



**SIMPOZIJI I KONFERENCIJE HRVATSKOG
DRUŠTVA ZA ANESTEZIOLOGIJU,
REANIMATOLOGIJU I INTENZIVNU
MEDICINU HRVATSKOGA LIJEČNIČKOG
ZBORA
2018. – 2025.**

KNJIGA SAŽETAKA

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CROATIAN SOCIETY OF ANAESTHESIOLOGY,
REANIMATOLOGY AND INTENSIVE MEDICINE
OF THE CROATIAN MEDICAL ASSOCIATION
2018 – 2025**

BOOK OF ABSTRACTS



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42. simpozij intenzivne medicine, 7. – 8. prosinca 2018., Hotel Palace,
Zagreb, Hrvatska / 42nd Symposium of Intensive Medicine, 7th – 8th
December 2018, Hotel Palace, Zagreb, Croatia
(AB1)

AB1

Kvaliteta života u bolesnika sa „low back pain“ sindromom nakon epiduralne

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UVOD: U dobi od 45 do 60 godina, gotovo 40% populacije pati od „low back pain“ (LBP) sindroma (1). Bolesnici sa kroničnim LBP imaju u različitoj mjeri narušenu kvalitetu života(2,4). U 30 bolesnika u dobi 39-85 godina, prosječno 59 godina uspoređivali smo kvalitetu života (QOL) standardiziranim upitnikom SF-36 (3) i upitnikom modificiranog Oswestijevog indeksa invaliditeta (MODI) prije i poslije epiduralne. Također smo uspoređivali vizualno analognu skalu boli (VAS) i pasivni test dizanja ispružene noge (SLRT) kao objektivne metode te konzumaciju lijekova kao indirektnu metodu.

METODE: Epiduralna je minimalno invazivni zahvat kod kojeg se pod kontrolom RTG uređaja u epiduralni prostor plasira lijek u bolesnika s patologijom kralježnice. Sam postupak izvodi se u pronacijskom položaju pacijenta. Nakon sterilnog pranja i pokrivanja, aplikacije lokalnog anestetika na mjesto uboda, epiduralnom iglom se kroz donji sakralni otvor pod kontrolom RTG uređaja vizualizira epiduralni prostor. Potom se epiduralnim kateterom koji je pojačan žičanom vodilicom napreduje do intervertebralnog diska koji je prema MR opisan kao ishodište radikulopatije. Odabrani prostor potvrđuje se kontrastom. Slijede aplikacija Hialuronidaze 5000 IU otopljene u 10ml 0,9%NaCl, zatim 9 ml 0,2% Ropivacaina i 40mg Kenaloga. Kod slučajno odabranih ispitanika (6 ispitanika) ostavljen je epiduralni kateter u epiduralnom prostoru nakon aplikacije prije navedenih lijekova te je fiksiran. Slijedila je aplikacija test doze od 40 mg Lidokaina. Ukoliko u narednih 30 minuta nije bilo ispada senzibiliteta ni motorike, pod kontrolom perfuzora aplicirano je još 20ml 10%NaCl/30 min (kasnije u tekstu hiperbarična otopina). Ispitanici su prije samog zahvata bili podvrgnuti kliničkom pregledu i ispunjavanju upitnika SF-36 i MODI. Pitali smo ih za bol na VAS u mirovanju i kretanju i izmjerili SLRT i količinu analgetika koju su koristili. Isti pregled i upitnici su ispitanicima podijeljeni i na kontrolnom pregledu 1 mjesec nakon zahvata. Upitnik SF – 36 je standardizirani upitnik i namijenjen je samoprocjeni psihičkog i fizičkog zdravlja, te socijalnog funkcioniranja. Sastoji se od 36 pitanja koja su podijeljena u 8 dimenzija: 1. fizičko funkcioniranje (sastoji se iz 10 čestica), 2. ograničenja zbog fizičkih poteškoća (3 čestice), 3. ograničenja zbog emocionalnih poteškoća (3 čestice), 4. socijalno funkcioniranje (2 čestice), 5. psihičko zdravlje (5 čestica), 6. energija i vitalnost (4 čestice), 7. tjelesni bolovi (2 čestice), 8. percepcija općeg zdravlja (5 čestica). Tih 8 dimenzija čini dva generalna koncepta zdravlja -fizičko zdravlje (fizičko funkcioniranje, ograničenja zbog fizičkih poteškoća, tjelesni bolovi te percepcija općeg zdravlja) i psihičko zdravlje (ograničenja zbog emocionalnih poteškoća, socijalno funkcioniranje, psihičko zdravlje, energija i vitalnost). Još se ispituju dvije njegove općenite manifestacije- funkcioniranje i dobrobit u pitanju broj 2. Kod ovog istraživanja kao alfa vrijednost uzeta je vjerojatnost pogreške od 10%, što je blaži kriterij od češće korištenih 5%. Blaži kriterij odabran je zbog eksplorativne prirode istraživanja, kojemu je cilj utvrditi veći broj potencijalno značajnih faktora vezanih uz povećanje kvalitete života nakon epiduralne. Varijable identificirane kao značajne u ovom istraživanju služit će kao osnova kasnijem istraživanju koje će uz veću statističku snagu i stroži kriterij provjeriti i produbiti rezultate ovog istraživanja.

REZULTATI: Statistička značajnost razlika među istraživanim skupinama provjerena je neparametrijskim testovima i za zavisne i za nezavisne uzorke. Parametrijski testovi nisu korišteni jer varijable u skoro svim slučajevima nisu bile normalno distribuirane, što je provjereno Shapiro-Wilk testom, te zbog toga što su zavisne varijable mjerene na ordinalnim ljestvicama. Pacijenti su uspoređivani po svojim rezultatima na VAS procjeni boli u kretanju i mirovanju, modificiranom Oswestry upitniku o boli u leđima i invaliditetu, skalama formiranim iz kratke forme RAND-ovog upitnika o zdravlju SF-36, te kutu podizanja ispružene noge (SLRT test). Wilcoxonovim testovima ekvivalentnih parova provjerene su razlike u različitim mjerama zdravlja prije i poslije provođenja epiduralne. Na ljestvicama upitnika SF-36, pacijenti su nakon epiduralne imali statistički značajno više

rezultate ljestvice ograničenja zbog emocionalnih poteškoća ($z = 2,254$; $p = ,031$; $r = ,52$) psihičkog zdravlja ($z = 2,297$; $p = ,021$; $r = ,53$), tjelesnih bolova ($z = 1,924$; $p = ,052$; $r = ,44$), te ljestvice SF-Q2 ($z = 1,877$; $p = ,080$; $r = ,43$) nego prije epiduralne (grafikon 1). Efekti su umjereno do snažno izraženi. Procjena boli mjerena VAS-om pri kretanju statistički je značajno niža nakon epiduralne nego prije, uz umjerenu veličinu efekta ($z = 1,886$; $p = ,061$; $r = ,40$) (grafikon 2). Bol mjerena modificiranom Oswestry upitnikom o boli u leđima i invaliditetu također je statistički značajno niža nakon epiduralne, u umjereno izražen efekt ($z = 1,658$; $p = ,100$; $r = ,38$) (grafikon 3). Pacijenti su mogli podići ispruženu nogu statistički značajno više nakon epiduralne nego prije ($z = 2,105$; $p = ,034$; $r = ,46$). (grafikon 4). Efekt je umjereno izražen. Statistički značajne razlike kod ostalih mjerenih varijabli nisu pronađene. Kako bi se utvrdile razlike u različitim mjerama zdravlja između sudionika koji dobili standardnu odnosno hiperbaričnu dozu lijekova, provedeni su Mann-Whitney testovi. Pacijenti koji su dobili standardnu dozu lijekova imali su statistički značajno više procjene boli od pacijenata koji su dobili hiperbaričnu dozu ($z = 2,682$; $p = ,006$; $r = ,59$), uz snažnu veličinu efekta (grafikon 5). Statistički značajne razlike kod ostalih mjerenih varijabli nisu pronađene. Kako bi se utvrdile razlike u stopi uzimanja analgetika prije i poslije epiduralne, proveden je McNemarov test. Rezultati ukazuju da razlika u uzimanju analgetika i prije i poslije epiduralne nije statistički značajna ($\chi^2(1) = 2$; $p = ,289$).

ZAKLJUČAK: Ovim istraživanjem smo pokazali poboljšanje u kvaliteti života kod bolesnika nakon epiduralne u dimenzijama bolova, emocionalnog ograničenja i opće dobrobiti. Te rezultate potkrepljuje i pad Oswestrijevog indeksa invaliditeta te povećanje opsega pokreta u testu sa pasivnim podizanjem ispružene noge. Kada smo usporedili standardnu dozu sa dozom kod koje je dodano 20ml hiperbarične otopine poboljšanje smo dobili u dimenziji ograničenja zbog emocionalnih poteškoća i dimenziji socijalnog funkcioniranja. Obje dimenzije pripadaju psihičkom konceptu zdravlja. Značajnije rezultate u daljnjem istraživanju možemo očekivati kada povećamo broj sudionika te ako učinimo bolju stratifikaciju sudionika po dijagnozama i dobi. Ove rezultate ćemo koristiti kao podlogu i smjernice za daljnje istraživanje na ovoj temi.

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2.

VIII. hrvatsko-europsko-američka anesteziološka konferencija, 23. –
26. svibnja 2019., Plitvice, Hrvatska / 8th Croatian-European-
American Anaesthesiology Conference, 23rd – 26th May 2019,
Plitvice, Croatia
(AB2 – AB8)

AB2

Stress hyperglycemia in surgical patients without diabetes

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INTRODUCTION: Stress hyperglycemia is defined as increase in blood glucose level above > 7,8 mmol/L or 10 mmol /L according to different data without early diagnosed diabetes caused by acute illness, surgery or trauma. Stress of surgery and anaesthesia together change balance between glucose production and utilization, increase production of counterregulatory hormones (glucagon, catecholamines, cortisol, growth factor) and all that leads to state of insuline resistance, most prominent first postoperative day and can be present 9 to 21 day after surgery.

