (51), neurology intensive care unit (40) and respiratory intensive care unit (27). The most often code blue call was made within week days (p>0.05). Sex was not associated with mortality (p>0.05). Worst outcome was associated with outpatient ward, nephrology ward, nephrology ICU and obstetrics ward (p<0.05). Code blue team's reaching time to patient was not associated with mortality (p>0.05). Time of code blue was associated with mortality. Worst outcome was observed during 01:00 to 06:00 (p<0.05). Mortality observed patients had received statistically significant longer period of CPR (p<0.05).

Conclusion: Worst patients for code blue team were unexpected clinics such as outpatient ward and obstetrics ward.

PP-43**STANFORD TYPE A AORTIC DISSECTION ONSET WITH NEUROLOGICAL SYMPTOMS:
A CHALLENGING CASE TO DIAGNOSE**

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Background: Aortic dissection (AD) occurs with the separation of the layers of the aortic wall. Clinical symptoms are wide and extremely variable. Neurological symptoms at the onset of AD are not only frequent (17–40%), but often dramatic and may mask underlying conditions. Here in; we report a rare case of Stanford Type A Aortic Dissection (STAAD) onset with neurological symptoms

Case Report: A 71-year-old male, who was transported to our emergency department by ambulance complaint of inability to recognize the environment, suddenly became non-verbal and had back pain. He was mild distress and confused at the admission. Physical examination was substantially unremarkable, with the exception of thready peripheral pulses and cold extremities. Initial computed tomography (CT) of the head showed no hemorrhage or areas of hypodensity. It was regarded as a normal by the attending radiologist. Acute stroke was determined in diffusion magnetic resonance imaging (MRI) but we thought that these complaints were not likely due to the stroke. The history and physical examination may strongly suggest AD that was suspected. Chest CT was performed and defined STAAD in the anterior arch of the aorta. He was taken immediately to operating room. Patient died because of ventricular fibrillation on second postoperative day.

Discussion: AD occurs due to tearing in the inner wall of the aorta, which then causes blood to flow between layers of the muscular wall. Stroke occurs in one in twenty of patients with aortic dissection was associated with increased morbidity and in-hospital mortality, but not higher long-term mortality among survivors [3]. Neurological symptoms at the onset of AD are not only frequent (17-40%), but often dramatic and may mask underlying conditions. Making the correct diagnosis could be difficult due to the rarity, wide range of symptoms and the similarity of other disease in emergency departments.

Conclusions: Here, the essences of diagnosis are high level of suspicion in the patient with atypical signs and symptoms. Even though, relatively uncommon cause of stroke, AD should be kept in mind.

PP-44

HOW CAN STATISTICS GUIDE ANESTHESIOLOGIST?

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Background and Aims: Turkish Statistical Institute (TUIK) and Ministry of Health has published a set of statistical data to identify long-term strategies and policies in the field of health and to take measures to constantly improve the organizational structure, service quality standards, management services and processes, depending on the plans, annual goals and targets determined. We emphasize the some of our comments about these data for future applications of anesthesia and intensive care in our country.

Material and Methods: Official data issued by the Ministry of Health and TUIK were taken into consideration.

Results: Since the year 2000, the proportion of the population aged 65 years and older has increased from 5.7% to 8.3%, respectively, a decrease in the proportion of the opposite segment of the population aged 14 years and younger has been observed, from 29.8% to 23.7%. Between years 2012 and 2016; the percentage of the population whose Body Mass Index (BMI) ≥ 30 has increased from 17.2% to 19.6% and proportional increases in renal, liver and cardiac transplants operations have been noticed, respectively 6, 9 and 3.5 times more compared to their prior values (Table 1,2).

Table 1

Figure 1.1. Population Pyramid, (%), Turkey, 2000, 2016

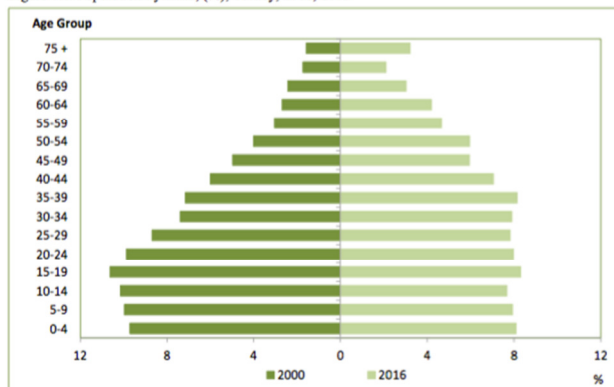


Table 2

Table 8.15. Number of Organ Transplantations by Years, All Sectors, Turkey

	2002	2012	2013	2014	2015	2016
Kidney	550	2.903	2.944	2.924	3.204	3.419
Liver	159	1001	1.248	1.212	1.216	1.395
Heart	20	61	63	78	89	69

Discussion: Demographically, the rapid increase in the proportion of the population aged 65 years and older will be an inevitable cause of an increase in the applications of geriatric anesthesia and the need for intensive and palliative care to the practice of anesthesia in the upcoming years. Because of the decline in the proportion of young population, it can be

foreseen that there is going to be an increase in both the number and severity of legal procedures related to pediatric anesthesia and intensive care. It appears that circulatory system diseases and neoplasms are likely to influence the medical ecosystem in the upcoming years, thus an organized planning in their oncological surgery, palliative care, intensive care and algology service is necessary. The trend in the increase of BMI is going to be an impact towards the upcoming popularity of bariatric anesthesia practices. The increase in transplantation surgeries is going to be a motivation for the need of further education in anesthesia and intensive care related concepts.

Conclusion: We conclude that statistical data would make a promising difference if health care planners and operators as well as the anesthetists keep an eye on the up-to-date statistical changes.

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PP-45

METFORMIN ASSOCIATED LACTIC ACIDOSIS (MALA) CAN BE CORRECTED BY CVVHD

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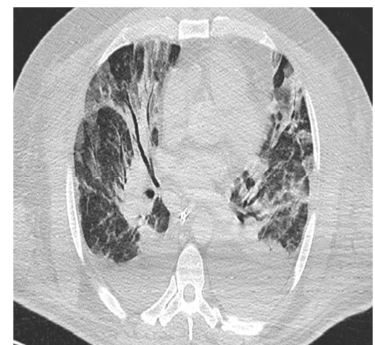
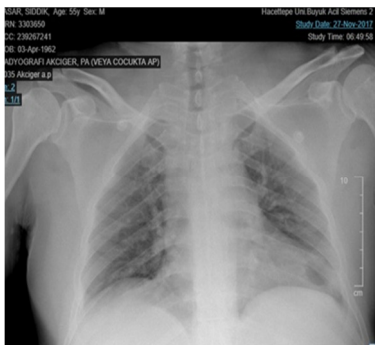
Background: Metformin increases plasma lactate levels due to the inhibition of mitochondrial respiration in tissues (i.e., liver and muscle) responsible for lactate removal and increased production of lactate by the intestinal mucosa. Lactic acidosis may occur in patients who have overdosed on metformin, or those with renal insufficiency, in whom lactate clearance is already impaired.

Our aim is to present a case in which successful treatment of severe MALA with continuous venovenous hemodialysis (CVVHD) was possible but the patient died as a result of aspiration of activated charcoal.

Case report: A 55-year-old male who had been using antidiabetic drugs and insulin irregularly was admitted to emergency service with the complaints of nausea and vomiting. Ph was 7.1 and lactate level was 20 mol/L in arterial blood gases (ABG). Activated charcoal was applied due to the suspicion of intoxication. When his mental status deteriorated, his trachea was intubated. During intubation, he had aspiration of the activated charcoal. On ICU admission, Ph was 6.78 and lactate was 25 mol/L in ABG. Metformin was detected in urine sample. CVVHD was started immediately. Multiple bronchoalveolar lavages were performed in order to suction the activated charcoal. On the 3rd day, CVVHD was discontinued because the acidosis was totally corrected. Oxygenation deteriorated after the second day. The computed tomography revealed generalized ground glass opacities on both sides of the lung. Although lung protective mechanical ventilation and antibiotic therapy, severe respiratory impairment persisted and he died of acute respiratory failure 18 days after admission.

Discussion: The mortality rate of MALA has been reported to be as high as 80%. Although our patient survived the MALA, he died as a result of respiratory insufficiency due to the aspiration of the activated charcoal. Aspiration of activated charcoal is not uncommon (4-24%) in the obtunded, nonintubated patient with loss of protective airway reflexes. Fatal ARDS may develop after aspiration of a large amount of activated charcoal, despite prompt therapeutic bronchoalveolar lavage.

Conclusion: We conclude that early CVVHD may reverse MALA and basic precautions, such as early intubation before administration of activated charcoal, should not be missed in patients with extreme physiological derangements such as in MALA.



PP-46**EFFECTS OF INTRAVENOUS FLUID WARMERS IN FREE-FLAP PATIENTS: CASE SERIES**

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Background: The success of free flap surgery mostly depends on a good microcirculation of the tissue. Therefore it is very important to avoid hypothermia and acidosis. In our clinic, use of forced air warming blankets along with a pre-warmed operating theater at 24°C are the routine procedure in these group of patients. We have been using intravenous (iv) fluid warmers in our clinic for some time. We aimed to observe the possible positive effects of this device on both body temperature and metabolic status of patients.

Case Reports: Three patients aged 68, 69 and 72, who were undergoing elective free-flap surgery were included in this report. Operation times were 7, 9 and 7,5 hours respectively. All patients received general anesthesia. Central venous catheterization were applied to all patients. In addition to forced air warming blankets, all iv fluid infusions were done with an iv fluid warmer (Astoflo® eco plus, Stihler Electronic, Stuttgart, Germany) via the central venous line. Routinely taken arterial blood samples and body temperature measurements were recorded during the surgeries. At the end of all three operations, arterial blood pH of all patients were normal and also, despite mild hypothermia, (mean 35,7±0,2) body temperatures were found to be higher according to our previous experiences. There were no vasoconstriction and blood flows of all three flaps were excellent due to Doppler monitoring.

Discussion: Basic targets of anesthesia for free flap surgery, are to provide adequate perfusion of transplanted tissue. The basic requirements for microanastomosed flap are to ensure hyperdynamic circulation and maintain normothermia. The infusion of room temperature fluid can cause hypothermia in patients requiring administration of a large amount of fluid. Several studies, in shorter operations compared to free-flap surgery, have demonstrated the effect of administering intravenous fluid in changing the mean body temperature. We think that iv fluid warmers have improved the quality of our anesthesia management.

Conclusion: Having recommended the use of iv fluid warmers in this type of surgeries, we think that, controlled studies with a sufficient number of patients are required in order to reach a definite conclusion on its efficacy, safety and benefits to be obtained.

PP-47**QUICK EVALUATION OF CEREBRAL AUTOREGULATION LIMITS WITH NIRS IN THE INTRAOPERATIVE PERIOD**

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Background Cerebral autoregulation (CA) is the important mechanism that derive stable cerebral blood supply, despite changes in mean arterial blood pressure (MAP). The autoregulation mechanism is valid between 50-150 mmHg. In chronic hypertension (HT), static autoregulatory curve shifts rightward and CBF decreases due to long term structural changes at small vessels. In this manuscript, we would like to mention a significant advantage of the intraoperative NIRS using in a malignant hypertensive patient during kidney transplantation.

Case report 31-year-old male patient was scheduled for kidney transplantation. He had HT that couldn't be controlled. Baseline arterial blood pressure (ABP) were 220/120 mmHg, rSO₂ levels were 60/62. After general anesthesia was administered, ABP decreased to 135/75 mmHg, rSO₂ were 54/56. After 30 minutes, ABP dropped to 110/60 mmHg, which was a normal ABP value for most people. NIRS rSO₂ decreased 40/41 fell by 33%/35% (Figure 1). This patient had HT that couldn't be controlled, so adequate cerebral perfusion was achieved with higher ABP. There upon, ABP was raised, the NIRS values were 45/45 (25%, 28%). Because the rSO₂ values were still 25% lower than the initial value, the ABP was raised to 130/80 mmHg and rSO₂ was seen to be 53/56. We interpreted this as the lower limit of the patient's CA curve and kept the ABP above it. The patient was transferred to the ICU with wellconsciousness state.