METHODS: we investigated databases to determine the stress hyperglycemia associated with the worse outcome and complications after the operation. Diabetic patients were excluded.

DISCUSION: Type of anaesthesia, as well as severity of surgery, site of surgery, perioperative nutrition, exogenous glucocorticoids, and patient factor as BMI and advanced age affect blood glucose level. Stress hyperglycemia can lead to surgical site infection, slow wound healing, diminished immune response, thrombosis, oxidative stress and extended stay in hospital. 12 to 30 % of patients with stress hyperglycemia in medical history do not have diagnosis of diabetes preoperative. Studies showed that postoperative complication and worse outcome in patients with stress hyperglycemia are more pronounced but in diabetic patients. Most of the societies have the target values of perioperative glucose between 7,7 mmol/L and 10 mmol/L. Glucose level in blood >10 mmol/L is treated with insulin. Some studies showed that treatment with insulin to maintain tight glucose level can lead to hypoglycemia and worse outcome thereby propose permissive mild hyperglycemia.

CONCLUSION: Poor regulation of glycemia is associated with worse outcome after surgery and complications. Maintaining target glucose values should be individually selected for each patient to achieve best outcome.

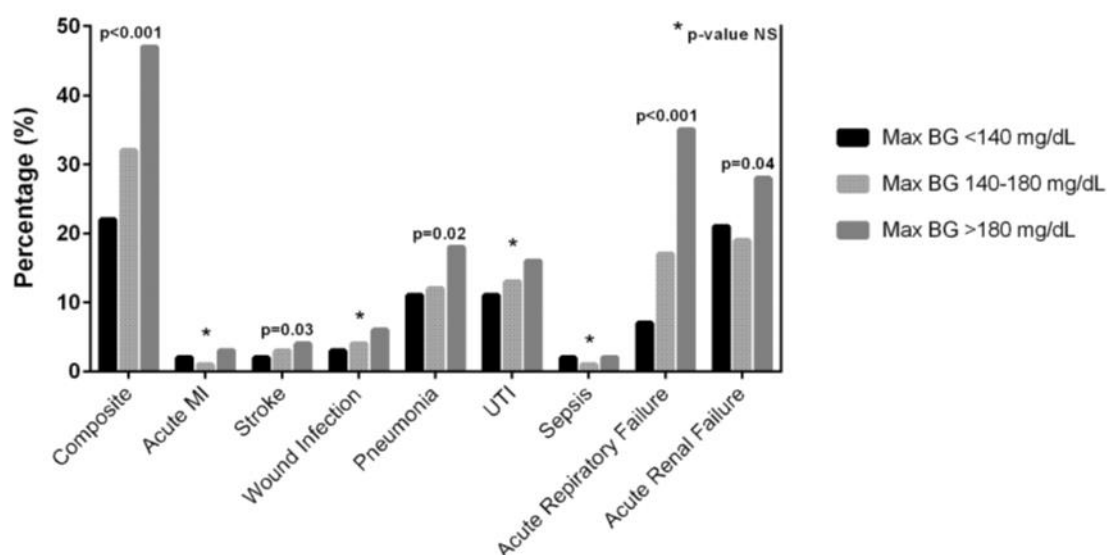


Table 1. Society Guideline Recommendations for Treatment of Perioperative Hyperglycemia and Diabetes

	Ambulatory Surgery	ICU	Non-ICU
SAMBA ⁵⁰	SC rapid-acting insulin analogs are preferred over IV or SC regular insulin Treatment goal: intraoperative blood glucose levels < 180 mg/dl (10 mM)		
ADA/AACE ⁵¹		Initiate insulin therapy for glucose > 180 mg/dl (10 mM) Treatment goal: For most patients, target a glucose level between 140 and 180 mg/dl (7.7–10 mM). Glucose target between 110 and 140 mg/dl (6.1–7.7 mM) may be appropriate for select patients if achievable without significant risk for hypoglycemia	Treatment goal: If treated with insulin, premeal glucose targets should generally be < 140 mg/dl (< 7.7 mM), with random glucose levels < 180 mg/dl (10 mM)
ACP ⁵⁴		Recommends against intensive insulin therapy in patients with or without diabetes in surgical/medical ICUs Treatment goal: Target glucose is between 140 and 200 mg/dl (7.7–11.1 mM) in patients with or without diabetes	
Critical Care Society ⁵²		BG > 150 mg/dl (8.3 mM) should trigger insulin therapy Treatment goal: Maintain glucose < 150 mg/dl (8.3 mM) for most patients in ICU	
Endocrine Society ³⁰			Treatment goal: Target premeal blood glucose < 140 mg/dl (7.7 mM) and random glucose < 180 mg/dl (10 mM) Higher target glucose < 200 mg/dl (11.1 mM) is acceptable in patients with terminal illness and/or with limited life expectancy or at high risk for hypoglycemia
Society of Thoracic Surgeons ⁵³		Continuous insulin infusion preferred over SC or intermittent IV boluses Treatment goal: Recommend glucose < 180 mg/dl (10 mM) during surgery, ≤ 110 mg/dl (6.1 mM) in fasting and premeal states	
Joint British Diabetes Societies ⁵⁵			Initiate insulin therapy for glucose > 10 mM (180 mg/dl) Target blood glucose levels in most patients are between 6 and 10 mM (108–180 mg/dl) with an acceptable range of between 4 and 12 mM (72–216 mg/dl)

AB3

Anaesthesia management in a patient with lung transplantation- a case report

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INTRODUCTION: Lung transplantation is life saving option for patients with end stage respiratory failure caused by chronic obstructive disease, idiopathic pulmonary fibrosis and cystic fibrosis as the main cause (1). Anaesthesia in these patients can be performed successfully with some specificity, considering medical state of patients, knowing side effect of immunosuppressive therapy on other organ (2) and physiology and pathophysiology of double transplanted lung (3). We want to present a patient with double lung transplantation (DLT) and anaesthesia management during his nasal surgery.

CASE REPORT: A 45-years old man with DLT in 2016. as outcome of terminal phase of idiopathic pulmonary fibrosis presented to our hospital with undifferentiated carcinoma of nose for surgery under general anaesthesia. He had pneumonia 2 weeks before surgery, and 6 cycle of photopheresis for acutisation of chronic lung transplant rejection. Herpes zoster neuralgia has remained after infection as chronic renal insufficiency. His chronic immunosuppressive therapy is: tacrolimus, prednisone, and mycophenolate mofetil. At the day of surgery he received his immunosuppressive, antihypertensive therapy, antibiotic prophylaxis, and for premedication midazolam 2 mg iv. Standard monitoring (ECG, NIBP, etCO₂, SpO₂), Sedline was used. After preoxygenation, induction in general anaesthesia was performed with sufentanil 15 mcg, propofol 100 mg with 2% lidocaine 2 ml, rocuronium 50 mg and airway was managed with single use, flexible laryngeal mask No 4 with cuff. Anaesthesia was maintained with continuous intravenous infusion of propofol and remifentanyl titrated to Patient State Index 25-50. Pressure controlled ventilation was set up, PEEP 5 hPa, PIP to 14-16 hPa, respiratory rate 14/min, FiO₂ 50%. During anaesthesia patient was hemodynamically stable, with adequate oxygen saturation, tidal volume and acid-base status. For analgesia received paracetamol 1 g and tramadol 100 mg, and 300 ml of infusion to avoid fluid overload. At the end of surgery neuromuscular block was reversed with sugammadex 200 mg, and extubation was carried out successfully. Totally awake and with adequate respiratory function patient was removed in recovery room, and discharged to the ward 2 hour after that.

DISCUSSION: We performed anaesthesia in according with existing recommendation for this specific state. Tracheal intubation is best choice compared to nasal intubation to prevent infection with nasal flora and must be taken carefully to avoid trauma of surgical anastomosis and it is recommended to use fiberoptic bronchoscope (3). Laryngeal mask can be used for short intervention. Interruption of lymphatic drainage predispose transplanted lung to fluid overload and pulmonary oedema and fluid balance must be maintained (4). Protective ventilation strategies with pressure controlled ventilation is recommended to avoid barotrauma of anastomosis and alveoli (3,4). Loss of cough reflex below tracheal anastomosis predispose patients to retention of secret and aspiration (5). All intravenous anaesthetic drugs can be used safely, as well as volatile agents. The dose of neuromuscular relaxant should be adjusted to patients state and length of operation (3). Adequate recovery of respiratory function and early extubation are one of the main target in anaesthesia for lung transplant patients (2).

CONCLUSION: Good preoperative assessment and preparation of transplanted patients, knowing about physiology of transplanted lung, effect of immunosuppressor therapy, coexisting disease is crucial for providing safe anaesthesia in these patients as well as for positive outcome.

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AB4

Anaesthesia management in an one and a half-year old patient with Ebstein anomaly

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INTRODUCTION: Ebstein anomaly is a rare congenital heart disease with an incidence of 0,3 – 0,6% among all congenital heart diseases. It was firstly described by Wilhelm Ebstein in 1866. Both sexes are equally affected. The leaflets of tricuspid valve are anatomically displaced apically with atrialization of right ventricle, which leads to right ventricle functional impairment and regurgitation through the tricuspid valve. Echocardiography differs this anomaly from other tricuspid valve anomalies by apical displacement of septal cuspis by >0,8 cm/m² of total body surface area (1). Impairment of tricuspid valve is often followed by pulmonary hypertension, functional or anatomic pulmonary atresia or stenosis, intracardiac shunting and cardiac arrhythmias mostly of supraventricular origin including paroxysmal supraventricular tachycardia (PSVT) as the most common, atrial fibrillation/ flutter and ventricular preexcitation (Wolff-Parkinson-White) in 14-30% of patients (2,3). Left ventricular (LV) function may be compromised due to right ventricle (RV) distension with following bowing of the IV septum into the LV cavity. Tricuspid valve repair is preferred for severely affected neonates, older children and adults, and is preferred to be done as a complete repair, meaning together with closure of existing intracardiac shunts. In this case report we want to present anaesthesia management of an one and a half year old child with this anomaly going through a non- cardiac surgical procedure.

CASE REPORT: An one and a half- year old female patient with body mass of 8800 g was scheduled for palatoplasty. The patient was born from a normal pregnancy, with normal birth weight and height, median line soft palate cleft, meconium amniotic fluid. First apneic cyanotic episode occurred and spontaneously regressed few hours after birth. Child was diagnosed with Ebstein anomaly, with present pulmonary hypertension in the first days of life as well as patent foramen ovale with bidirectional shunt. Preoperative 12-lead ECG was presented with HR= 121/min, intermediate axis, PR= 138ms, QRS= 94 ms, QTc= 422ms, IRBBB, patient's normal oxygenation on room air was 90%. Antibiotic prophylaxis with cefuroxime (250 mg IV) was given 2 hours prior to procedure. In the OR, a standard noninvasive monitoring was set (3-lead ECG, NIBP, SpO₂, etCO₂). Preoperative vital signs were SpO₂ 97% on room air, BP 105/70 mmHg, HR=135/min. Patient was preoxygenated for 5 minutes with 80% oxygen and sedated with midazolam (2 mg) iv. Auscultation showed normal breathing and holosystolic heart murmur in lower left sternal border. Findings of the airway examination revealed a Mallampati score of 2 with a full range motion of the neck. Anaesthesia was induced with sevoflurane (1.5% insp.), fentanyl (45 mcg), thiopental (30 mg) and 10 rocuronium (10 mg), dexamethasone (2mg) and propranolol (0,1 mg) iv. A cuffed reinforced endotracheal tube of size 3.5 was placed using video laryngoscope, MAC , blade No 1. End- tidal carbon dioxide monitoring was initiated (with initial etCO₂ =48 mm Hg). Anaesthesia was maintained with sevoflurane and additional bolus doses of rocuronium and fentanyl. Positive end- expiratory pressure (PEEP) was set to 0, PCV, FiO₂ 50%. Maintenance of iv fluids was provided by continuous infusion at speed of 30 – 35 mL/h (glucose electrolyte mixture). During the procedure child was hemodynamically stable, without arrhythmia. Postoperative analgesia and sedation were provided by administering acetaminophen (65 mg) and midazolam (3mg) intravenously prior to leaving the OR. Child was administered in ICU right after the surgical procedure asleep, intubated and mechanically ventilated. She was extubated 2 hours after, discharged to paediatrics ward 4 hours later, and released from the hospital 4 days after the procedure.

DISCUSSION: Ebstein's anomaly comes in variety of clinical presentations. It can be described as anatomically mild, moderate and severe based on the placement of tricuspid valve and the severity of RV dilatation (4). Key points of anaesthesia management in patients with Ebstein anomaly are: maintaining preload, afterload, sinus rhythm, preventing increase in pulmonary vascular resistance

and tachycardia. Some authors described safely using IM/IV ketamine and etomidate for anaesthesia induction, while we used thiopental with good outcome (2,4). PEEP should be set at minimum necessary to prevent atelectasis, considering its effect on RV afterload, and etCO₂ should also be kept in lower values to maintain adequate PVR. Antiarrhythmic drugs and defibrillator should be immediately available in case of arrhythmia onset. Most authors used vecuronium or rocuronium for muscle relaxation considering their cardio stable properties.

CONCLUSION: Due to wide variety of clinical presentations of Ebstein anomaly, variable complications during anaesthesia can be expected. It is important to be ready for rapid intervention in case of possible occurrence of arrhythmia as described before. Anaesthesia can be safely provided in patients with Ebstein's anomaly if it's properly adjusted to the clinical presentation of the patient.

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AB5

Anaesthetic management of heart transplant candidate with dilated cardiomyopathy and implantable cardioverter defibrillator undergoing thyroid surgery, a case report.

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ABSTRACT

INTRODUCTION: Dilated cardiomyopathy is the most common form of cardiomyopathy, and also a common cause of heart failure (HF) (1). Patients with congestive heart failure are at risk of sudden death from arrhythmias. Treatment with implantable cardioverter defibrillator (ICD) in patients with NYHA class II or III congestive heart failure and LVEF of 35% or less reduces overall mortality (2). The indication for heart transplantation is defined as “end-stage heart disease not remediable by more conservative measures” (3,4). Nowadays, the listing criteria for heart transplantation candidacy are more restrictive, so the patients must undergo thorough clinical evaluation before the admission to the waiting list. Among others, active malignancy or history of malignancy with probability of recurrence is the contraindication for heart transplantation (3,5). Papillary thyroid carcinoma (PTC) is the most prevalent endocrine malignancy (6).

CASE PRESENTATION: A 47-year-old man presented for elective total thyroidectomy due to papillary carcinoma during his regular cardiac re-evaluation for heart transplantation candidacy. His background history was significant for dilated cardiomyopathy (ejection fraction 20%), persistent atrial fibrillation, arterial hypertension, and morbid obesity (BMI 39, weight 130 kg). As a method of primary prevention of sudden cardiac death, in April 2015 he got an ICD device implanted, and experienced three DC shocks since then. Except his body constitution and trophic changes on the skin, there were no other significant concerns revealed by physical examination. His chronic therapy included: sacubitril/valsartan, propranolol, mexiletine, eplerenone, furosemide, allopurinol, dabigatran and bilastine. The dabigatran therapy was discontinued two days prior to the procedure. In the premedication, the patient received propranolol, mexiletine, sacubitril/valsartan and furosemide. Preoperatively, standard anaesthesia monitoring, intra-arterial catheter for invasive blood pressure monitoring and brain function monitoring was placed. The induction of anaesthesia was achieved with midazolam, sufentanil, ketamine, sevoflurane and rocuronium. Video laryngoscopy was performed to ease the endotracheal intubation. After the induction of anaesthesia, a magnet was placed above the ICD bay. The maintenance of anaesthesia was accomplished with sevoflurane in the mixture of air and oxygen. Upon completion of the surgery, the magnet was removed and sugammadex was given as the reversal agent. The course of anaesthesia and awaking was uneventful. Respiratory sufficient and hemodynamically stable, the patient was transferred to the ICU unit for 24-hour-monitoring.

CONCLUSION: The risk for CV death and MI in head and neck surgery, according to ESC/ESA guidelines, is defined as intermediate (7). However, clinical risk factors must also be taken into account. Whether the ICD should be interrogated or reprogrammed preoperatively, is still a dilemma. Although the current European guidelines propose the inactivation of the ICD, it is not a universal requirement for all procedures (7,8). In most ICDs, a magnet will lead to suspension of tachyarrhythmia detection with inhibition of tachycardia therapies but will not affect the pacing mode (8). Pulse oximetry and invasive blood pressure monitor should be placed in order to mechanically detect the systole and to reduce the risk of misinterpretation of the ECG (7,8). Based on the above, such patients require careful preoperative evaluation and postoperative hemodynamic and ECG monitoring. The devil is in the details.

KEYWORDS: implantable cardioverter defibrillator (ICD), non-cardiac surgery, heart failure, obesity, total thyroidectomy

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AB6

Anaesthesia management of a patient with heart transplant for non-cardiac surgery

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INTRODUCTION: Since the first human cardiac transplantation in 1967, approximately 3,500 heart transplants are performed every year worldwide (1). Average postoperative survival periods is 15 years. Due to these facts these patients are now presenting for various non-cardiac procedures. The information regarding the physiological and pharmacological interactions in a denervated allograft heart, the side-effects of immunosuppression, the risk of infection, and the potential for rejection is essential for anaesthetic management. This case report reviews the anaesthetic management of a heart transplant recipient undergoing a total thyroidectomy.

CASE REPORT: A 28-year-old female patient (H 162 cm, W 63kg) presented for total thyroidectomy due to papillary carcinoma. She had undergone orthotopic heart transplantation 11 years ago, at the age of 17, for dilated cardiomyopathy. Presently, she was NYHA I, ASA III with following chronic therapy: tacrolimus, mycophenolate mofetil, amlodipine, levothyroxine, fluvastatin, ivabradine and acetylsalicylic acid. Standard preoperative lab assessment was within normal values, as well as thyroid hormone status. Echocardiogram showed EF 65% with mild diastolic dysfunction, ECG sinus rhythm, with known LAD stenosis (50%) planned for balloon dilatation. The physical examination of the airway showed normal findings. Day before the surgery she received LMWH sc. for thromboprophylaxis. On the day of surgery, the patient was given her morning doses of immunosuppressants, antibiotic prophylaxis and midazolam 7,5 mg orally. Standard anaesthesiology monitoring was applied (ECG, spO₂, NIBP, and depth of anaesthesia monitoring). The patient was preoxygenated for 5 minutes, and after administration of sufentanil, lidocaine 2%, propofol and rocuronium, oral intubation was performed with ET No 7,0 with cuff. Anaesthesia was maintained with titrated sevoflurane (1.75-2.5 insp Vol%), and bolus of sufentanil, according to Patient State Index (PSi) within the range of 29 – 35. Pressure controlled mechanical ventilation, PEEP 5, FiO₂ 50%. Throughout the surgery, BP was stable with sinus rhythm 75 – 85/min, without arrhythmia perioperatively. Fluid volume was maintained with 500 ml of Ringer's lactate solution, and Plasma-Lyte 500 ml. Gastroprotection, and preemptive analgesia with Perfalgan 1 gr and single dose of NSAID metamizole 2.5 g. The surgery lasted for 1.5 h. At the end of surgery, neuromuscular block was reversed with sugammadex 100 mg and extubated after return of airway reflexes. The patient was kept in the recovery for 4 h and then transferred to the ward. She was discharged home three days after.