Discussion In this report, we aimed to present a case on the usefulness of assessing the CA limit with NIRS. This patient had to undergo operation due to the presence of a suitable cadaveric kidney. Although the patient's HT was intensively treated for a long time, it couldn't be under controlled. For these reasons, the patient was anesthetized. MAP of about 70-90 mmHg, which are considered normal for most people, could cause cerebral hypoperfusion in such a patient. Hypoperfusion is one of the most important causes of postoperative poor neurological outcomes. There are clinical situations, such as pediatric surgery, carotid surgery, cardiopulmonary bypass where monitoring cerebral perfusion and CA could help prevent brain damage and guide adjustments to the procedure.

Conclusion It is a great advantage that the lower limit of CA is quickly assessed by NIRS in such a hypertensive case.

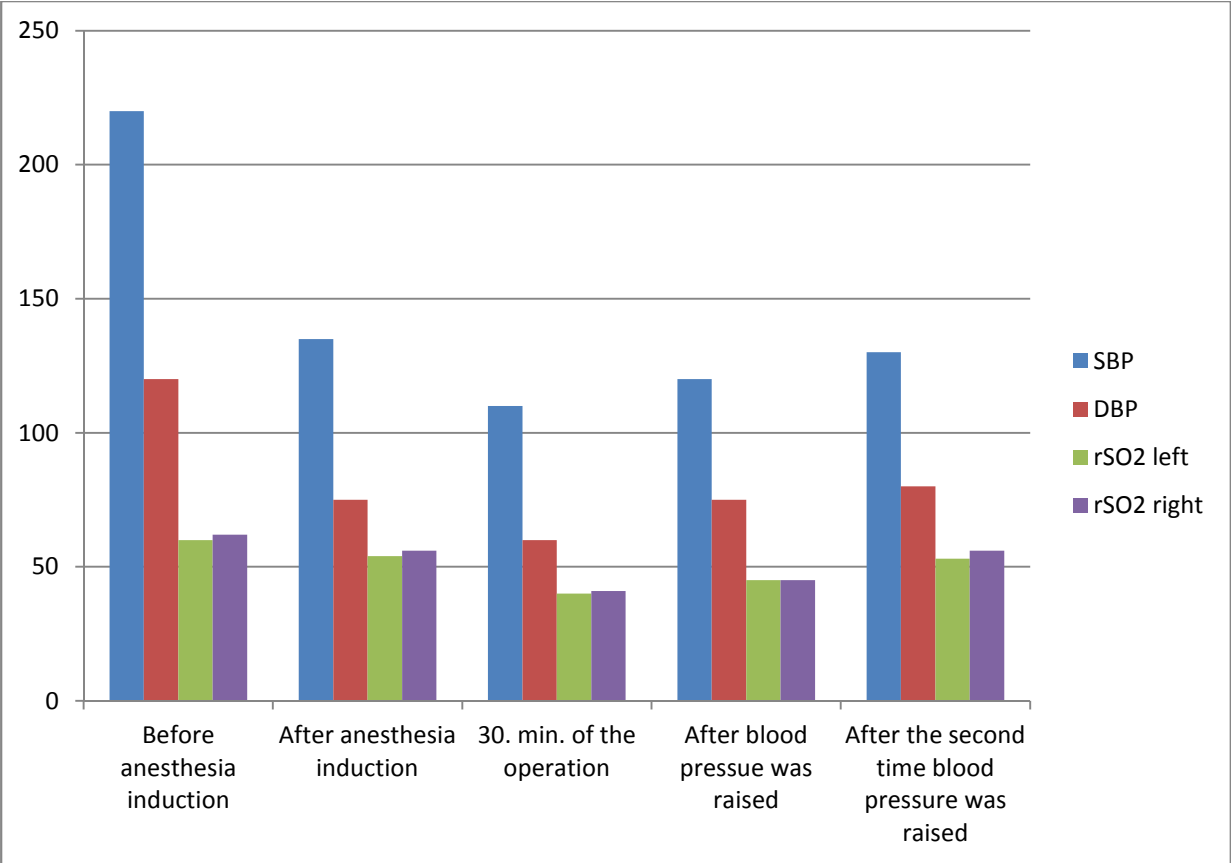


Figure 1: Changes in systolic blood pressure, diastolic blood pressure, and cerebral oxygenation over time

PP-48**THE EFFECTIVENESS OF OUR PREOPERATIVE CARDIAC EVALUATION METHODS IN PATIENTS UNDERGOING NON-CARDIAC SURGERY**

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Objective: The average age of the community is increasing with the rising number of cardiac patients. Cardiac complications are more common in patients undergoing non-cardiac surgery. Therefore, preoperative evaluation of patients with cardiac risk; planning the treatment of the patients and taking necessary precautions during the operation.

Material ve Methods: Patients undergoing non-kardiac surgery and anesthesia in outpatient clinic were recruited between 1 August- 1 November 2011. Patients "Out of Heart Surgery Preoperative Evaluation Form" and assessed preoperatively "Heart of Cardiac Patient Tracking Form Non-Surgical" were followed. Cardiac Risk Assessment and Diagnostic Algorithm " and" Clinical Risk Factors "According to our risk patients were consulted by the Department of Cardiology.

Results: 1113 patients received study 119 (10.7%) in the evaluation of cardiology. This increases with age. In patients > 60 years the prevalence is a high as 55.6%. The statistical difference between the age groups was observed in our patients undergoing evaluation Cardiology (p=0.01). The most common situations are unstable cardiac arrhythmias with 77.1%. β -blocker is the most recommended drug group by cardiology.3 patients anesthesia induction in hypotension, 2 patients with intraoperative arrhythmia. These patients are planned cardiologic evaluation of patients and treatments performed.

Conclusion: Intraoperative period with preoperative assessment methods are made cardiac risk group has been estimated as the occurrence of a small number of patients with cardiac complications; our study protocol noncardiac patients have shown that effect for preoperative evaluation.

Keywords: Non-cardiac surgery, cardiac risk patient

PP-49

CATHETER RELATED GIANT ATRIAL THROMBOSIS CAUSES TRICUSPID VALVE INSUFFICIENCY AND ARRHYTHMIA

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Background: Right heart thromboemboli (RHTE) are a life threatening long term complication of central venous catheters (CVC) and predominantly developed in the right atria. Foreign bodies like pacemakers and CVC may facilitate thrombosis development in right atria (1).

In this case report, a patient underwent cardiopulmonary bypass and right atriotomy because of CVC related giant thrombosis in the right atria is presented.

Case report: A 63-year-old female patient underwent total colectomy for colon cancer 2 years ago. She had 8,5 F polysuphone right subclavian vein port catheter (Celsite Braun®, France) for chemotherapy.

Patient had dyspnea, arrhythmia and effort angina for 6 months. Transthoracic echocardiography revealed a second degree tricuspid regurgitation and a 26x16 mm thrombus in the right atrium. Sinus arrhythmia was detected in ECG. The right subclavian catheter was visualized by the 5th intercostal space and catheter tip was undetermined with preoperative chest X-ray (CXR) (Figure 1). Because of unresponsiveness to antithrombotic therapy, patient was scheduled for surgery.



Figure 1.

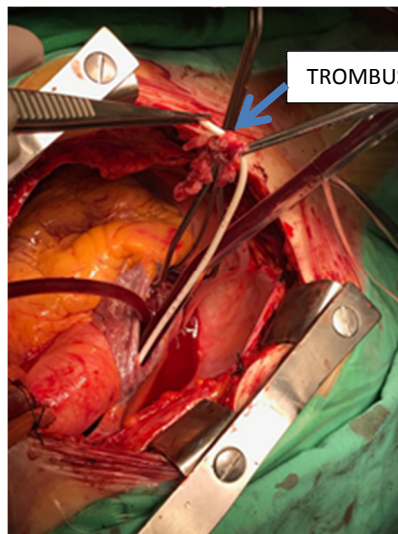


Figure 2.

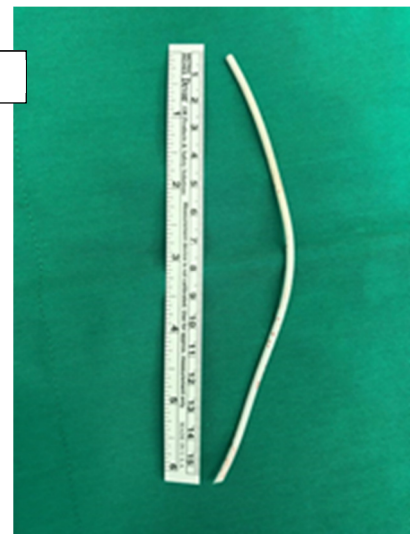


Figure 3.

The patient has undergone right atriotomy by using heart and lung pump. Thrombus surrounding the curled catheter in the atrium partially closed the coronary sinus and attached to the tricuspid valve ring (Figure 2). The catheter's portion in the atria was 15 cm (Figure 3).

The patient was extubated at the 4th hour in the ICU and transported to service at the 24 hour postoperatively.

Discussion: The most common complication after implantation of subcutaneous infusion port cvc is thrombosis; and tip position is the most important single risk factor. US Food and Drug Administration guidelines state that "the catheter should not be placed in or allowed to

migrate into the heart". Carina is a reliable, simple anatomic landmark for CVC tip placement with CXR.

Conclusion: Inadequate confirmation of CVC tip may cause catastrophic result with respect to patient and physician.

Practitioners always should keep in their mind the flow charts that national or international professional associations have prepared about confirming the catheter placement.

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PP-50

A CHALLENGING COMPLICATION DURING REMOVAL OF ESOPHAGEAL STENT

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Background: Esophageal stent placement is a safe treatment option for intrathoracic anastomotic leak, after esophagectomy. After sealing, stent is removed using flexible esophagoscopy (1).

A case is presented that esophagus breaking off during stent removal and coming out of the patient's mouth during stent removing with esophagoscopy. Maintaining airway patency and safety sedation are anesthesiologist's life saving task during catastrophic events.

Case report: A 66 year old female patient has undergone partial esophagectomy, subtotal gastrectomy and esophagogastrostomy 2 months ago, because of distal esophageal tumor. Because of sustained air leakage, self expandable silicon covered retrievable nitinol stent in 13 cm length, covering the leakage was placed under sedation (EGIS® S&G BIOTECH, Korea). After confirmation of leakage sealing clinically and radiologically, gastroenterologist tried to remove the stent under sedation in the endoscopy laboratory. At the end of tedious attempts, esophageal tissue surrounding the stent firmly came out of the patient mouth with esofagoscope (Figure 1,2). Sedation was deepened and the patient was intubated for securing the airway and transferred to the operating room. During esophagoscopy under general anesthesia, pulmonary tissue was seen through the perforated esophageal wall and the patient was transferred to ICU and then another surgical center for operation.

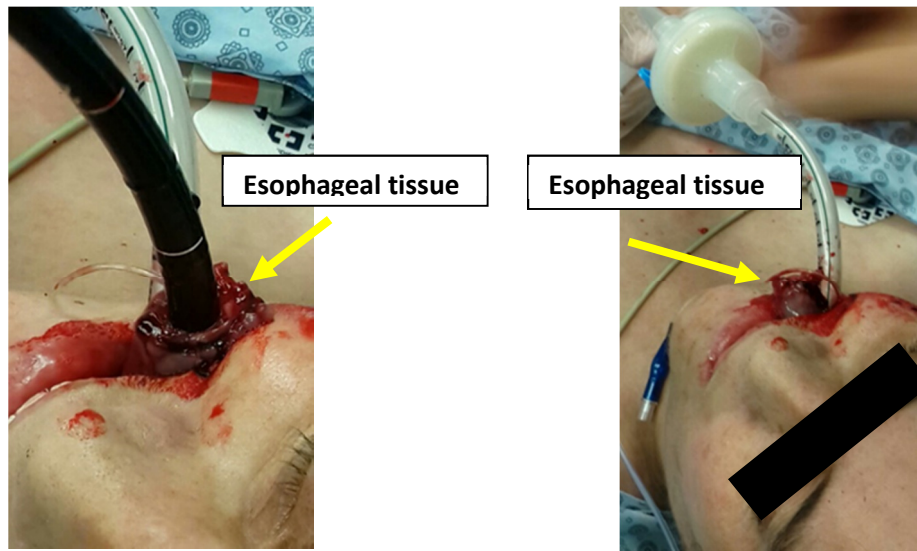


Figure 1.

Figure 2.

Discussion: Proliferation of granulation tissue and subsequent embedding of the stent make the stent removing challenging. Stent removing predisposes the complication like bleeding and mucosal tears especially when the duration of stent is longer than 2 weeks. Suggested stent drill time for anastomotic leak is 12 ± 11 days (2). In presented patient stent drill time was 5 weeks.

Conclusion: Anesthesiologist should be alert about the airway patency in cases which share the airway with endoscopist. Sufficient knowledge and experience about airway

management and airway equipment will be life saving for some unexpected airway complications.

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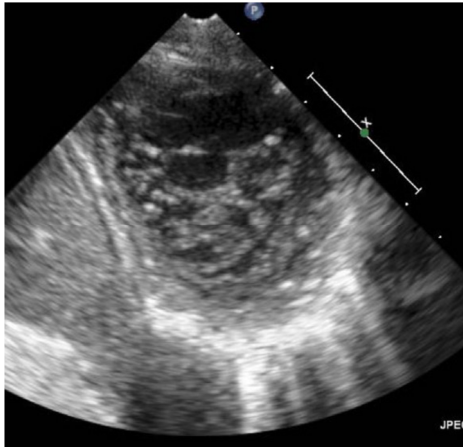
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PP-51**A RARE CAUSE OF SUDDEN CARDIAC ARREST; LEFT VENTRICLE NON COMPACTION (SPONGIFORM CARDIOMYOPATHY)**

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Background: Left ventricular noncompaction (LVNC) is a rare heart muscle disorder characterized by prominent myocardial trabeculations and deep intertrabecular recesses in the LV cavity. It is estimated that the prevalence of LVNC prevalence in adults is 0.01% to 0.26%. Heart failure, arrhythmias and thromboembolic complications might occur. Sudden cardiac death is a serious concern with LVNC.

Our aim is to draw attention to the possibility of cardiomyopathy in patients with sudden cardiac arrest.



Case report : A 21-year-old male patient who has seizure history was admitted to emergency department with cardiopulmonary arrest. On admission his Glasgow Coma Scale was 3 and the rhythm was ventricular fibrillation. Cardiopulmonary resuscitation (CPR) was performed for 15 minutes. After spontaneous circulation returned (ROSC), coronary angiography was performed. Coronary stenosis wasn't observed. On ICU admission, his blood pressure and heart rate were evaluated normally. Echocardiography was performed. The ratio of Noncompaction / Compaction was >2 . Targeted temperature management was applied. One week later he opened his eyes. Because of enough respiration the patient weaned from mechanical ventilation. MRI was performed after 5 days. Posterior cortical areas substantially were effected by hypoxemia. On the 11th day, his mental status and respiration deteriorated. His trachea was intubated again. The following day sudden cardiac arrest occurred. Rhythm was pulseless electrical activity. Effective CPR was performed during 45 minutes but spontaneous circulation didn't return. He died on 12th day after having been admitted.

Discussion : LVNC is a kind of cardiomyopathy in which the heart muscle does not contract properly. The patients whose ejection fractions are less than 30% are at greater risk for sudden death.

Conclusion : The rare causes of sudden cardiac arrest like LVNC have begun to be detected by using advanced imaging methods. This methods should be used on the patients accepted by cardiac arrest without coronary artery disease.

PP-52

CASE REPORT: UNEXPECTED GOOD NEUROLOGIC OUTCOME OF SUDDEN CARDIAC ARREST PATIENT WITH LARGE MULTIPLE BRAIN INJURY

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Background: Patients with cortical involvement in MRI 3 to 5 days after cardiac arrest were reported to have high rates of mortality and severe neurologic impairment. There is limited literature of complete neurologic recovery with severe multifocal cortical injury by cranial MRI after out-of-hospital cardiac arrest. It is aimed to present a case with good neurological outcome after out-of-hospital cardiac arrest with targeted temperature management (TTM).

Case Report: A 19-year-old patient fell down while playing basketball. He was unconscious and pulseless, without spontaneous respiration. His brother didn't perform cardiopulmonary resuscitation (CPR). Emergency team (ET) arrived 6 minutes later. The initial cardiac rhythm was pulseless ventricular tachycardia (pVT). ET performed CPR for 15 minutes. In the emergency room the patient defibrillated and CPR performed for 13 minutes more. EF:45, decreased LV systolic functions were present in echocardiography. Patient was admitted to ICU as Glasgow Coma Scale (GCS) 3. TTM was performed at 34 degrees for 24 hours followed by 5 days of normothermia at 36 degrees. Inotropic support was given for 4 days. On the 2nd day of TTM, he was considered as ARDS. Patient who was followed up in positive pressure mechanical ventilation was given antibiotic treatment. On the 5th day, there were signal enhancements in cerebellum, bilateral basal ganglia, parietookipital cortex compatible with hypoxic encephalopathy on the cranial MRI (Figure). He was extubated on the 10th day. On the 13th day, coronary vessels were reported as normal and implantable cardioverter defibrillator was performed. The patient was transferred to the service on the 15th day with GCS:15.

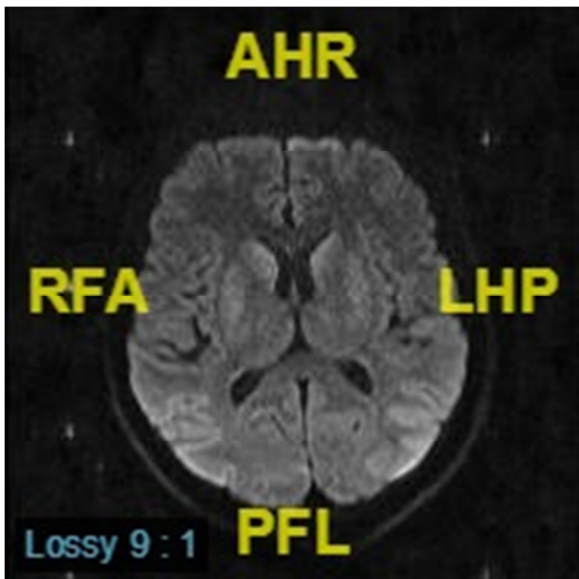


Figure. Cranial DWI MRI obtained 5 days after a cardiac arrest showing signal enhancements in cerebellum, bilateral basal ganglia, parietookipital cortex

Discussion: Only 5-35% of out-of-hospital cardiac arrest patient leave the hospital alive, with some degree of neurological impairment. DWI abnormalities were highly sensitive (98.5%)

but only modestly specific (46.2%) for predicting poor neurologic outcome at 3 months. Unlike previous studies, our patient unexpectedly had a good neurological outcome. He can still play guitar and shows academic skills similar to prearrest period.

Conclusion: Determination of the prognosis after cardiac arrest may be more difficult after TTM, and variables such as multiple cortical injury in cranial MRI should perhaps be reconsidered.

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PP-53**CASE REPORT: RESISTANCE TO TARGETED TEMPERATURE MANAGEMENT
AFTER CARDIAC ARREST**

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Background: Targeted temperature management (TTM) is used successfully for improving neurological outcomes and reducing mortality after conditions leading to global ischemia, such as cardiac arrest¹.

Our aim is to present a case with full neurological recovery after CPR and percutaneous coronary interventions (PCI), in whom resistant high body temperature (37°C) was observed despite TTM.

Case Report: A 52-year-old man collapsed when he was out with his wife. He had no known disease previously. The resuscitation team performed CPR for 8-10 min. The initial rhythm was ventricular fibrillation. In the emergency room, further defibrillations were required for 12 min and emergent PCI was applied to the *left anterior descending* artery. After his admission to ICU, adult surface cooling pads were placed and TTM (target 32°C for 24 hours) was started. His body temperature increased to 37.5°C despite application of Arctic sun device and additional application of external ice packs to the axilla, groin areas and around the head. His lowest temperature could be at 37°C during maintenance period for 24 hours. Resistance to the cooling was thought to be associated with infections. Bilateral infiltrations on chest x-ray was seen and Staphylococcus Aureus grew from tracheal aspiration cultures. After 24 hours, a target of 36.5°C was continued for 48 hours in order to prevent hyperthermia. The patient had hyponatremia and legionella antigen in urine sample was positive; proper antibiotics were given. He had hypotensive periods requiring inotropic therapy. His hemodynamic status returned to normal, he regained consciousness and his trachea was extubated on the 5th day. He was transferred to the cardiology ward on the 11th day of his arrival. The patient was discharged from the hospital without any neurological sequelae.

Discussion: Hyperthermia following cardiac arrest has been shown to be associated with unfavorable neurological outcomes². Beside its therapeutic effects by maintaining hypothermia, TTM can be used for preventing hyperthermia which can be more dangerous in a patient rescued from cardiac arrest.

Conclusion: Resistance to cooling during TTM should be regarded as fever and therefore should be acted upon aggressively in order to prevent hyperthermia associated brain injury after cardiac arrest.

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PP-54**AORTIC VALVE REPLACEMENT IN A LIVER TRANSPLANT PATIENT: CASE REPORT**

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Background: Liver transplantation is a successful surgical therapy for patients with advanced liver disease and is being performed more frequently (1). Therefore, in liver transplant recipients, aortic valve insufficiency resulting from bacterial endocarditis and subsequent aortic valve replacement (AVR) surgery are more commonly experienced.

This case report describes the anesthetic management during AVR surgery in a liver transplant patient.

Case Report: A 28-year-old, 83-kg, 172-cm, ASA-III male patient with aortic stenosis was admitted to our hospital due to becoming AVR surgery. In his preoperative evaluation, hemoglobin was 14.8 gr/dL, leukocyte count was 4400/uL, platelet count was 50.000/uL (following 6 units of platelet transfusion), AST was 14 U/L, ALT was 11 U/L, APTT was 38.5 seconds, INR was 1.48, BUN was 35 mg/dL, creatinine was 0.79 mg/dL, glucose was 110 mg/dL, albumine was mg/dL, total bilirubine was 4.21 mg/dL, and direct bilirubine was 0.85 mg/dL. In the operating room, induction of anesthesia was achieved by midazolam, fentanyl, and rocuronium following electrocardiography, pulse oximetry, and invasive blood pressure monitorization. Anesthesia was maintained by sevoflurane and remifentanil infusion. The patient was given 300 U/kg heparin which was antagonized by 1 mg/100 U protamine at the end of by-pass. Tranexamic acid was infused 1 mg/kg following a bolus of 10 mg/kg. We gave the patient 2 U fresh frozen plasma and 4 U platelet suspension at bypass pump exit. Dopamine infusion 5 µg/kg/dk was started due to his unstable hemodynamics variables after pump exit. Hemodynamic stability was achieved by positive inotropic support and he was transferred to the intensive care unit where he stayed for one day and was transferred to normal ward thereafter. The patient was subjected to an emergency operation due to tamponade which was diagnosed on 10th postoperative day. Our patient was discharged from the hospital following 3 days of stay in the intensive care unit and 18 days of stay in the normal ward.

Discussion: Coagulopathic bleeding in liver transplant recipients can often lead to hemodynamic instability and dysfunction of the involved organ (renal, cerebral, cardiac, etc.). As experienced in our patient, fresh frozen plasma, platelet suspension, and tranexamic acid may be used to prevent bleeding and to keep the hemodynamics stable.

PP-55**PULMONARY ENDARTERECTOMY IN A PATIENT WITH PEMPHIGUS VULGARIS:
CASE REPORT**

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Background: Pemphigus is a rare, auto-immune, mucocutaneous disease. Pemphigus vulgaris (PV) is the most serious form of the disease. Steroid treatment is associated with improved life expectancy in these patients. However, complications associated with steroid side effects may lead to death (1).

This report describes the anesthetic management during the endarterectomy of a patient with PV who was diagnosed to have chronic, diffuse segmentary pulmonary embolism resulting from steroid and immune-suppressant use.

Case Report: A 63-year-old, 70-kg, 1.75-m, ASA III male patient with PV and diabetes mellitus who was diagnosed with PE and started medical treatment 5 months ago was scheduled for pulmonary endarterectomy.

In the operating room, induction of anesthesia was achieved by fentanyl, midazolam, and rocuronium following electrocardiography, pulse oximetry, arterial catheterization, near-infrared spectroscopy, and bispectral index monitoring. Intubation was achieved under meticulous laryngoscopy and the patient was supported by pressure pads. Anesthesia was maintained by total intravenous anesthesia with respiratory parameters of 6 ml/kg tidal volume, 5 cm H₂O PEEP, and 35-45 mmHg ET CO₂. Midazolam was used to keep the BIS value at 40-60. Pentothal was given before total circulatory arrest and a 24.56% decrease was observed in NIRS. Bilateral pulmonary endarterectomy was performed and the patient was transferred intubated to intensive care (Figure 1). He was extubated uneventfully on 16th postoperative hour and transferred to normal ward on postoperative day 5.