DISCUSSION: Pre-operative assessment of any transplant recipient undergoing non-cardiac surgery should focus on graft function, risks of infection and arrhythmias, that can occur in over 50% of the patients. Since transplanted heart has no sympathetic, parasympathetic or sensory innervation, and the loss of vagal influence results in a higher than normal resting HR. The increase in cardiac output is dependent on venous return, with an initial increase in left ventricular end-diastolic volume, which mediates an increase in stroke volume and ejection fraction by means of the Frank-Starling mechanism. 2,3 That is why heart transplant patients are said to be "preload dependent". In the transplanted heart, the HR shows no response to drugs like muscle relaxants (pancuronium, gallamine), anticholinergics (atropine, glycopyrrolate and scopolamine). Sugammadex is recommended for reversal of neuromuscular blockade because profound bradycardia or asystole has been reported following the administration of neostigmine in heart transplant recipients and in many instances, the bradycardia was unresponsive to atropine (4)

CONCLUSION: In general if the transplanted heart is functioning satisfactorily, these patients present few problems in non-cardiac surgery if anesthetist understands the pathophysiology of the transplanted and denervated heart.

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AB7

Issues of tracheal polyps during general anaesthesia

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INTRODUCTION: Primary tracheal tumors make up 2% of the upper respiratory tract tumors (1). Only 10-20% of cases are benign formulations, and presented with the symptoms of obstructive pulmonary disease such as dyspnea, cough and recurrent respiratory infections (1). Endotracheal polypoid formations are classified into 3 groups: multiple papillomas, solitary papillomas and inflammatory polyps (1). It has been established that their occurrence is associated with smoking, foreign bodies, toxic gases, and infections after prosthesis (1). Different methods are used in the diagnosis of tracheal polyps, such as spirometry, CT and bronchoscopy (a gold standard in visualizing and taking biopsies of the tumor). Therapy depends on the size of the lesion. For smaller lesions it is recommended to use corticosteroids and antibiotics. Larger lesions can be extirpated during bronchoscopy, and surgery is rarely needed (2).

CASE REVIEW: The subject of our case is a 83-year-old male patient, ASA III, scheduled for total laryngectomy with neck dissection due to planocellular carcinoma of the larynx confirmed by the biopsy after laryngeal microsurgery. Preoperative fibrebronchoscopy (FOB) was made, with which (among others) the polyp was found on the front wall of the trachea, diameter of 8mm, obstructing 30% lumen and localized 5 cm distal from the vocal cords. Because of the above findings and doubts about the complications during respiratory and subsequent mechanical ventilation, a pulmonologist and a bronchoscopy consultant were considered preoperatively, and they agreed that founded formation would not interfere during induction in anaesthesia or during mechanical ventilation during surgery. Upon arrival in the operating room, an extended invasive monitoring was performed, including ECG, SpO₂, etCO₂, IBP, Sedline, UK. For induction we used Dormicum, Sufentanil, Hypnomidate and Esmeron. Orotracheally intubated with the help of videolaryngoscope by first attempt. Position of the tube verified with the FOB. Anaesthesia was maintained with Sevoflurane in a mixture of oxygen and air, and Remifentanyl continuously. The course of anaesthesia, as well as the operation itself passed without complications. Intraoperatively after laryngectomy, a transglottic tumor has been macroscopically determined, affecting the entire right hemilarynx from the epiglottis to the piriform sinus. The oesophagus inspection visualized a tumor process that affects the front wall and spreads distally 2 – 3cm. The tracheal polyp is determined not to be removed and although it has been protruding and partially obstructing the lumen, it did not interfere with mechanical ventilation as well as spontaneous breathing of the patient after awakening from anaesthesia in ICU, because the tracheal cannula bypassed the polyp. In presented case it is probable that tracheal polyp was unrelated to the tumor process of the larynx and esophagus. Pathohistological finding of the biopsy specimens taken during bronchoscopy is still expected.

DISCUSSION: Bronchoscopy represents the gold standard in diagnosis, and often the final therapy of tracheal polyps (2). Although they are rare, they can lead to obstruction of the respiratory tract or irreversible lung diseases (2). Generally dyspnea on exertion occurs when tracheal lumen is smaller than 8 mm and dyspnea at rest when it is smaller than 5mm (2). It is extremely important to determine the exact localization and size of the tumor, as well as the degree of obstruction of the tracheal lumen prior to introduction into general anaesthesia, and if it is possible to remove it during bronchoscopy. If this is not a possibility and if a justified doubt of total luminal obstruction after application of a muscle relaxant exists, primary it is needed to insure the airway without the above mentioned drug, and surgically remove the tumor before giving it.

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AB8

Pitfalls in nasotracheal intubation in infancy; a macrostomia repair case report

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BACKGROUND: Macrostomia is a congenital deformity resulting from failure of fusion of maxillary and mandibular process. It is a rare congenital deformity with an incidence of 1 in 60,000 to 1 in 300,000 live births. Transverse facial clefts are more common on right side of face in unilateral cases. Males are more affected than females. Various surgical techniques have been described in the literature for the correction of these defects. We want to present a case of a bilateral macrostomia repair and airway pitfalls during nasotracheal airway management.

CASE REPORT: Male infant 3,5 months old, W 7 kg, presented to our Department for bilateral cleft lip repair. Beside obvious macrostomia, he was otherwise healthy. According to the size chart, nasotracheal intubation with preformed nasal tube (Sumi®) No 3.5 with cuff was planned facilitated with videolaryngoscope MAC blade size No1. Other sizes of tubes were available. Facemask preoxygenation with mask No 3 was done to cover the whole mouth opening. Induction was done with fentanyl, propofol and esmeron. First, right nostril was intubated with before mentioned 3.5 tube and tried to be guided with Magill's into the trachea, but the tube was too short to reach the vocal cords – when bent is at the nostril. The child was preoxygenated and ventilated again, before second attempt was made with Sumi preformed nasal tube No 4. Luckily, the tube easy passed the nostril and entered the trachea. Intubation was verified and surgery proceeded. Bilateral correction was made, and after the procedure infant was transferred to PaediatricICU to be extubated after edema of the airway resolves (4 hours after the end of the surgery).

DISCUSSION: Despite wide and adequate mouth opening, Mallampati grade 0, nasotracheal intubation is preferable for this shared airway. At the same time, nasotracheal intubation can be challenging in infants, due to small vulnerable airway. Preformed nasotracheal tubes are preferred in head and neck surgery, but size tables can be misleading, so various ET size and types must be available. Although, ET with cuff can overcome outer diameter concerns of an endobronchial intubation and allow smaller tube use, too short tube to reach the vocal cord is rarely seen.

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AB9

Primjena protokola za kontrolu glikemije na Odjelu za intenzivno liječenje kirurških bolesnika
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UVOD: Kontrola glikemije kod kirurških bolesnika u ranom poslijeoperacijskom razdoblju često može biti vrlo izazovna. Stresni odgovor organizma uzrokovan kirurškim liječenjem i kritičnom bolešću dovodi do značajnog poremećaja metabolizma ugljikohidrata, masti i bjelancevina. Dolazi do pojave katabolizma i gubitka mišićne mase, inzulinske rezistencije i hiperglikemije, oštećenja funkcija organa i slabljenja imunoloških funkcija te se posljedično tome povećava rizik pojave infektivnih komplikacija, sprječava cijeljenje tkiva, produljuje vrijeme mehaničke ventilacije te boravak u jedinici intenzivne medicine (JIM).

Uobičajene metode kontrole glikemije u JIM-u kirurških bolesnika pokazale su se nedosljedne i ovisne o osobnom iskustvu liječnika. Analizom podataka vezanih uz kontrolu glikemije pokazala je potrebu za standardiziranim pristupom.

Istraživanja su pokazala lošiji ishod liječenja kod bolesnika koji su imali veći broj epizoda hipoglikemije i visoku varijabilnost glikemije. Stoga smo izradili jednostavan protokol koji provode medicinske sestre. Ovim istraživanjem smo pokazali kako je naš protokol siguran za upotrebu te da omogućava bolju kontrolu glikemije. U budućnosti možemo očekivati da će ovakav pristup pokazati i bolji konačni ishod liječenja. 1,2,3,4

METODE: U istraživanje su uključeni kirurški bolesnici stariji od 18 godina koji su dijabetičari i imaju APACHE 2 sustav bodovanja veći od 15, te su zahtijevali poslijeoperacijsko intenzivno liječenje. Medicinske sestre skrbe o bolesniku prema individualiziranom protokolu kontrole glikemije.

U svrhu lakše i brže primjene protokola razvijena je i aplikacija u programskom jeziku JAVA namijenjena za aparate sa Android operacijskim sustavom. Aplikacija omogućuje automatsko izračunavanje vrijednosti brzine protoka inzulina, vrijednosti bolusa inzulina te predlaže postupke prema protokolu, a instalirana je na tabletu koji je dostupan medicinskim tehničarima u JIM-u.

Razina glukoze u krvi koja se prihvaćala do uključanja protokola je 11 mmol/L u dva uzastopna mjerenja. Nakon što je pokrenut protokol, kontrola glikemije provodi se svaka 2 sata. Ciljane vrijednosti su između 8mmol/L i 11mmol/L. U slučaju vrijednosti ispod 8mmol/L kontrola se provodi svakih sat vremena, a ispod 4mmol/L svakih 30 minuta. Isključeni su bolesnici kod kojih je boravak u JIM-u bio kraći od 24 sata te kod kojih je došlo do odstupanja u protokolu. Ukupan broj bio je 32 bolesnika od kojih je isključeno 12 zbog navedenih kriterija. Kod 20 bolesnika pristupilo se obradi podataka. Kontrolna skupina od 20 bolesnika uzeta je retrogradnom analizom iz arhive sa istim kriterijima uključanja.