Discussion: During anesthesia for patients with pemphigus vulgaris, protective and preventive measures against the development of new skin lesions should be taken for all sites of pressure including oral and tracheal regions and steroid treatment should be maintained. In addition, lung protective measures such as low tidal volume and avoiding hypervolemia were taken in our patient due to pulmonary embolism and subsequently developed pulmonary hypertension.

Conclusion: Patients with PV should be evaluated in detail preoperatively for their current medications and co-existing medical conditions. Also, protective and preventive measures should be taken.



Figure 1.

PP-56**ANESTHETIC EXPERIENCES IN HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (HIPEC)**

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Background: Hyperthermic intraperitoneal chemotherapy (HIPEC) and cytoreductive surgery are increasingly effective multimodal treatment options for populations in selected cases of peritoneal carcinomatosis in recent years. In this study, we aimed to investigate the effects of preoperative comorbidities, intraoperative fluid and blood transfusions on the postoperative period by retrospectively examining the files of patients who were hospitalized with HIPEC.

Material and Method: All HIPEC patients who taken in our hospital received since 2004 were included in the study. Only 1 patient was left out of study because it was intraoperatively inoperable. Retrospectively demographic, intraoperative and postoperative data of all patients were recorded. Continuous variables were analysed by t-Student's test, and U-Mann Whitney tests. Categorical variables were analysed by chi-square test. Statistical analyses was performed using SPSS for Windows.

Result: 38 patients were included in the study. The mean age of the patients was 54.6 ± 11.4 years, more frequent in women (60.5%), malignancies originating from gastrointestinal system constituted 76.3%, 39.5% in preoperative anemia, more liberal fluid transfusions were performed intraoperatively with a mean of 7.5 ml/kg /sa, hospital stay was 26.5 ± 15.1 days and 3 patients were discharged. In addition, liberal and restrictive fluid treatments were not found to be risk factors in the rate of exitus, postoperative minor and major complications, hospital and intensive care unit stay.

Conclusion: Cytoreductive surgery and HIPEC have shown that our anesthesia management does not have any effect on postoperative mortality and morbidity, even with high-risk surgeons. However, we believe that risk factors can be better identified by increasing the number of patients in the study.

PP-57**ANESTHETIC MANAGEMENT OF A PATIENT WITH A GENETIC DISORDER
METHYLENTETRAHYDROFOLATE REDUCTASE DEFICIENCY A1298 C
(HETEROZYGOTE MUTANT) AND MTHFR C677T (HOMOZYGOT NORMAL)**

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Background: Nitrous oxide causes an acute increase in plasma homocysteine that is more pronounced in patients with MTHFR C677T or A 1298C variants. A 1298C and MTHFR C677T deficiency is a rare cause of genetic disorder which anesthetic management can cause even death by inhibiting methionine synthetase leading an increase in homocysteine levels in the body. Here we want to represent an anesthetic management of a MTHFR deficient patient.

Case: A 37 years old woman, 60 kg was scheduled for endometrial biopsy, colposcopy and conisation. Her physical examination and laboratory values were normal.

Her previous anesthesia history was for a cesarean section in 2004 with general anesthesia. She told she had late recovery, breathing problems and epileptic attack during early recovery period at Postoperative Care Unite (PACU). She experienced miscarriages. She had epileptic tonic clonic attacks.

In the day of surgery, she explained she was diagnosed as Methylen tetrahydrofolate reductase deficiency A1298 C and MTHFR C677T at 2012. She had examined once more with the guide of literature.

After induction of anesthesia with Propofol and remifentanyl, a laryngeal mask airway was placed; anesthesia was maintained with propofol infusion with air in oxygen for 60 minutes. At the end of the surgery LMA was removed, she was transferred to the PACU with a good breathing pattern, SpO₂ 100%, but sleepy. Her sleepiness increased and agitation began at the 45 th minute of her PACU stay. Her lung auscultation did not reveal any pathologic sound but she was expressing difficulty of breathing. Then excitatory movements began in her right arm and leg. In a 10 minute period, her agitation, difficult breathing and excitatory movements resolved. She followed up for more 4 hours in the PACU. Her homocystein blood level was measured and found 3 fold high. She discharged without any complication.

Conclusion: Nitrous oxide increases circulating homocysteine concentration and maydo so more in patients with variants of MTHFR gene. This can cause neurologic, and cardiac adverse events.

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PP-58**ANESTHESIA MANAGEMENT IN A PATIENT WITH PATAU SYNDROME
WHO UNDERWENT BILATERAL VITRECTOMY**

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Introduction: Patau syndrome was firstly described by Patau et al. and associated with trisomy 13 (1). The syndrome is characterized by microphthalmia, polydactyly and cleft lip-palate. In addition to limited lifespan, cardiac, vascular and central nervous system malformations give importance to the syndrome (2). In this case report, we aimed to discuss the anesthesiology approach and management in a 2-year-old female patient with Patau syndrome underwent bilateral vitrectomy operation.

Case report: Characteristic features like a low nasal bridge, low-set ears, sloping forehead, prominent glabella, sunken eyes, microphthalmia in the right eye, alopecia, high arched palate were present in a 2-year-old female patient with 12.5 kg weight underwent bilateral vitrectomy operation. In the preoperative evaluation, there was no additional problem or pathology. After premedication with midazolam, the patient was taken into the operating room and monitored. Video laryngoscope was prepared for the risk of difficult intubation. Following anesthesia induction with 3mg/kg propofol, 1mcg/kg fentanyl and 0.6mg/kg rocuronium, the patient was intubated with no: 4.5 uncuffed endotracheal tube using Miller no: 1 blade without facing any difficulty. During anesthesia maintenance, total intravenous anesthesia (TIVA) was preferred with using propofol and remifentanyl in doses of 10mg/kg/hour and 0.05 mcg/kg/min respectively. Propofol dosage was reduced to 6mg/kg/hour by the time. During the operation, approximately 2 hours, vital signs of the patient remained stable. At the end of the operation, 3mg/kg sugammadex was administered to the patient. Following the successful extubation, she was transferred to the remission unit without any problem. During her follow-up in the unit, 100% oxygen support with face mask supplied after the drop of oxygen saturation to the level of 90%. In 20 minutes, oxygen saturation of the patient became 98% and stabilized. The patient was transferred to the pediatrics service after keeping the saturation without oxygen support.

Conclusion: Cardiac-craniofacial malformations and growth retardation are significant features in the matter of anesthesia management (2). There is a risk for facing with difficult intubation and vascular access, postoperative apnea and hemodynamic problems (3). Intraoperative opioid and neuromuscular blocker usage can lead to postoperative respiratory problems; thus it should be kept in mind that 'close follow-up' of the patient is essential in postoperative period as in intraoperative period.

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PP-59**ANESTHETIC CONSIDERATION OF SPINE SURGERY IN A PATIENT WITH SEVERE KYPHOSIS DUE TO ANKYLOSING SPONDYLITIS**

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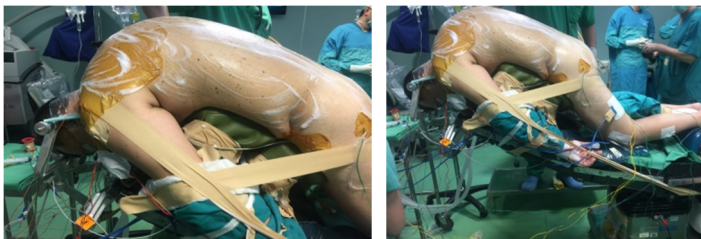
Background: Ankylosing Spondylitis (AS) is a chronic progressive inflammatory disease. Anaesthetic considerations for patients with AS include difficulty in positioning, difficult or impossible access to the airway. Spine surgery is a difficult and bleeding operation especially in adult patients and performed in prone position. Prone position can cause significant pathophysiological changes in the cardiovascular system and respiratory system. In this report we want to discuss a patient with severe kyphosis due to Ankylosing Spondylitis.

Case Report: A 47-year-old, 178 cm, 85 kg, ASA physical status II patient with severe progressive kyphosis due to Ankylosing Spondylitis was admitted to the operation room for vertebral osteotomy and posterior instrumentation and fusion. After standard monitoring with ECG, Pulse oxymeter, NIBP, a right radial arterial catheter and a 14 G iv catheter were placed. We planned to perform a nasal awake fiberoptic intubation under dexmedetomidine infusion. After the intubation neuromonitoring with motor evoked potential (MEP) and somatosensory evoked potential (SSEP) was obtained. We inserted a femoral vein catheter for blood transfusion. Optimum positioning could not be achieved even with the Halo fixator. In the end with generous gel and foam padding, excessive ventilation pressure was decreased. Once an acceptable position was achieved, the surgery began (Figure 1). T₁₂-L₁ posterior instrumentation and fusion with L3 osteotomy was performed. Heavy blood loss was sustained during 7th hour of surgery; an estimated blood loss of 6800 mL was replaced with 5 units of red blood cells, 4 units of fresh frozen plasma. After the operation he was taken to the PACU and extubated on postoperative day one and discharged home 7 days after the surgery.

Discussion: There are a number of positional and technical difficulties for AS patients undergoing spinal surgery, especially in relation to the difficult airway and prone positions and surgical bleeding. The cardiac and respiratory systems are especially vulnerable to the extreme and lengthy of prone position. The needed positioning, combined with the problems associated with AS, presents a unique challenge in anesthetic management.

Conclusion(s): We report a case that documents the difficulties of anesthetic management of the patient with AS, suggests the need for awake fiberoptic intubation and good venous access possibly central line placement and support for prone position and postoperative care unit.

Figure 1. Position of the patient



PP-60**BLOODLESS CURING METHODS AS A PART OF STRATEGY IN ANESTHESIA OF GERIATRIC PATIENTS (CASE REPORT)**

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Bloodless medicine is based on programs of avoiding transfusion treatment, by using pharmacologic alternative medicaments as a change for blood transfusion and harmless techniques (methods), with a high technology which brings bleeding to a minimal quotes. The Doctor (Physician) and his team has got primary role in all this process of bloodless patients treatment , and they have to be highly educated with a practical expirience, so that way blodless technology and treatment could be used correctly and on the proper time.

In Bosnia and Herzegovina bloodless medicinice hasn't got yet taken place where it deserve and is still observed suspiciously by patients an by medical personel too. According to the fact that modern medicine is streaming towards bloodless treatment, it is obvious that interest of physicians in our country should increase in future.

Case Presentation: In this paper 77 years old female pateint has been presented . She has gone trough ortopedic surgery (endoprosthesis of a right knee). Anesthesiologic tratment of this patients has been influenced and made worse by many additional diseases (comorbidityes). During this operations Cell Salvage autotransfusion has been used. Early postoperative period have been complicated with a higher blood loss. For that reason multidisciplinary medical team have been founded and there were anesthesiologist, orthopedic surgeon , transfusiologist and hematologist. In this paper throuhg the complex treatment of this patients we described all benefits of multidisciplinary approach and all obstacles that team had according to specific bloodless therapeutic demands.

Discussion: Comparing our paper and work to the similiar in the nearby countries and world it is obvious that the next step in development of bloodless patients tratment in our country should be strong preoperative preparation and creating uniforme protocol for all patients who are for health, moral, religious and other reasons are not willing to receive blood or blood components. There is so many programs and measures that should be implemented and developed in all medical instutions in Bosnia and Herzegovina with a purpose of saving blood, avoiding blood transfusions and preventing blood loss to the minimum.

Conclusion: Dispite the fact that blodless methods of patients tratment haven't been yet totally accepted by patients and physicians in our country there is so many scientific and clinical justfull reasons why it should be changed. Bloodless medicine is based on tested, scientifically proved longlasted clinical expirience and is today unavoidable part of modern clinical medicine which gives us excelent results.

Keywords: bloodless curing, anesthesia, geriatric patients

PP-61**ANESTHESIA DURING THE REMOVAL OF HUGE MYXOMA IN AN ELDERLY PATIENT**

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Background: To present the course of anesthesia during the removal of a huge myxoma of the left atrium in a patient of 69 years old.

Case Report: Patient with signs of heart and transthoracic echocardiographic data on the presence of myxoma 9x7 cm of the left atrium, prolapsing into the left ventricle was hospitalized for emergency surgery. Cardiosurgical monitoring was extended by transesophageal echocardiographic monitoring (TEEM). The duration of the artificial circulation was 28 minutes, cross-clamping of the aorta - 18 minutes, anesthesia - 121 minutes.