Kod bolesnika su u obzir uzeti: demografski pokazatelji, prosječna razina GUK, prosječna razina GUK-a u 6h, minimalna razina GUK, maksimalna razina GUK, vrijeme u željenom rasponu glikemije (eng. Cumulative time in band, cTIB), indeksi varijabilnosti glukoze (standardna devijacija - SD, glycemic fluctuation index - GFI, glycemic fluctuation coefficient - GFC, hyperglycemic index - HGI), broj epizoda srednje teške i teške hipoglikemije (<4mmol/L), postotak vremena glikemije ispod 8mmol/L i iznad 11mmol/L te kazneno bodovanje protokola (Glucose penalty indeks – GPI). 5,6,7,8,9,10

Podatci su obrađeni T-testom nezavisnih grupa, sa CI 95% i $p < 0.05$.

REZULTATI: Utvrdili da između skupina nije bilo razlike u broju mjerenja glukoze u krvi te u ukupnom vremenu intenzivnog nadzora glikemije. Također nije pokazana razlika u prosječnoj vrijednosti razine GUK-a, SD prosječnog GUK-a te u prosječnoj vrijednosti razine GUK-a u 6h. U skupini kod koje je primijenjen protokol utvrdili smo značajnu razliku u pokazateljima varijacije glikemije (GFI, GFC). Bolesnici su imali viši cTIB, više vrijednosti minimalne razine GUK-a, manje epizoda srednje-teške i teške hipoglikemije. Sam protokol u usporedbi sa kontrolama je bolje ocijenjen sa GPI.

ZAKLJUČAK: Možemo zaključiti kako je naš protokol siguran za primjenu, ima manje neželjenih događaja i bolju kontrolu glikemije. U nastavku istraživanja želimo potvrditi slične rezultate kod bolesnika koji nisu dijabetičari te pokazati kako ovaj protokol poboljšava ishod liječenja kritičnih kirurških bolesnika.

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AB10

Laryngeal mask airway vs. endotracheal intubation for adenoidectomy in day surgery-single centre experience

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Adenoidectomy is a common paediatric surgical procedure that is performed alone or in conjunction with tonsillectomy. The procedure itself usually takes 20 to 30 minutes and is done in a day surgery setting. Children who may need to be admitted overnight include those younger than 3 years of age, with concomitant airway abnormalities and a obstructive sleep apnea.

Compared with tonsillectomy, is less painful procedure and may be performed using a laryngeal mask airway or endotracheal intubation. Postoperative pain is usually controlled with paracetamol or nonsteroidal antiinflammatory drugs (NSAIDs), without need for opioids. Though infrequent, complications following adenoidectomy can include postoperative haemorrhage in the first 24 hours, velopharyngeal insufficiency, adenoid regrowth and nasopharyngeal stenosis.

This retrospective study observed the data from 2016, till February 2020. in day surgery at University Hospital Centre Zagreb. to light out the pitfalls and advantages of LMA vs. ETT; choice of analgesics and different anaesthesia techniques in adenoidectomy patients.

AB11

Perioperative anaesthesia management of infant with tetralogy of Fallot

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This case report describes the perioperative management of an 8-day-old term male neonate with Tetralogy of Fallot (ToF), undergoing emergency surgery for anal atresia. Born at 38 weeks gestation with a weight of 2578 g, the patient had multiple congenital anomalies, including ToF, anal atresia and hydronephrosis. ToF was prenatally diagnosed at week 24 and confirmed postnatally via echocardiography, showing perimembranous VSD, pulmonary stenosis, and hypoplastic pulmonary arteries. Despite moderate cyanosis (SpO₂ 85% on oxygen), the patient was hemodynamically stable and managed as ASA IV/E. The clinical presentation of ToF depends on the degree of obstruction of the right outflow tract, and may include "Tet spells" – episodes of severe hypoxemia. Anaesthesia was induced intravenously with thiopental, fentanyl, and midazolam, followed by endotracheal intubation. Maintenance included sevoflurane and appropriate volume and glucose replacement. Perioperative management focused on avoiding cyanotic spells, maintaining euvoemia, and ensuring adequate oxygenation and perfusion. Due to the right-left shunt, hypoxia, hypercapnia and acidosis, which worsen pulmonary flow, were avoided. The procedure lasted 2 hours and 20 minutes without complications. The patient was stable, with satisfactory diuresis and temperature. This case highlights the importance of tailored anaesthetic strategies in neonates with complex congenital heart disease undergoing non-cardiac surgery.

AB12

Perioperative anaesthesiology care in Croatia

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Anaesthesia is a safe nowadays, and improvements in monitoring and standards of care brought many benefits into the practice. As in the rest of the Europe, population in Croatia is getting older, thus patients in need for surgery are more complex, e.g. with more comorbidities and less physiological reserve. So, perioperative optimization before surgery is very important. Walking through the surgery is mosaic of many details, altogether making huge importance in the final outcome (e.g. complications and length of stay...with growing evidence in the literature). Guidelines in many areas are the frame for standard of care, but individual approach to each patient in local settings (equipment and resources) is a cornerstone, making the optimization before surgery even more important. Details pertain to the surgery are familiar to the anesthesiologist, and that's why this is our job to do it. As in life, the devil is in details.

All preoperative assessments in Croatia are done by anesthesiologists, either by consultants or anaesthesiology trainees supervised by consultants where there is shortage in the staff. In majority of hospitals, patients fill in preoperative questionnaire before coming to the paranaesthesia clinic. At the preoperative ambulance they get detailed information about their procedure and information about the medications to stop or take on the day of the surgery. Perioperative blood management is also part of the preoperative work of anesthesiologists, with the special accent on the anemia correction. The day before surgery or on the day of surgery short visit and corrections are done if needed-all provided by anesthesiologists.

As far as the anaesthesia work during surgery, all of it is done by anesthesiologist, so as procedural sedations for invasive procedures in radiology suite, gastroenterology interventions, cardiac lab procedures and sedations for radiology imaging studies if needed. Still non anaesthesiology stuff is not allowed to use anaesthetics for procedural sedations according to Croatian regulations, except for intensivists.

Majority of intensive care units in Croatia are led by anesthesiologist. In University Hospital Centres and Clinical Hospitals, anesthesiologists are in charge in Surgical ICUs. In local or regional Hospitals they are in charge for adult mixed ICUs- led by anesthesiologists.

Traditionally, anesthesiologists are pioneers in surgical ICUs in Croatia, and in mechanical ventilation. As in other countries there are struggles to take the piece of the cake from us, but too many surgical procedures with too many details different from nonsurgical cases makes this less likely to be so without specific skills and knowledge to gain. And there is not a short way to get it.

In the majority of Hospital s in Croatia, only anesthesiologists, together with anaesthesia or ICU nurses are medical emergency teams covering the resuscitations not only in emergency wards, but in the whole hospitals. Advanced airway management is also almost exclusively part of our skills.

Pain management outpatient clinics in Croatia are led by anesthesiologists.

Diversity and broad spectrum of activities makes this hard, but still a lovely job to do.

4.

X. hrvatsko-europsko-američka anesteziološka konferencija , online,
20. – 23. svibnja 2021., Sveti Martin na Muri, Hrvatska / 10th
Croatian-European-American Anaesthesiology Conference, online,
20th – 23rd May 2021, Sveti Martin na Muri, Croatia
(AB13)

AB13

Re-operation after tonsillectomy & adenoidectomy and possible risk factors, single centre experience?

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Tonsillectomy with or without adenoidectomy is the most common surgery in the paediatric population. The most common indication in 75% of cases is airway obstruction and recurrent infection. Patients are most often children without serious concomitant illnesses and disorders. Patient discharge in the same day or the next day. The procedure can be complicated by respiratory tract damage, laryngospasm and post-operative bleeding after tonsillectomy. Postoperative bleeding after tonsillectomy (with or without adenoidectomy) is a possible consequence of inadequate surgical haemostasis and the breakdown of fibrin clots. It is not common but can be life-threatening. Bleeding may be due to congenital or acquired haemostasis disorders. Non-steroidal anti-inflammatory drugs that cure postoperative pain may increase the risk of bleeding. Bleeding mostly occurs within 24 hours and in the period from 5 to 12 days. Post-tonsillectomy hemorrhage is a challenge for the anesthesiologist because it causes hypovolemia, hemodynamic instability, anemia and a full stomach due to swallowed blood with the possibility of regurgitation and aspiration and predisposes the risk of difficult intubation. The retrospective study included patients undergoing tonsillectomy with or without adenoidectomy from January 2018 to March 2020 on Head and Neck surgery at University Hospital Centre Zagreb who experienced bleeding after surgery.

5.

44. simpozij intenzivne medicine, 3. – 4. prosinca 2021., Zagreb,
Hrvatska / 44th Symposium of Intensive Medicine, 3rd – 4th
December 2021, Zagreb, Croatia
(AB14 – AB16)

AB14

Distanazija u doba COVID-19 pandemije

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Distanazija je pojam manje poznat od eutanazije, a označava polaganu, bolnu i nedostojnu smrt. U zemljama zapadne Europe sinonim je za terapijsku ustrajnost, a u Sjedinjenim Američkim Državama se koristi izraz medicinska beskorisnost. Terapijska ustrajnost ili medicinska beskorisnost su djelovanja koja nemaju učinak, odnosno ne dovode do izlječenja bolesnika. U zdravstvenim ustanovama se provode svakodnevno, a u vrijeme COVID-19 pandemije čini se kako je ovo djelovanje češće, jer bolesnici u terminalnim fazama svojih kroničnih bolesti nerijetko umiru na mehaničkoj ventilaciji u jedinicama intenzivnog liječenja od ili s COVID-19. Jedinice intenzivnog liječenja su tehnološki opremljene za liječenje najtežih bolesnika kojima možemo pružiti izlječenje i kvalitetu života nakon preživljenja. Distanazija postaje etički problem, uz razvoj tehnologije i uporabu te tehnologije u završnoj fazi života, kada se koriste svi raspoloživi resursi u želji da se pobijedi smrt. U tom djelovanju iscrpljuju se svi medicinski djelatnici, a bolesniku uskraćuje pravo na dostojanstvenu smrt upisano u Kodeksu medicinske etike i deontologije Hrvatske liječničke komore.