Before the beginning of the surgery TEEM allowed to detailed volume-kinetic parameters of the heart: end diastolic volume (EDV) – 78 ml, end systolic volume (ESV) – 38 ml, ejection fraction (EF) – 51%. The dimensions of the right atrium were 5x6 cm, regurgitation on the tricuspid valve (TK) - II degree, pressure in the right ventricle (RV) - 57 mm Hg, the left atrium - 11x12 cm, in the cavity of which a huge myxoma 9x8 cm was visualized with prolapse to the ventricle, base located on the atrial septum.

According of possibility of wedging the myxoma, before induction to the anesthesia, 400 ml of crystalloid under the control of invasive blood pressure (BP) - 90/55 mm Hg was administered. Induction to anesthesia was performed against the background of phenylephrine at a dose of 1 mg/kg/min maintenance of BP - 100/60 mm Hg., heart rate (HR) - 90 bpm, CVP - 8 mmHg. By continues TEEM was controlled of the integrity of the myxoma, the adequacy of surgical intervention and the state of intracardiac hemodynamics. After the removal of the myxoma: EDV – 94 ml, ESV – 48 ml, EF - 52%, regurgitation on TK - I degree and pressure in RV - 34 mmHg. The postoperative course in the ICU was hemodynamically stable, on the 7th day the patient was discharged from the hospital in a satisfactory condition.

Conclusion: Due to the adequate provision of urgent surgical intervention, a 69-year-old patient with a huge, clustic myxoma of the left atrium received a positive result without serious complications.

PP-62**POCD - POSTOPERATIVE COGNITIVE DYSFUNCTION**

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Introduction: As the number of surgeries performed worldwide is increasing, optimizing postoperative cognitive function and preventing/treating POCD are major public health issues. POCD is defined as a cognitive disorder that develops in the early, and continues in the late postoperative period. It clinically manifests itself with memory impairment, difficulty of concentration, attention and other cognitive impairments (thinking, speech, etc.) confirmed by neuropsychological data testing. Diagnostics of POCD currently varies depending on the country and the proposed criteria.

Aim: To recommend some every day practices which can help in POCD reduction. To raise awareness of possible POCD occurrence in geriatric patients, its effect on long-term disability, higher health care costs and even increased mortality.

Methods: Selective review of the literature

Discussion and Conclusion: Advanced age, pre-existing cerebral, cardiac, and vascular disease, low educational level, and extensive surgery elevate the risk of POCD.

Pre-operative discussion with patients and their families regarding the possibility of post-operative cognitive dysfunction in at-risk groups, especially in elderly patients and/or patients with baseline dementia or cognitive deficits.

A MMSE can be considered before and after surgery for patients that are at risk for POCD (elderly, patients with baseline dementia or cognitive deficits, etc) in order to establish a baseline level of cognitive functions and monitor for the occurrence of POCD.

Maintaining normothermia is strongly advocated. Normoglycemia should be maintained. It is recommended to avoid the use of anesthetics for non-anesthetic purposes, e.g. treating hypertension by increasing the dose of inhaled anesthetic.

Epidural analgesia may be better than parenteral analgesia during the in-hospital recovery period.

Spinal anesthesia was not better but actually worse than general anesthesia for reducing post-operative cognitive dysfunction.

While both anesthesia and surgery have been associated with POCD, prolonged hospital stays, sleep deprivation in the hospital, and postoperative pain may contribute too.

Preoperative cognitive intervention, a combination of physical activity and cognitive activity, has been shown to prevent the development of POCD.

PP-63**POSTOPERATIVE RECOVERY AT GERIATRIC PATIENTS AFTER URGENT SURGERY
OPERATION - CASE REPORT**

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Introduction: Elderly patients are becoming an increasingly large part of most surgical practices, consistent with demographic shifts. The process of ageing is complex and under constant influence by numerous factors, for which reason the way human age is extremely individual. It is important to understand and acknowledge how elderly differ from younger adults, and how management needs to be modified and tailored to the individual patient in order to improve outcomes. The goal of treatment of an elderly patient is not necessarily to increase human longevity regardless of the consequences, but to increase active longevity free from disability and functional dependence. Avoiding intraoperative catastrophe was the primary mission of the anesthesiologist.

Case Presentation: A 73-year-old female was urgently received at the UKC Tuzla Surgery Clinic on 06.11.2017. due to severe abdominal pain. Immediately was transferred to ICU where the patient was hypotensive, dyspnoic, tachycardiac, with low oxygen saturation, cyanotic, in the mouth was the stomach content and at the nazogastric sonde went bowels content. After shorter preoperative preparation and stabilization of the general condition, patient underwent urgent, major abdominal surgery under general anesthesia. After the completed operation, the patient is taken to ICU for controlled mechanical ventilation, tachycardiac, hypotensiv, with low urine output. Postoperative recovery of the patient in ICU lasted about 45 days. At 19.12.2017.yr patient hemodynamic and respiratory stabile, orderly mental status is transferred to the Clinic for Surgery.

Discussion: Emergency surgical presentations in the elderly are increasing rapidly and present many significant challenges. Although, evidence has shown that elderly patients have poorer outcomes, there are specific strategies that hospitals and teams can develop to improve the care received by this vulnerable group.

Conclusion: Elderly patients are uniquely vulnerable and particularly sensitive to the stress of trauma, surgery and anesthesia in ways that are only partly understood. Minimizing perioperative risk in geriatric patients requires thoughtful preoperative assessment of organ function and reserve, meticulous intraoperative management of coexisting disorders and vigilant postoperative pain control.

Keywords: elderly patients, urgent surgery, specific challenges

PP-64

TRACHEOSTOMY AS A SAFE AIRWAY MANAGEMENT DURING THYROID SURGERY IN A SEVERELY OBESE MAN: A CASE REPORT

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Background: Thyroid surgery is associated with difficult tracheal intubations because of the distorted airway anatomy. Thyroidectomy for large thyroid mass compromising the airway carries a relatively high risk of post-operative respiratory obstruction which may necessitate tracheostomy as a life saving procedure.

This case report describes the safe management of compromised airway due to huge thyroid mass, complicated with obesity.

Case report: A 63 year old man, severely obese (115 kg) presented with huge neck mass, with occurrence of shortness of breath and hoarseness of voice, without stridor. Computer tomography scan showed a huge thyroid mass (96x71 mm) extending into the superior mediastinum compressing the trachea, and decreasing the tracheal lumen. Fine needle biopsy showed Hurthle cell carcinoma. Direct laryngoscopy revealed swelling of the epiglottis and moderate restriction of the vocal cords mobility. Awake fiber optic intubation was done and total thyroidectomy was performed. The patient remained hemodynamically stable throughout the procedure. To avoid possible airway obstruction tracheostomy was done before awaking the patient. After the operation, patient stayed for two days in the intensive care unit, and was discharged with permanent tracheostomy, in stable condition, without postoperative complications.

Discussion: Pre-operative predictors for post-thyroidectomy respiratory failure are: large thyroid mass, retrosternal extension, stridor, malignancy, recurrent laryngeal nerve palsy, radiological evidence of tracheal compromise. Despite these predictors, the decision for tracheostomy is usually done during the operation, based on findings like: tracheal deformity and tracheomalacia. An alternative option is leaving the endotracheal tube in the post-operative period. Obesity is an additional factor that complicates the airway management. Based on pre-operative predictors for airway obstruction, long duration of the operation and possible postoperative bleeding, tracheostomy should be a planned elective procedure during thyroidectomy. This was the case in our patient.

Conclusion: Tracheostomy during thyroidectomy is a safe procedure in patients expected to have respiratory failure, and could be a good alternative to delayed endotracheal extubation.

PP-65**ANESTHETIC MANAGEMENT OF A PATIENT WITH DILATED CARDIOMYOPATHY FOR INGUINAL HERNIA REPAIR: A CASE REPORT**

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Background: Dilated cardiomyopathy (DCM) is mostly idiopathic, characterized by LV or biventricular dilation, systolic dysfunction and impaired contractility. These patients are often at a risk of dysrhythmias or sudden cardiac death (1). Anaesthetic management of patients with cardiomyopathy is challenging and it may be associated with high mortality.

Case Report: A 63 year old male presented with inguinal hernia was posted for surgery. His previous medical records revealed dilated cardiomyopathy which was treated 1 year back with digoxin, beta blockers, diuretics. On examination patient had dyspnea, mild pedal edema, regular HR 85/min, BP 115/65 mmHg. Preoperative ECG showed left bundle branch block, left ventricular hypertrophy. Echocardiography revealed global hypokinesia, severe LV systolic dysfunction, EF 30%, moderate mitral regurgitation. Chest X-ray revealed cardiomegaly. High risk consent was obtained and the patient was planned to receive epidural anesthesia.

Under aseptic preparations epidural catheter was placed at L1-L2. Test dose 2ml 0,5% Bupivacaine was given, it was negative. One hour before surgery 9 ml 0,25 % Bupivacaine was given divided in 3 doses and during surgery the patient received total 8 ml 0,25% Bupivacaine divided in doses of 2 ml each. Patient received 50 mcg Fentanyl intravenously. Intraoperatively no significant changes in blood pressure and HR were noticed without any postoperative complications.

Discussion: Choice of anaesthesia should be planned and it should be aimed at having only minimal haemodynamic fluctuations, avoiding drug induced myocardial depression (2) During general anesthesia dose dependent myocardial depression may occur with use of volatile anesthetics, opioids, benzodiazepine. Moreover stress response to intubation and extubation along with decreased preload due to positive pressure ventilation may also be deleterious to the patient. Spinal anesthesia can cause a precipitous fall in blood pressure and does not provide postoperative analgesia. Titrated doses of local anesthetics epidurally result in lower risk of hypotension and prolonged postoperative analgesia. It also improves myocardial performance by reducing LV afterload without improving contractility(3). Fluid management is also critical and loading the patient in the preoperative and intraoperative period may lead to heart failure.

Conclusion: The management of a patient with DCM who undergoes a noncardiac surgery is always a challenge for the anesthesiologist, as it is associated with high mortality. Patients with DCM can be effectively managed under regional anesthesia.

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PP-66**OUR EXPERIENCE USING A LARYNGEAL MASK FOR UROLOGICAL PROCEDURES.**

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Background and Goals: Traditional protocol in our clinic calls for endotracheal anesthesia to be used for the superior urinary apparatus and spinal anesthesia for the inferior part of the urinary apparatus. This being said, if patients refuse spinal anesthesia or if spinal anesthesia can not be achieved, endotracheal anesthesia will be used regardless of whether surgery is being conducted in the lower urinary apparatus. The purpose of this study is to highlight the efficacy of using a laryngeal mask during urological procedures when patients refuse spinal anesthesia.

Materials and Methods: This study involves 30 male patients between the ages of 20-40 years old ASA I-II undergoing urological surgery. The surgeries lasted about 30±10 minutes and the procedures conducted were Transurethral of Urinary Bladder Tumor (TURBT), Stricture Ureter Stent and Urethral Lithotripsy, Varicocele, and Hydrocele. Patients were given oral midazolam 5mg, 1 hour before surgery as a premedication. The induction was made with fentanyl 2 microgram/kg/weight, and propofol 2mg/kg/weight, and anesthesia was maintained with addition oxygen+ sevoflurane 0.8 + Propofol 0.1 mg/kg/min IV.

Results and Discussion: Position did not differ between patients who were intubated and patients using the laryngeal mask. Patients were hemodynamically stable and were well ventilated with an SaO₂ of 100%, heart rate of 60-70 bpm and blood pressure 100-110/60-70 mmHg. There were no reported complications and the patients woke up happy and ready to leave the hospital within 24 hours.

Conclusion(s): Using a laryngeal mask is a great and a safe choice for short urological procedures.

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Key words: Anaesthesia, general, Anaesthetics i.v., propofol, Intubation tracheal

PP-67**ULTRASOUND-GUIDED BILATERAL TRANSVERSUS ABDOMINIS PLANE (TAP) BLOCK AND NON-OPIOIDE ANESTHESIA IN ELDERLY HIGH-RISK PATIENT UNDERGOING EMERGENCY ABDOMINAL SURGERY**

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Elderly patients undergoing emergency surgery are at higher risk of adverse postoperative outcomes, resulting from combinations of age-related physiological decline, multiple co-morbidity, polypharmacy, cognitive dysfunction and geriatric syndromes, including frailty (1). One important contribution to development of peri-operative complications is inadequate postoperative pain therapy. Inadequate analgesia for elderly surgical patients contributes to postoperative morbidity, including delirium, cardiorespiratory complications and failure to mobilize. TAP block and non-opioid anesthesia as a part of multimodal analgesic regimens are promising alternatives to reduce higher doses and dependence of opioids and the adverse effects that accompany. We present a case of a 75-year-old male patient who was scheduled for emergency major abdominal surgery with many co-morbidities. Peri-operative pain management was achieved with ultrasound-guided bilateral TAP block and non-opioid anesthesia. This multimodal approach of anesthesia in the elderly can provide optimal pain control, will prevent adverse reactions and avoid many potential side effects from systemic opioid pain medications.

Keywords: elderly patient, USG TAP block, non-opioid anesthesia, pain management.

Background: Older people undergoing elective and emergency surgery are at higher risk of adverse postoperative outcomes, resulting from combinations of age-related physiological decline, multiple co-morbidity, polypharmacy, cognitive dysfunction and geriatric syndromes, including frailty (1). Elderly patients with congestive heart failure, COPD and multiple coexisting diseases undergoing major abdominal surgery are at high risk for peri- and postoperative complications. They are particularly sensitive to opioid analgesics and their use in higher dosage should be avoided (2). Regional anesthesia (including peripheral nerve blocks) and multimodal analgesic regimens are promising alternatives to reduce higher doses and dependence of opioids and the adverse effects that accompany (delayed emergence, somnolence, dizziness, ileus, constipation, nausea and vomiting, respiratory depression, pruritis, urinary retention, tolerance by desensitization, reduced cardiac output, short duration of central muscle stiffness, weakness of pharyngeal musculature and breathing problems, coma and death) (3). Ultrasound-guided (USG) bilateral TAP block (TAPB) is useful in abdominal surgery and provides better pain scores, reduced use of opioids, wakefulness and decrease side effects, better return of gastrointestinal function, and overall reduced risk of cardiovascular complications. As multiple organ systems are at risk, it is critical to maintain hemodynamic stability, minimize hypothermia, avoid hypoxia and aggressively manage pain. We report a case of high-risk elderly patient who successfully underwent emergency abdominal surgery under USG bilateral TAPB and non-opioid general anesthesia.

Case report: A 75-year-old male (height 184 cm; weight 80 kg) was scheduled for emergency major abdominal surgery. He suffered from abdominal pain, vomiting, constipation and abdominal distension that lasted for six days. The patient has previous history of severe hypertension, ischemic heart disease (with LVEF 30%), COPD, cerebrovascular accident (left hemiplegia), and deep vein thrombosis. His daily medications included: carvedilol 6,25 mg twice daily, losartan 50 mg twice daily, furosemide 20 mg, pentoxifylline 400 mg twice daily, aminophylline retard 350 mg twice daily, spray flixotide twice daily inhaler and ventoline as needed, aspirin 100 mg and acenocoumarol (sintrom) 4 mg. International normalized ratio (INR) was 2.4 and 2 units of fresh frozen plasma and vitamin K 1 mg i.v. were given to prevent possible intraoperative bleeding from major abdominal procedure. On physical examination he had tachycardia (heart rate 115/min), blood pressure was 186/90 mmHg, respiratory rate 22/min, SpO₂=88%. Nasogastric tube and urinary catheter were placed. We placed 2 large intravenous canula with isotonic ringer lactate solution. The patient received dexamethasone 0.1 mg/kg and paracetamol 1 gr before the induction of anaesthesia (as pre-emptive analgesia). Under aseptic conditions and after local anesthesia, left radial artery was placed for invasive arterial pressure monitoring. Preoxygenation was done for 3 minutes before tracheal intubation was facilitated with 100% of oxygen 6 L/min. Rapid sequence induction was done with midazolam 1 mg, lidocaine 80 mg, propofol 80 mg and rocuronium 60 mg. Continuous monitoring of electrocardiogram (EKG), oxygen saturation (SpO₂), heart rate (HR), and end-tidal CO₂ was carried out. After tracheal intubation, 40 mg of ketamine (0.5 mg/kg) i.v. bolus dose were given as preemptive analgetic and continuous i.v. infusion of lidocaine 1 mg/kg/hr and magnesium sulphate 1 gr/hr. Central venous catheter was placed in right internal jugular vein under aseptic condition to monitor central venous pressure (CVP) and to administer vasoactive drugs if necessary. Anesthesia was maintained by using isoflurane MAC 0.7 combined with oxygen : air (50 : 50) and were given additional boluses of rocuronium as required. USG-TAPB with 20 ml 0.25% bupivacaine was performed under ultrasound guidance on the both sides (right and left), using Siemens Acuson X300 system (Siemens, Germany) ultrasound device and high-frequency (6-13 MHz) linear transducer, covered with sterile plastic sheath. The skin was prepared with 10% betadine solution. After draping the needle insertion site, the probe was placed on the anterolateral abdominal wall between the iliac crest and the subcostal margine. After identification of the neuro-fascial plane between the internal oblique and the transversus abdominis muscle, a 22G x 4" 50 mm needle mm (B. Braun, Stimuplex, Germany) was advanced by the "in-plane" technique. When tip of the needle reached the TAP between the internal oblique and transverses abdominis muscles, 1 ml of 0.25% bupivacaine was injected into the patient. After negative aspiration the entire amount of the syringe (19 ml) was given with occasional aspiration. By giving local anesthetic on the US-monitor was seen the spread of the local anesthetic in TAP space, as a dark oval-shaped hypoechoic fluid pocked at TAP. We kept the patient warm with air-warm blanket to avoid perioperative hypothermia and anti-embolic pumps. Total intravenous fluids during the surgery were given to maintain the blood pressure adequately. Resection of the obstructed bowel segment by the tumor mass with jejunio-ileal reanastomosis was performed. All the time during the surgery the hemodynamic remained stabile with ABP between 135/80 and 150/90 mmHg, SpO₂ between 93-97 %, HR 87-95/min, CVP between 10-12 mmHg, urinary output 50-100 ml/hr intra-operatively. Before the closure of the abdominal wall, 1 gr i.v. Metamizole was given and continuous i.v. infusion of lidocaine 1 mg/kg/hr and magnesium sulphate 1 gr/hr was discontinued. At the end of the surgery, muscle relaxation was reversed with

intravenous (i.v.) neostigmine 0.05 mg/kg and atropine 0.01 mg/kg. After he was fully awake, he was transferred to the Intensive Care Unit (ICU) for furthermore treatment. Three hours after the operation, he was extubated, hemodynamic remained stable, and didn't complain of any pain (Visual Analogue Scare-VAS at rest was 2 and on movement was 3). On the second postoperative day he was transferred to the Department of Digestive Surgery. Postoperative management of pain was consisted of giving 1 gr Paracetamol if VAS score was 4 and above 4 and 1 gr of Matamizole if VAS score was 7 and above 7. The analgesic effect of USG-TAPB lasted for 54 hours and the postoperative treatment of pain was achieved only with 1 gr of Paracetamol twice daily. Patient remained stabile all the time during the postoperative period, didn't complain of nausea and vomiting, any cardiac or respiratory problems, and not postoperative delirium and postoperative cognitive disfunction. Eight days after the surgery he was discharged from the hospital without any complications.

Discussion: Geriatric patients suffer from a greater number of co-morbid diseases, have lower organ function reserve, and demonstrate altered physiologic and pharmacologic reactions. It may require more time for older patients to understand the pain scale due to barriers such as vision, hearing or cognitive defects. In addition, elderly patients also tend to underreport pain and effective peri-operative pain management requires careful assessment of pain and sensible dosing of analgesics (3). This particular patient population have unique age related co-morbidities that lead to an increase in postoperative complications involving the neurological, pulmonary, cardiac and endocrine system. Despite advances in anesthesia and analgesia, mono-therapy with opioids continues to be the mainstay for treatment of postoperative pain, which often leads to inadequate pain control, or respiratory and gastrointestinal compromise. Peripheral nerve blocks and multimodal analgesic regimens are promising alternatives to reduce high doses and dependence of opioids and their adverse effects and can be very effective approach to peri-operative pain management in the elderly and cognitively impaired patients.

We report the use of USG bilateral TAPB and non-opioid anesthesia for bowel surgery in a high-risk elderly patient. USG TAPB was the first time described by Hubbard et al in 2007 (4). TAP block is peripheral nerve block that provides analgesia by blocking the sensory nerves from Th7-L1. It provides analgesia of parietal peritoneum as well as skin and muscles of antero-lateral abdominal wall. TAP block can be effectively used to provide adequate analgesia for abdominal surgeries, especially in patients with compromised physiology. Also it is recommended in patients undergoing abdominal surgery when epidural analgesia is contraindicated (5). Non-opioid anesthesia is defined as giving the drugs with analgesic effect (ketamine, lidocaine, and magnesium sulphate) intra-operatively (6,7,8). This approach will achieve cardio-circulatory stability, will avoid needs of opioids in the post-operative period (and well known opioid adverse effects), the intensity of postoperative nausea and vomiting and sleep disturbances after the operation.

In general, patients in the postoperative period feel comfortable after an opioid general anaesthesia and often report little pain in the recovery room but as anaesthesiologists we are often unaware of hyperalgesia during the next 1 to 4 days postoperatively (9). Opioids provide an initial analgesics effect but development of acute tolerance can lead to an increased need for analgesics and opioids may therefore not be particularly effective in controlling postoperative pain. It was assumed that NMDA receptor antagonists may prevent acute tolerance or long-lasting hyperalgesia.

Singh et al. reported a case report of using bilateral TAPB as a sole anesthetic technique in emergency surgery for huge irreducible incisional hernia in a high risk patient (10).

Lili in their study reported efficacy of USG TAPB and rectus sheath block in elderly high-risk patients undergoing emergency abdominal surgery (11).

Vuong et al. reported three case reports of using TAPB as the primary anesthetic for laparotomy in the elderly patients with multiple comorbidities (12).

Patil et al. reported using TAPB for an emergency laparotomy in a 72-year-old male patient with gall bladder perforation and small intestinal obstruction, with history of multiple coexisting diseases (13).

In the literature I didn't find any study or case report using non-opioid anesthesia in the high-risk elderly patients.

Postoperative pain management in the elderly, despite advanced pain management modalities, drug delivery systems and benefits of optimal analgesia continues to be a problem. Perioperative regional anesthesia techniques (including peripheral nerve blocks as TAPB) in the elderly will influence and control perioperative pathophysiologic events by: reducing neuroendocrine stress response, improving effective pain control, facilitating return of gastrointestinal function (earlier enteral feeding), and earlier patient mobilization. It remains a well-accepted option to: reduce cognitive dysfunction (delirium), helps to minimize stress (tachycardia and hypertension), reduce intra- and post-operative opioids consumption, result in less pulmonary compromise (atelectasis, pneumonia, prolonged mechanical ventilation), superior pain control during dynamic activity, early ambulation and provide for venous thrombosis prevention (14). Multimodal drug therapy and non-opioid anesthesia is another potentially advantageous choice toward perioperative pain management that utilizes a variety of analgesics in order to minimize dosages and adverse effects of any single agent while maximizing analgesic effect (3).

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PP-68

PREDISPOSITION TO LEFT MAIN BRONCHIAL INTUBATION-CASE REPORT

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Background: There is a natural tendency for a tracheal tube to pass into right main bronchus during endotracheal intubation or tracheostomy. There are conditions in which there is a tendency for a tracheal tube to pass into left main bronchus; this occurrence should be acknowledge more often

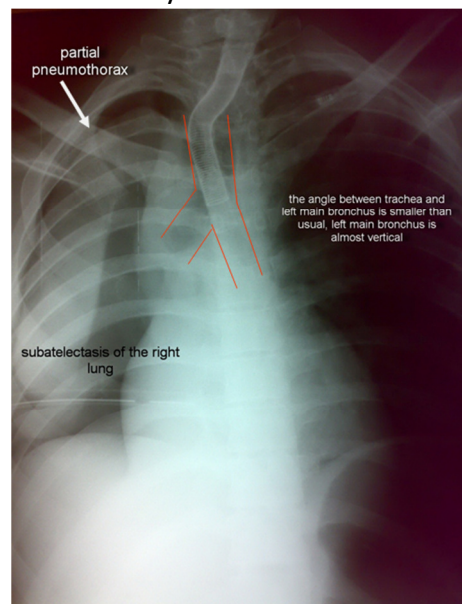
Case report: 68 year old male patient underwent surgical tracheostomy in the intensive care unit. After the tracheal canula was in place, it was noticed that breath sounds were absent above right hemithorax. On solely clinical grounds right sided pneumothorax was suspected and right pleural cavity drainage performed. Chest radiogram showed subatelectasis of the right lung, partial pneumothorax on the right and endotracheal canula positioned in the left mainstem bronchus. Bronchoscopy confirmed the position of the tracheal canula in the left main bronchus and atelectasis of the right lung. Tracheal canula was repositioned above the carina.