AB15

Primjena CPAP-a sa visokim PEEP-om u mladog pretilog bolesnika sa teškim oblikom COVID 19 ARDS-a

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UVOD: Liječenje pacijenata s teškim oblikom ARDS-a je jedan od većih izazova u intenzivnoj medicini, s obzirom na podijeljena mišljenja o načinu liječenja, odn. o načinu mehaničke ventilacije. ARDS je difuzno, inflamatorno oštećenje pluća koje dovodi do gubitka respiratorne površine i teške hipoksije, smanjenje plućnih volumena i rastezljivosti pluća, a povećanje fiziološkog mrtvog prostora i venske primjese. Radiološki se vide obostrano inhomogena zasjenjenja. ARDS je hitno stanje i potrebno je brzo primjenom mehaničke ventilacije, recruitment manevrom i postavljanjem visokog PEEP-a omogućiti adekvatnu oksigenaciju.

METODE: Muškarac, 38 godina, BMI 40.9, SARS-CoV-2 POZITIVAN, primljen je na odjel Infektologije 4. dana bolesti, febrilan do 40°C uz zimice i tresavice, dispnoičan, SpO₂ 93%, frekv. disanja 20/min, kardiocirkulatorno stabilan. Na rtg pluća bilateralni infiltrati u svim plućnim poljima. Od komorbiditeta ima bronhalnu astmu, liječen Ventolin aerosolom.

Tijek liječenja na odjelu: oksigenoterapija 10 L/min. preko maske, SpO₂ 96%, pO₂ 84,8, eupnoičan. Terapija: Dexamethason 2x8 mg, Fraxiparine 1x0,8 ml, Remdesivir, vitamin C, B1, B6, D, Controloc.

3. dan liječenja se pogoršava, SpO₂ 93%, pO₂ 69, pCO₂ 31,9; tahipnoičan 30/min., postavi se HFNC 60/60% što pacijent tolerira, eupnoičan je, a SpO₂ je 97%. 12 sati kasnije nastupi pogoršanje, SpO₂ 88%, pO₂ 67,0, pCO₂ 31,3; potom HFNC 60L/75%, a SpO₂ je 95%, pO₂ 88,6, pCO₂ 26,5, tahipnoičan. 12 sati kasnije prilikom pokušaja ustajanja postaje tahidispnoičan 50/min., SpO₂ 60%; postavi se NIV, PEEP 12; FiO₂ 100%, PS 5, SpO₂ 80%, tahidispnoičan do 60/min. Kod dolaska anesteziologa na odjel: pacijent je cijanotičan, uznemiren, dezorijentiran, tahidispnoičan 55/min., tahikardan 120/min., cirkulatorno stabilan dehidriran, anuričan. Sediramo ga morfijem, PEEP povećamo do 18, PS 2, a FiO₂ 100%. Nakon 1 sat je pacijent tahipnoičan 38/min., SpO₂ je 89%, priseban je, kontaktibilan, suradljiv, osjeća olakšanje kod disanja i nema pritiska u prsima.

Prijem u JIL: priseban, kontaktibilan, orijentiran, tahipnoičan 36/min., SpO₂ 90%, tahikardan 125/min., NIV, PS2, PEEP 18, FiO₂ 100%, evidentno veliki dišni rad (P.01 -18), sediramo ga kontinuirano morfijem. Zbog visokog dišnog rada i velike tjelesne težine (TT 140kg), postepeno povećamo PEEP na 20-22 cmH₂O, a PS 0 što rezultira smanjenjem dišnog rada (P0.1 je -14), frekv. disanja 25/min., povećanjem SpO₂ 97%, cirkulatorno je stabilan. Smanjimo FiO₂ na 90% uz što je pO₂ 93,50; pCO₂ 46,00; Horowitz indeks 103,8.

Pacijenta rehidriramo parenteralno uz poticanje diureze. N-G sondu ne postavljamo radi visoke vrijednosti PEEP-a i naglo nastale hipoksije kod svake malpozicije fullface maske. Nastavimo Klavocin radi uroinfekcije (E.colli), kortikosteroid, Fraxiparine 2x0,8 ml (D-Dimeri >34000), statine, C, B1, B6, D vitamine, nadoknadu elektrolita, bronhodilatatore, kontinuiranu sedaciju morfijem. Nakon inicijalne respiratorne stabilizacije učinimo CT toraksa nativno radi akutne renalne insuficijencije na kojem se vidi obostrano difuzno uzorak mliječnog stakla sa manjim otočićima urednog parenhima, zahvaćeno 80% plućnog tkiva; vidljiv je pneumomediastinum; susp. plućna embolija (D-dimeri >34000). Angiografiju ne radimo radi akutne renalne insuficijencije.

10 sati od prijema, pacijent je tahipnoičan 30/min., pad SpO₂ na 94%, FiO₂ 90%, pO₂ 90, Horowitz indeks 100, a dišni rad se ne smanjuje (P0.1 -14). S obzirom na nemogućnost smanjenja FiO₂ i veliki dišni rad, učinimo CPAP recruitment manevar i postavimo PEEP na 25 cmH₂O. Tokom manevra pacijent je kardiocirkulatorno stabilan, uz neznatni porast krvnog tlaka. Nakon manevra SpO₂ se povisi na 97%, frekv. disanja snizi na 26/min., dišni rad smanji i cirkulatorno je stabilan. Snizimo FiO₂ na 80%, pri čemu je i dalje SpO₂ 97%, pO₂ 88,6; pCO₂ 36,7, Horowitz indeks 118, u porastu. Potom svaki dan smanjujemo FiO₂ za 10% uz održan SpO₂ 97%, frekv. disanja do 20/min i porast omjera pO₂/FiO₂,

Horowitz indeks kod FiO_2 35% je 242,8. Nakon smanjenja FiO_2 na 35%, počinjemo smanjivati PEEP za 1-2 cmH₂O svakih 6-12 sati uz nadzor omjera pO_2/FiO_2 .

3. dana liječenja razvije se pneumotoraks koji nema utjecaj na respiratornu i cirkulatornu stabilnost. Postavimo torakalnu drenažu.

14. dana liječenja u JIL-u, NIV PEEP 8, FiO_2 35%, pO_2 98, SpO_2 99%, Horowitz indeks 280, pa postavimo HFNC 60L/35% i kroz 3 dana smanjujemo protok na 40L/min. uz uredne parametre oksigenacije i ventilacije.

17. dan liječenja pacijentu postavimo oksigenaciju preko nosnih kanila 3L/min. SpO_2 98%, pO_2 88,5; pCO_2 39,7, frekv. disanja 19/min., kardiocirkulatorno je stabilan, te ga premještamo na odjel infektologije.

ZAKLJUČAK: Primjena CPAP-a sa visokim vrijednostima PEEP-a kod teškog oblika ARDS-a u pretilog bolesnika je sigurna i učinkovita metoda neinvazivne mehaničke ventilacije uz uvjet adekvatne kontinuirane analgesedacije, kardiocirkulatorne i respiratorne stabilnosti, odnosno kontinuiranog praćenja respiratornih i hemodinamskih parametara.

AB16

Tromboembolijski incidenti gornjih ekstremiteta u COVID JIL-u i izbor anesteziološke tehnike za rekurentne trombektomije i embolektomije

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UVOD: Infekcija SARS-COVID 19 se manifestira šarolikom inflamatornom plućnom patologijom, povećanom plućnom vaskularnom permeabilnošću uzrokovanog citokinskom olujom i inflamatornom kaskadom karakterističnom za endotel bilo kojeg organa.

Koagulacijski poremećaji su česta pojava kod Covid pacijenata. Tromboembolijski incidenti arterija i vena su češći nego kod drugih pacijenata hospitaliziranih u JIL-u. Uzroci tome mogu biti imobilizacija, hipoksija, inflamacija, ozljeda endotela, sistemsko hiperkoagulabilno stanje.

METODA: Prikazom ovog slučaja željeli smo primarno ukazati na rijetku rekurentnu pojavu tromboembolija gornjih ekstremiteta, unatoč sistemskoj primjeni antikoagulansa kao i izboru anestezije za operaciju bolesnice sa COVID pneumonijom.

REZULTAT: Primjenom vještina regionalne anestezije uz kombiniranu respiratornu potporu sa NIV transportnim ventilatorom moguće je učiniti dugotrajne vaskularne operacije sa zadovoljavajućom anestezijom i postoperativnom analgezijom uz očuvanu intaktnost respiratornog sustava.

ZAKLJUČAK: Tromboembolijski incidenti gornjih ekstremiteta su rijetka komplikacija u COVID prisutnoj endotelnoj patologiji. Svaka pojava nelagode, trnca ,bolova ili promjene boje kože prstiju šake treba probuditi sumnju na moguću trombozu ili emboliju arterije ili vene. Primjena niskomolekularnog heparina unatoč visokim dozama u našem slučaju se nije pokazala kao uspješna. Za operacije tako zahtjevnih pacijenata regionalna anestezija se ponovno pokazala kao tehnika prvog izbora.

6.

XI. hrvatsko-europsko-američka anesteziološka konferencija, 19. – 22.
svibnja 2022., Hotel Olympia, Vodice, Hrvatska / 11th Croatian-
European-American Anaesthesiology Conference, 19th – 22nd May
2022, Hotel Olympia, Vodice, Croatia
(AB17 – AB42)

AB17

Pseudotrombocitopenija / trombocitopenija liječiti ili ne liječiti?