Discussion: Brzenski and Benumof reported a case of left mainstem bronchus intubation in a patient with short incisor-to-carina distance, hepatomegaly, ascites and right lower lobe collapse, hypothesizing that these conditions lead to tracheal bifurcation anatomy distortion.¹ In another case, patient with huge goitre was inadvertently intubated main left bronchus; the patient's chest x-ray showed that trachea was deviated to the right.² The conditions predisposing to tracheal shift to the right are: atelectasis of the right lung (bronchial tumor, aspiration, foreign body obstruction), conditions after right lung resection, pathological process involving left hemithorax that shifts midline to the right (large pneumothorax, large pleural effusions).

Conclusions: Distorted tracheal anatomy that makes axis of the trachea and axis of left main bronchus overlap (the angle between the vertical axis of trachea and left main bronchus is smaller than usual, resulting in more vertical axis of the left main bronchus) predisposes to left main bronchial intubation.

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PP-69

**ACTIVITY REGULATION OF HEART RATE IN CHILDREN
DURING THE INDUCTION OF ANESTHESIA WITH PROPOFOL**Yusupov A.S., Usmanova G.M., Fayziev O.Ya

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Aim: The purpose of the study, improving the efficiency and safety of induction of anesthesia during surgical operations gastrointestinal tract in children by assessing the regulation of heart rate and clinical course.

Material and methods. The work is based on the analysis of the results of the study of 46 children aged 1 to 14 years with diseases and malformations of the gastrointestinal tract, which plunge to the surgical intervention . After conventional premedication intravenously administered solution based propofol 3.5 mg/kg. Epidural catheterization followed by 0.25% bupivacaine in 2 mg/kg body weight. Epidural anesthesia was performed before surgery and used as the main component of anesthesia during the procedure, and then continued in the postoperative period.

Anesthesia was maintained with propofol by continuous infusion at a dose of $7,3 \pm 0,4$ mg/kg/hour.

Results: After premedication children received into the operating drowsy state, corresponding to pain, skin color was pink, moist. The respiratory rate did not change. Peripheral pulse remained average filling and tension. Indicators of breathing virtually unchanged and remained in the normal age range.. After premedication, there was a slight increase in the SatO₂ by 0.11 %.

Discussion: During the induction rates of blood pressure and oxygen saturation were significantly different from baseline, $103,87 \pm 1,92$, then at the introductory period, there was an increase of 7,83% ($p < 0.05$), which was $112 \pm 2,15$. Other indicators as ejection fraction and mean diastolic pressure tended to reduction respectively for 2,96% and for 6,07%, at the same time indicators of stroke volume, heart rate and cardiac index tended to increase respectively by 3,94%, 3,0% and 6,97%.

Conclusions. Technique of anesthesia using propofol and ketamine against EA bupivacaine, a positive effect on the system of the functional state of the leading mechanisms of the autonomic nervous system during the induction of anesthesia.

PP-70

RED NECK SYNDROME IN SLOW INFUSION VANCOMYCIN TREATMENT

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Background: Vancomycin is used for the perioperative prophylaxis for bacterial infections in patients with penicillin or cephalosporin allergy [1,2]. “red man’s” or “red neck” syndrome and anaphylaxis are two types of hypersensitivity reactions caused by vancomycin. Following rapid infusion of antibiotic, histamin release from the mast cells causes symptoms of “red man’s” syndrome such as flushing, erythematous discoloration and pruritus over the face, neck and upper part of the body accompanying with hypotension and myocardial depression [1–3]. In this report, we present a patient who developed “red neck” syndrome with slow infusion vancomycin treatment, which was given for total hip prosthesis surgery.

Case Report: A 67-year old female patient underwent total hip replacement surgery. Perioperative vancomycin planned to be given 1x1 gr in 100 cc 0.9% saline solution through one hour intravenous infusion because of the penicillin allergy. On the 10th minute of treatment, disseminated or partly banded itchy and erythematous rashes accompanied without hypotension have been developed particularly at the upper part of the body (Figure 1-2). Prednisolone 0.5 mg/kg and diphenhydramine an antihistaminic drug, have been added to patient’s treatment. The red rashes were quickly improved. Following dermatological evaluation, “red neck” syndrome has been diagnosed. Vancomycin dose regimen has been rearranged as 4x500 mg/day. Treatment was continued for 14 days.



Figure 1

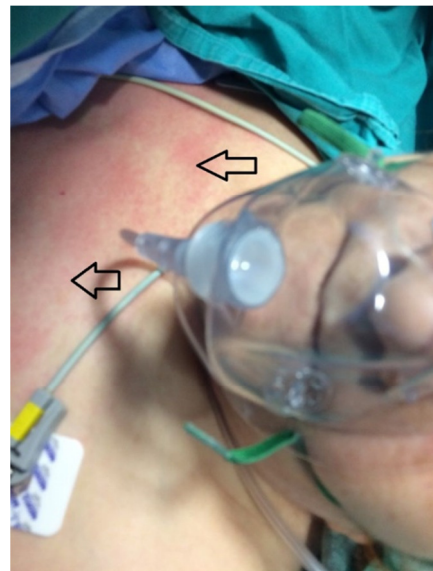


Figure 2

Discussion: “Red Neck” syndrome has a relatively high incidence with intravenous administration of vancomycin, but it also occurs with oral or intraperitoneal administration [3]. To be protected of this syndrome, the infusion rate should be slower than 10 mg/min. and the drug should be given in 50 cc or 100 cc isotonic saline solution. In our case, red neck syndrome developed despite given in the appropriate dose of drug and slow release in 100 cc. salin .

As a conclusion, “red neck” syndrome is one of the common side effects of vancomycin treatment. Although some controversies are still exist on the mechanism of this side effect, the symptoms could be diminished with modification in dose regimens and antihistaminics.

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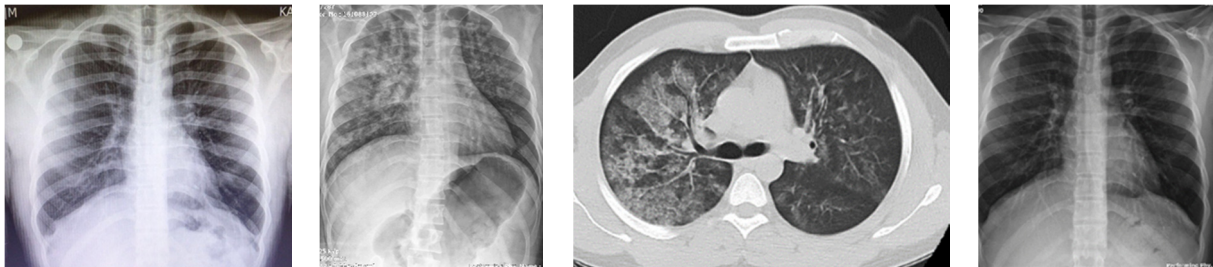
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PP-71**NEGATIVE PRESSURE PULMONARY HEMORRHAGE AFTER LAPAROSCOPIC SURGERY**Özlem Deligöz, Osman Ekinci

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Background: Negative- pressure pulmonary edema (NPPE) caused by forced inspiration against obstructed upper airway (OUA) is well recognized state (1). Negative pressure pulmonary hemorrhage (NPPH) with NPPE is uncommon (2). We aim to report a case of NPPH due to OUA after extubation.

Case report: Laparoscopic pyeloplasty operation under general anesthesia was performed in a 28 years old male, ASA-I patient. There wasn't any complication during operation. Extubation was performed in awake normal position. Immediately after extubation, resistance was felt by balloon and it ended in 15 seconds with 100% oxygen inhalation with mask. Patient didn't have hypoxia (SpO₂:98-100%) and was followed up for 30 minutes with monitorization and was sent to service as Modified Aldrete Score 10. After first hour of follow up recurrent hemorrhagic vomiting occurred. General state was stable. Respiration rate 14-16/min and on physical examination prominent rales on right hemithorax heard with auscultation. Gastro endoscopy revealed no obvious hemorrhage in stomach and esophagus. Chest x-ray showed cotton like infiltrates. There was active hemorrhagic vomiting instead of liquid sparkling vomiting. We followed him as negative pressure pulmonary hemorrhage case in reanimation unit with oxygen inhalation by mask. After four days follow up in Intensive Care Unit (ICU) we discharged him from ICU with clinical and radiological improvement.



Preoperation

Second hour

Fourth hour

Fifth day

Discussion: The principal pathophysiological mechanisms involved in generation of NPPE and NPPH is negative intrathoracic pressure creating disruption of alveolar-capillary membrane. Clinical symptoms guide in diagnosis. Early diagnosis provides successful management in this fatal condition (2). We assumed pulmonary hemorrhage or gastric ulcer hemorrhage in this case.

Conclusion: We conclude that it is better to remind negative pressure pulmonary hemorrhage in a patient with postoperative recurrent hemorrhagic vomiting without evident respiratory distress and to perform gastroscopy after chest x-ray evaluation.

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PP-72**TRANSIENT IDIOPATHIC BILATERAL VOCAL CORD PARALYSIS**

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Background: We present a case of acute bilateral vocal cord palsy (BVCP), who was admitted to our emergency department. The vocal cord palsy recovered spontaneously within weeks. The patient was followed in our intensive care unit during acute cord paralysis.

Case: 73 year-old male was admitted to our emergency department with the complaints of respiratory distress with stridor. His breathing difficulty started previous night and accompanied with vomiting, dysphagia and slurring of speech. The patient had an uneventful cholecystectomy operation under general anesthesia two weeks ago. He was consulted with Eart Nose Throat (ENT) department. Direct laryngoscopic examination revealed diffuse mild edema of vocal folds and supraglottic structures including ventricular bands and aryepiglottic plicae. He was given oxygen and 1mg/kg methyl-prednisolone was administered. As he did not respond the initial treatment, an urgent tracheotomy was performed.

He was followed in intensive care unit during the following 5 days and was transferred to the pulmonary ward afterwards. Slightly diminished velum pharyngeum reflexes and mild disorientation was observed along with vocal fold paralysis. This mandated to rule out a possible cerebro-vascular accident (CVA). Cranial MRI showed infarctions at thalamic lacunary and pons. The whole cerebrum was found mildly edematous. The patient was treated with klopidogrel, acetyl salisilic acid, benserazide hydrochloride.

Within following weeks, the patient was regularly followed by ENT department with direct laryngoscopy. The edema of the larynx was gradually decreased. The patient was decannulated after 4 weeks. His control MRI showed regression in the cerebral edema.

Conclusion: Vocal cord paralysis has a wide range of etiological causes including surgical trauma, extrinsic compression by malignancies, idiopathic causes, prolonged intubation, nonsurgical trauma, central neurologic diseases. In a significant number of patients, etiologic factor can not be identified. The percentage of these idiopathic cases was reported as high as 32-39% in different patient series.

Our patient can also be branded as "idiopathic", although the patient had a concomitant CVA. The patient may also has suffered from nasogastric tube syndrome due to the nasogastric tube inserted ata recent cholecystectomy operation.

PP-73

**VOCAL CORD CARCINOMA SEEN BY INCIDENTAL WITH VIDEOLARINGOSCOPE:
AN INTERESTING CASE REPORT**

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Background: Vocal cord pathologies are caused by submucosal oedema or haemorrhage, leading to fibrosis and hyalinization. Vocal cord lesions may appear incidentally during laryngoscopy as they may occur by giving symptoms. The term vocal cord lesion refers to bilateral thickening of the membranous mucosa. GlideScope^R video laryngoscope (Saturn Biomedical Systems, Burnbary, BC, Canada) has a high-resolution camera embedded within the blade, a light-source and a 60° curved blade. The GlideScope^R video laryngoscope (GVL) is widely used for all type of surgery in general anesthesia. GVL is portable and can reduce the number of intubation attempts, also in difficult airways. In this case, we aimed to present a patient with previously unknown vocal cord lesion that was taken for humerus fracture surgery in operation room.