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SAŽETAK

Trombocitopenija je najčešći koagulacijski poremećaj u kritično bolesnih bolesnika koji se javlja u 20% bolesnika, dok je kod kirurških bolesnika taj postotak i do 30%.

Pseudotrombocitopenija je s druge strane lažno nizak broj trombocita koji je posljedica nakupljanja i aglutinacije trombocita u uzorku uz prisustvo antikoagulant(a) (najčešće korišten EDTA-etilendiamintetraoctena kiselina) in vitro. S obzirom na korištenje automatiziranih brojača krvnih stanica može doći do krive diferencijacije pri prebrojavanju te se nakupine trombocita automatizmom broje kao leukociti ili se ne prebrojavaju. Iz toga je razloga pregled razmaza periferne krvi nužan kod svakog bolesnika s trombocitopenijom. Pregled razmaza može pomoći pri isključivanju uzroka pseudotrombocitopenije. EDTA-ovisna pseudotrombocitopenija je čest laboratorijski fenomen sa procijenjenom prevalencijom 0,1-2% hospitaliziranih bolesnika. Pseudotrombocitopenija sama po sebi nije patološki poremećaj ali njeno neprepoznavanje može dovesti do nepotrebne dodatne dijagnostike, neprimjerene terapije i promjene u planu liječenja.

U našem prikazu slučaja prezentiramo bolesnicu 27 godina starosti koja je primljena u kirurški JIL nakon hitnog zahvata, čija je anamneza opterećena hematološko-onkološkim stanjima, te kakav je bio slijed dijagnostike i liječenja bolesnice po primitku nalaza ekstremno niskih trombocita.

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AB18

Awake sedation and partial brachialis plexus nerve block as neuromonitoring for median nerve tumor extirpation

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ABSTRACT

The purpose of perioperative anaesthesia management is adequate analgesia, patient comfort and safety. Choosing adequate anaesthesia technique and monitoring also provides optimal condition for surgery. Operative procedures near neuronal structures have the great risk of permanent or temporarily neuronal damage. Thus it is important to detect neuronal structures during surgery and prevent nerve injury.

We report a case of an adolescent 15 year old patient who underwent a right upper arm median nerve tumor extirpation. Our goal was to preserve the motor function of the right hand to enable surgeon to examine median nerve function during surgery. We performed interscalene nerve blockade using ultrasound (US) guidance with 0.2% levobupivacaine. Patient was sedated using propofol titrated to achieve BIS monitor values of 70-80. Using this technique we produced sensory blockade and adequate analgesia of the right upper hand. At the same time patient was able to move her fingers at the request of the surgeon. This way surgeon identified structures in operating field and prevented possible nerve damage. Patient was cooperative, comfortable and satisfied. Analgesia was sufficient up to the day after surgery when the patient was released home. The surgery and anaesthesia went without any complication. At the 6 week follow up patient had good sensory and motor function of the operated arm.

The choice of the anaesthesia technique facilitated surgical procedure, made it safe and prevented possible complications.

AB19

The comparison of depression and anxiety in patients after hip fracture surgery under general or regional anaesthesia

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INTRODUCTION: Hip fractures are one of the most common injuries in the elderly, the injury affecting lifestyle and general mood of the patients. Changes in cognition and behaviour is relatively common in elderly patients after hip surgery, with an increased incidence of depression and anxiety which can significantly slow down the process of recovery after surgery. So far, research has shown that even the type of anaesthesiological procedure can have influence on cognitive changes and mood in the short term and long term postoperative period. The aim of this ongoing trial is to investigate the influence of general and regional anaesthesia on anxiety and depression in patients after hip fracture surgery.

MATERIALS AND METHODS: Patients are divided into two groups, first group are those who undergo hip surgery under regional anaesthesia and second group are patients who are operated under general anaesthesia. Patients are tested 24 hours before and 24-48 hours after surgery with Hospital Anxiety and Depression Scale to evaluate preoperative and postoperative depression and anxiety.

RESULTS: We have enrolled so far 22 patients (19 female, 3 male), of which 3 patients didn't pass initial cognitive testing and were excluded from research. We have prospectively collected data for 19 patients (11 patients in the regional anaesthesia group and 9 patients in the general anaesthesia group).

DISCUSSION: Research is still ongoing. We hope to bring more clarity as to what could be precipitating factors that influence the onset of mood changes.

AB20

Ultrasound-guided brachial plexus block as multieffective therapeutic approach for peripheral vasopressor arm injury

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ABSTRACT

INTRODUCTION: Peripheral vein line (PVL) administration of vasopressors is associated with potential risk of extravasation and local tissue damage. Treatment of such incident is lacking strong recommendations. Brachial plexus block (BPB) provides analgesia and significant sympathectomy-like effect making it useful in promoting blood flow in critical ischemia.

METHODS: We report a case of 58-year-old woman admitted to the intensive care unit (ICU) from emergency department with PVL-vasopressor arm injury. At the admission, she was unconscious and hypotensive, due to severe alcohol intoxication. Norepinephrine was running through PVL, speed infusion: 0,46 µg/kg/min. The skin was discolored, with erythema and phlebitis, indicated possible drug extravasation. The patient couldn't self-report pain. PVL was removed and we decided to use combined interscalene-supraclavicular ipsilateral BPB as a therapeutic approach for iatrogenic arm-tissue injury targeting analgesic and sympathectomy effect. We used 20 mL of 0.25% levobupivacaine for BPB. The block was performed at the bedside using ultrasound guided "in plane" needle technique, closely monitoring the patient.

RESULTS: After blockade was performed an enlargement of pulse pressure waveform at the ipsilateral arm was documented, which was indirect sign of vasodilatory effect. Thirty-six hours later, there were no clinical signs of arm-tissue injury.

CONCLUSION: PVL-vasopressors are potential risk for local tissue damage. BPB can be effective, bedside therapeutic approach in this situation. Closely monitoring of PVL function, and signs of extravasation of drug is best prevention practice.

AB21

Blood purification in a patient with severe coronavirus disease and acute myeloid leukemia - a bridge to chemotherapy. A case report

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ABSTRACT

Systemic inflammation in COVID-19 often leads to multiple organ failure, including acute kidney injury (AKI). Renal replacement therapy (RRT) in combination with sequential extracorporeal blood purification therapies (EBP) might support renal function, attenuate systemic inflammation, and prevent or mitigate multiple organ dysfunctions in COVID-19. So far, AKI in critically ill patients with COVID-19 appears to be a marker of disease severity and a negative predictor of survival and is posing additional challenges to patient management. We present treatment and intensive approach in the case of a male patient with life threatening COVID-19 infection and Acute myeloid leukemia with underlying existing myeloid lineage disease who was admitted to the COVID Intensive Care Unit (ICU) for treatment of severe respiratory failure due to SARS CoV-2 infection. EBP therapy with oXiris featuring cytokine adsorption properties was administered and it has shown to be feasible and with no adverse events. During the treatment, patient experienced serum IL-6 level reduction, attenuation of systemic inflammation, multiorgan dysfunction improvement, and also it helped maintaining short-term outcomes such as hemodynamic stability and oxygenation index. Nevertheless, future randomized trials are certainly required to demonstrate the clinical effects of EBP in COVID-19.

AB22

Combined lung ultrasound and bedside echocardiography – important tool for diagnosis and management of cardiorespiratory failure in critically ill patients

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INTRODUCTION: In last two decades lung ultrasound (LUS) and bedside echocardiography (BECHO) became well established assessment tool for cardiorespiratory disorders in critically ill patients. Unfortunately, due to the lack of training, education, experience and well established guidelines, the both methods are often used separately, which may cause insufficient decision making process in intensive care units (ICU).

METHODS: In short literature review we want to summarize and outline the benefits and advantages of combined usage of LUS and BECHO in the ICU setting.

RESULTS AND CONCLUSION: Recent literature showed that combined usage of LUS and BECHO may lead to faster and more accurate assessment of the most common cardiorespiratory pathology in ICU, including all causes of respiratory insufficiency and different types of haemodynamic instability or shock. Although, a large number of already developed ultrasound protocols must be evaluated in randomized and controlled trials, practical application and simultaneous use of both methods in everyday critical care practice should be promoted and encouraged, so as appropriate training and education.

AB23

General anaesthesia accompanied with Nerve Integrity Monitoring (NIM) during thyroidectomy and parathyroidectomy

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Recurrent laryngeal nerve (RLN) injury is possible serious complication during thyroidectomy and parathyroidectomy, leading to potential speaking, swallowing and breathing problems. Sometimes RLN is difficult to identify visually so intraoperative nerve monitoring is risk-minimising strategy to preserve the nerve. Nerve Integrity Monitoring (NIM) implies placement of specially designed NIM endotracheal tube with two electrodes positioned in contact with vocal cords under direct laryngoscopy or videolaryngoscopy. The tube is used to monitor electromyographic (EMG) signals in vocal cords during surgery. EMG responses are measured to identify RLN, control manipulation during surgery and verify integrity of the nerve. To maintain adequate EMG signals and minimise the risk, specific anaesthesia conditions should be considered. That means adequate intubation strategy for optimal visualisation of vocal cords and planning for potentially difficult airway in patients with enlarged thyroid gland, specific drug choice as non-depolarising muscle blocking agents are contraindicated during NIM monitoring and proper intraoperative anaesthesia monitoring.