Case Report: A 60-year-old, ASA II (alcohol addict, smoker for 30 years) male patient was taken in operation room for humerus fracture. After routine monitorization general anaesthesia was given. On doing video laryngoscopic examinations, it was found that there was an about 0.5 cm in diameter, white, sessile mass which arose from the commissure of right vocal cord. Rest of vocal cord, larynx, and hypopharynx were found to be normal. After applying GVL, the patient was intubated with 8 size of tracheal tube. Anesthesia was continued with %1.5-2 sevofluran and FiO₂ 0.50. After the operation, patient was consulted by otorhinolaryngologist. They took laryngeal punch biopsy from the lesion and it resulted squamose cell carcinoma.



Discussion: Vocal cord lesions are more commonly found in people who routinely stress their vocal cords and they are usually oedematous, with a myxoid stroma, but they will become fibrotic with time. In our case, there was no history of vocal abuse. Compared with Macintosh laryngoscopy, GlideScope^R video laryngoscope provides considerable convenience during intubation.

Conclusion: In conclusion, our patient was taken to the operation room due to humeral fracture. The vocal carcinoma that was seen incidentally previously unknown. This nodule could not be seen clearly with normal Macintosh laryngoscopy and maybe anesthesiologist did not understand the lesion alone. We think that GVL generally gives good results in terms of a clear image in that such cases.

PP-74**HYPOGLYCEMIA AND VENTRICULAR BIGEMINY**

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Introduction: Ventricular bigeminy is a premature ventricular contraction with early depolarization of the myocardium originating from the ventricle. This arrhythmia describes a state of heart generating one normal QRS complex following a premature beat also known as wide QRS complex. This premature ventricular contraction may show up due to chemical changes, electrolyte imbalances, misuse of alcohol, heart muscle damage, cardiomyopathy, high blood pressure, increased levels of adrenaline that may be caused by nicotine, caffeine, exercise and anxiety. They may cause fainting, palpitation, chest pain, and heart failure. If common causes are excluded, biochemical alterations like hypoglycemia, may be the main cause of arrhythmia and simple manipulations can be solution for this ECG anomaly.

Case: A 50-year-old male patient was prepared for left inguinal hernioplasty. He has not have any cardiac or medical complaint and he was an ASA I patient. He was brought to operation theater after 9 hours of preoperative fasting, routine monitoring was performed included electrocardiography, noninvasive blood pressure and pulse oximetry, and all parameters were normal. An intravenous access was secured and the patient was sedated with 2 mg of midazolam. Under all aseptic precautions, subarachnoid block was performed in left lateral position with 15 mg of hyperbaric bupivacaine. Before the starting of surgery, ventricular premature contractions were observed in patient's electrocardiography. Following every QRS complex there was one premature ventricular extra systole (Ventricular bigeminy). Despite this, the patient did not have any physical cardiac symptom and a biochemical problem was predicted to be the reason. Therefore, capillary glycemia was measured 34 mg/dL. 500 mL 5% dextrose solution was infused in 30 minutes. After all, premature ventricular contractions disappeared. As the surgery concluded his 12-lead electrocardiogram was normal and he was consulted by a cardiologist for precautionary purpose.

Conclusion: Premature ventricular contractions may occur because of hypoglycemia especially in the patients who have no cardiac complaints and long preoperatively fasting times. Tight glycemic control and start time of fasting, according to the time of taking elective cases into the operating room are important in patients which are in the pediatric and risk groups in order to avoid this problem.

Keywords: premature ventricular contraction, ventricular bigeminy, hypoglycemia

PP-75**ANESTHETIC MANAGEMENT IN PATIENT WITH MCKUSICK-KAUFMAN SYNDROME**

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Background: Mutations in the MKKS gene cause McKusick-Kaufman (MKS) syndrome that rare (1/10.000) and inherited in an autosomal recessive disorder. MKS is characterized by the combination of polydactyly, congenital heart disease (CHD), genital malformations in males (most commonly hypospadias) and hydrometrocolpos (HMC) in females. Many cardiac malformations that have been described in individuals with MKS. Respiratory problems and intestinal obstruction caused by massive pressure in the abdomen, cardiac malformations, in patients with renal failure, require special attention at management of the anesthesia.

Case report: Female-16 year's old-patient with diagnosed MKS was planned recto-vaginal fistula reparation under general anesthesia. The patient had mental retardation, cardiac problems, extremity anomalies, renal insufficiency and she had no urine output. She had previously had HMC, vaginoplasty, operations.

Hemodialysis conducted to the patient because of the preoperative hyperpotasemia (5.9 mE/L). No premedicated patient performed close hemodynamic monitoring. Anesthesia provided by 2% sevoflurane in 40/60% O₂/air by inhalation and 0.2 µg/kg/min remifentanyl for maintaining stable hemodynamics. Blood gases and electrolytes (K) were analyzed periodically. At the end of the operation, muscle relaxant was reversed

Discussion: Following standard monitoring, pre-oxygenation was performed. Slow induction of anesthesia with 2.5 mg/kg propofol and 0.6 mg/kg rocuronium was done and anesthesia maintained sevoflurane+remientanyl. Mask ventilation was maintained with ease. Bifid epiglottis was seen during laryngoscopy (Figure 1). Oro-tracheal intubation was easily performed. Anesthesia provided by maintaining stable hemodynamics. The patient was discharged to the pediatric surgery service when met the discharge criteria.

Conclusion: Preanesthetic evaluation is vital in MKS. These are airways evaluation for difficult tracheal intubation, put forth have risk factors for latex allergy, cardiologic evaluation for structural heart changes. Patients should be preoxygenated well because massive masses reduce respiratory volume. Induction may be slow due to cardiac anomalies. However, decreasing lung volume due to massive mass and increased aspiration due to intestinal obstruction may require rapid induction. Preoperative renal functions and electrolyte levels should be considered, if a problem is encountered, it should be corrected before operation. Nitrous oxide and succinylcholine must be avoided for their side effects.

PP-76**ANESTHESIOLOGIC EXPERIENCE IN POLAND-MOBIUS SYNDROME**Nilgün Alpay

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Background: Poland-Mobius syndrome is a rarely seen congenital disease that is made of the features of Poland and Mobius syndromes. As well as increased risk of malignant hyperthermia Poland-Mobius syndrome; because of absence of pectoralis major muscle, possibility of unilateral vocal cord paralysis, tracheomalacia, palatal weakness, uvular weakness has been a difficult anesthetic management. (1-3).

Case Report:

A male, 3-years old anxious patient came with a complain of dental pain. The patient had a aplastic left pectoral muscle (Figure 1-2), left facial paralysis, limb anomalies (unilateral syndactily), developmental delay, high palate, limited mouth opening and unilateral aplastic kidney.

Preanesthetic examination showed that the patient was afebrile and his pulse was 98 beats/min. The blood pressure was 112/54 mm Hg. Blood cell counts, renal - liver function tests, serum electrolytes were within normal limits. The patient was standard monitored. Preoxygenation was done for 5 minutes and anesthesia was induced with propofol 3 mg/kg iv and 0,5 mg/kg rocuronium slowly and maintained with sevoflurane 1-1,2% in 50% air 50% oxygen mixture and for post op analgesia; 10 mg/kg iv paracetamol was given. The dental procedure lasted 60 minutes. At the end of the surgery, sugammadex 4mg/kg was used and he was awaked as uncomplicated. He was shifted to the ward after an hour post operative period and discharged on the same day.

Discussion: Although increased risk of respiratory failure and malignant hyperthermia, we did not face a problem neither perianesthetic nor postoperative period

Result: Sugammadex, and inhaled anesthetics may be used safely for minor surgery procedures of patients with Poland-Mobius syndrome.

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PP-77

ANESTHESIA MANAGEMENT IN A PATIENT WITH HEMOGLOBIN KANSAS

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Background: Hemoglobin (Hb) Kansas is a hemoglobinopathy that was first identified in the United States, and with a decrease in oxygen affinity of hemoglobin¹. It is a rare pathology. Although the pathology of these cases as hematological has been mentioned in the literature, we did not come across cases related to its anesthesia management. For this reason, we would like to present anesthesia management together with the literature.

Case Report: A 44-year-old male patient who has been scheduled for surgery for intraabdominal mass excision, had no symptoms other than linal cyanosis in his preoperative examination. In order to exclude other possible causes of cyanosis, since our case will undergo major surgery, despite having no symptoms other than lip cyanosis; cardiac and respiratory tests have been performed and no health problems have been found. In preoperative monitoring, there were no abnormal findings except for the presence of sPO₂ 54%. pO₂ has not been measures in the analysis of arterial blood gas taken simultaneously (Table 1).

After giving general anesthesia with propofol, fentanyl, rocuronium; central venous and radial arterial catheterizations have been performed. Invasive arterial blood pressure and central venous pressure have been monitored. Cerebral oxygen levels have been closely monitored with cerebral oximetry. During the operation, 1200 mL of hemorrhage has occurred, 2 units of erythrocyte suspension (ES) infusion have been performed. The operation lasted for 5 hours and the patient has been sent to the intensive care unit (ICU). After two days of intensive care, and five days service control, the patient has been discharged without any problems.

Discussion:There is no problem in oxygen presentation to tissues in Hemoglobin Kansas, since it has low hemoglobin oxygen affinity. Because the amount of oxygen bound to Hb is low, the oxygen saturation is measured to be low. We believe that it is necessary to perform the necessary tests to exclude respiratory and cardiac pathologies, even if hemoglobinopathy is detected preoperatively when low saturation is detected.

Table 1: Results of arterial blood gas analysis and cerebral oximeter monitorization of the case

Arterial blood gas parameters	Preoperative without O ₂	mechanical ventilation	After 2 units ES	Postoperative extubation
pH	7,43	7,33	7,34	7,35
pCO ₂ (mm/Hg)	36,2	30,8	30,5	32,2
pO ₂ (mm/Hg)	not measured	213	189	137
Hb (g/dL)	12,4	11,6	9	9,9
SpO ₂	54%	77%	79%	74%
Cerebral oximeter R/L(%)	30/29	55/51	57/56	51/48

Conclusion: Although Hb Kansas case is rare, when encountered. We believe that an anesthetic management can be carried out no problem despite low saturations.

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PP-78**COMPARISON OF FOUR DIFFERENT QUALITY OF RECOVERY SCORES
FOLLOWING GENERAL ANESTHESIA**Ebru Yeşim Turan, Verda ToprakBaskent University Istanbul Hospital, Turkey, Celal Bayar University, Manisa, Turkey
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Background: Quality of recovery after anesthesia and surgery is an important measure of the health status of the patients. Quality of recovery is a description of the quality of life of the patients; showing the health status of the patient rather than the reaction to his health status and other aspects of life. In this study we aimed to compare four different quality of recovery scores following general anesthesia in Turkish patient population.

Method: Following ethical approval, this prospective observational study planned. After standard general anesthesia with sevoflurane in O₂/N₂O mixture, tracheal intubation with rocuronium and in surgeries lasting minimum 2 hours and extubated in the operation theatre, the recovery scores EQ 5D, VAS, QoR-40, MAS were asked to rate patients ages greater than 18, at preoperative period, when patients are in the recovery room at 60 th postoperative minute and the day after surgery. Exclusion criterias were, patients poor ability of understanding Turkish, severe psychological disorders, ASA IV-V patients and day case surgeries. Results were analysed statistically with Cronbach alpha.

Results and Discussion: Results of 108 patients for four quality instruments were analysed. Patients expressed that they don't have negative experience for rating the questionnaire. The questionnaires were completed at the perioperative period in 16.3 ±9.2 min, in the recovery room in 22.4±11.4 minutes, following day in 14.2± 8.5 minutes. As a result, the 40 item questionnaire QoR-40 has a good reliability, validity and internal consistency (p<0.001) in Turkish patient population. The questionnaire can be applied to different types of surgical patients in a short time without refusal. There was a good convergant validity between QoR-40 and VAS in the recovery room (p=0.020 rho=0.226) and after 24 hours following surgery. (p=0.18 rho=0.230). EQ 5D and QoR was not found correlated. Test-retest reliability was found reliable only for comfort domain.

Conclusion: QoR-40 is an objective measure and can be a useful "end-point" in perioperative settings.

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