AB24

Carski rez kod pacijentice s Fontanovom cirkulacijom

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SAŽETAK

UVOD: Fontanov zahvat je palijativni operacijski zahvat, a primjenjuje se kod prirođenih srčanih bolesti kod kojih se ne može uspostaviti funkcionalna biventrikularna cirkulacija. To je treća faza u nizu operacija nakon koje se cjelokupna venska cirkulacija ulijeva pasivno u plućnu arteriju, a oksigenirana krv iz pluća ulazi u jedan zajednički atrij i jedan sistemski ventrikul. Procjenjuje se da oko 85% djece s prirođenom srčanom greškom, sada preživljava do generativne dobi. Kod pacijentica s Fontan cirkulacijom, trudnoća je rizično stanje jer jedan zajednički atrij i jedna klijetka moraju tolerirati kardiovaskularne prilagodbe kao što su povećano cirkulacijsko preopterećenje, do 40% veći minutni volumen srca te povećanje frekvencije srca. Promjene venske cirkulacije mogu modificirati cirkulaciju maternice i placente što dovodi do preranog pucanja membrana i prijevremenog poroda.

PRIKAZ SLUČAJA: Pacijentica u dobi od 29 godina, kojoj je u djetinjstvu zbog atrezije trikuspidne valvule, ventrikularnog septalnog defekta i pulmonalne stenoze/atrezije učinjena palijativna operacija po Fontanu, primljena je u 37. tjednu trudnoće na Zavod za kardiotorakalnu anesteziju KBC-a Zagreb zbog potrebe za hitnim carskim rezom. Pacijentica je podvrgnuta općoj anesteziji zbog adekvatne kontrole hemodinamskog stanja, a anestezija je održavana sevofluranom u smjesi zraka, za analgeziju su korišteni remifentanil i sufentanil te rokuronij za neuromuskularnu relaksaciju. Nakon dekurarizacije i buđenja bolesnica je ekstubirana i u stabilnom kliničkom stanju transportirana u jedinicu intenzivne medicine kardiokirurških bolesnika.

DISKUSIJA: Sve veći je broj pacijentica koje dožive odraslu dob, a u mladosti su bile podvrgnute palijativnim operativnim zahvatima. Zbog specifičnosti Fontan cirkulacije pacijentice imaju povećan rizik od aritmija, zatajenja srca te intrakardijalnih tromboza. S obzirom na mali broj opisanih slučajeva u literaturi, prezentiramo naše iskustvo vođenja anestezije kod pacijentice s Fontanovom cirkulacijom.

AB25

Impact of COVID-19 infection on the incidence of cerebral thromboembolic events undergoing endovascular thrombectomy at the Zagreb University Hospital Centre: anesthesiologist point of view
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BACKGROUND: Stroke is the second leading cause of death in Croatia. In 2019, 5.180 people died of stroke, which makes 10.0% of all deaths. (1) Acute ischemic stroke may be one of the consequences of a COVID-19 associated coagulopathy. (2) Mechanical endovascular thrombectomy has become the standard of care for these patients. (3) Preprocedural anaesthetic considerations include rapid and relevant preoperative assessment and advance planning. The objective of anaesthetic care is maintaining haemodynamic stability to achieve blood pressure goals. (4)

METHODS: We analyzed the data from University Hospital Centre Zagreb. The dataset included all the patients with an acute cerebral thromboembolic event who underwent mechanical endovascular thrombectomy during 2019 and 2021.

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AB26

Importance of capnography in airway management

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ABSTRACT

Capnography monitoring is one of minimum standards for monitoring of patients during anaesthesia, in intensive care, emergency departments according guidelines of different anaesthetic societies. It should be used in all patients with artificial airway (tracheal tube, supraglottic airway devices), and in sedated patients unresponsive to verbal commands. Fourth National Audit Project (NAP 4), largest study of major complication of airway management (death, brain damage, emergency surgical airway, admission to intensive care) showed that 70 % of deaths and persistent neurological injury in intensive care were caused by failure to use capnography. NAP 4 study reported 9 oesophageal intubation: 3 in anaesthesia, 4 in intensive care and 2 in emergency department. Capnography is gold standard to detect accidental oesophageal intubation and flat line of capnography should indicate oesophageal intubation until it is proven otherwise, no trace =wrong place. In our department we performed tracheotomy, elective or emergency and capnography monitoring is essential to detect correct tracheal intubation or accidental oesophageal intubation. Using of flexible bronchoscope is recommended for confirmation of tracheal intubation, especially in difficult clinical situation.

AB27

Jednodnevna kirurgija – koje su danas granice?

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UVOD: Pojam jednodnevne kirurgije datira iz početka 20. stoljeća. 1909. godine James Nicoll objavio je u British Medical Journal, rezultate u 8 988 djece , operirane po principu jednodnevne kirurgije . Prema IAAS, pacijent u jednodnevnoj kirurgiji definiran je prijemom u zdravstvenu ustanovu s ciljem dijagnostičkog i/ili operativnog zahvata, po zahvatu očekuje se brz oporavak te ne postoji potreba za hospitalizacijom. Razvoj kirurških metoda , anestezioloških tehnika i metoda analgezije doprinosi eksponencijalnom porastu broja pacijenata zbrinutih po principu jednodnevne kirurgije.

METODE: Prikazujemo trenutno važeći osnovni koncept uspjeha jednodnevne kirurgije : kritičan preoperativni probir, odabir najbolje anesteziološke i kirurške tehnike, otpust prema važećim kriterijima.

REZULTATI: Izbor pacijenata s obzirom na dob, težinu, komorbiditete, ASA status te socijalni aspekt ukoliko je sagledan individualno i praćen zahvatom koji je definiranim vremenskim trajanjem i niskom incidencijom postoperativnih komplikacija uz korištenje optimalnih anestezioloških tehnika i lijekova rezultira dobrim postoperativnim uspjehom uz ekonomske uštede.

ZAKLJUČAK: Prednosti jednodnevne kirurgije su jasne i dokazane : usmjerena je na pacijenta, nosi niži rizik postoperativnih komplikacija i hospitalnih infekcija, ekonomična je.

KLJUČNE RIJEČI: jednodnevna kirurgija, probir, anestezija, analgezija

AB28

Monitoring koncentracije citokina upalnog odgovora u neurokirurških bolesnika

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Ozljeda mozgovnog tkiva pokreće upalni odgovor u kojem dolazi do oslobađanja čitavog niza citokina. Citokini se oslobađaju iz stanica središnjeg živčanog sustava, kao što su mikroglija, astrociti, stanice endotela mozgovnih krvnih žila i neuroni, ali također i iz aktiviranih leukocita i limfocita koji su iz periferne krvi prošli kroz oštećenu krvno-mozgovnu barijeru. Ovisno o svojoj ulozi, klasificiraju se kao proupalni (pr. interleukin (IL)-1, IL-12, IL-18, čimbenik tumorske nekroze alfa) i protuupalni (pr. IL-4, IL-10, IL-13), dok neki citokini imaju i dualnu ulogu (1).

Utjecaj upalnog odgovora i citokina na tijek i ishod liječenja istraživani su kod bolesnika s traumatskom ozljedom mozga, subarahnoidalnim krvarenjem i akutnom ishemijom mozga. Brojna istraživanja pokazuju da koncentracije citokina u krvi i likvoru koreliraju s pojavom neuroloških i infekcijskih komplikacija kao i s ishodom liječenja (2, 3). Te činjenice stvaraju potencijalnu potrebu za monitoringom koncentracija citokina u specifičnim skupinama bolesnika. Takva vrsta praćenja mogla bi pridonijeti kliničkoj procjeni, pa čak i omogućiti ranije prepoznavanje pacijenata rizičnih za kliničko pogoršanje (4). Obzirom da upalni odgovor unutar središnjeg živčanog sustava može uzrokovati izravno oštećenje neurona i njihovu apoptozu, imunomodulatorna terapija mogla bi poboljšati ishod liječenja. Nažalost, zasada se još nijedna od ispitivanih terapijskih opcija nije pokazala uspješna u tom smislu. Koncentracije citokina mogu se mjeriti iz krvi, likvora i mozgovnog mikrodijalizata. Svaka od tih metoda pruža različit uvid u upalni odgovor, u rasponu od generaliziranog sustavnog odgovora do regionalnog unutar samog tkiva mozga. Uzorci krvi su najdostupniji, međutim dobiveni rezultati su dijelom odraz i sustavnog upalnog odgovora, pogotovo u politraumatiziranih bolesnika. Uzorci likvora dostupni su iz vanjske ventrikularne drenaže i pružaju informaciju o globalnim koncentracijama citokina u subarahnoidalnom prostoru. Iz uzoraka dobivenih cerebralnom mikrodijalizom možemo mjeriti regionalne koncentracije citokina u tkivu mozga kojem prijeti sekundarno oštećenje, međutim sama metoda je skupa i invazivna (5). Mjerenje koncentracija citokina je zahtjevno, obzirom na njihovo kratko poluvrijeme života, dinamiku oslobađanja iz stanica te općenito vrlo niske koncentracije (u pikogramima). Najčešće se koristi metoda ELISA koja je pouzdana, ali zahtijeva educirano laboratorijsko osoblje, skupu opremu, pažljivo rukovanje uzorcima te dugu pripremu samih uzoraka. Svakako postoji potreba za razvitkom osjetljive, pouzdane i brze tehnologije za kvantitativnu analizu citokina u stvarnom vremenu (6).

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AB29

Monitoring u dječjoj kardijalnoj anestezilogiji

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Od prve javne demonstracije moderne anestezije u Bostonu 1846. godine, ulažu se napor u razvoj naprednih metoda praćenja vitalnih funkcija pacijenata. Monitoriranje vitalnih funkcija djece s prirođenim srčanim greškama bio je dodatan izazov zbog posebnosti fiziologije i potrebe za razumijevanjem značenja praćenih vrijednosti. U počecima dječje kardijalne anestezije dostupnost anestezioške opreme za novorođenčad i dojenčad nije bila adekvatna, što je vidljivo u prvim anestezioškim opisima takvih zahvata. Suvremena tehnologija osigurala je velik broj sofisticiranih monitora, osobito u posljednjem desetljeću. Rizik razvoja perioperacijskih komplikacija kod pacijenata s prirođenom srčanom greškom izuzetno je visok, zbog čega je potrebno koristiti prošireni i kontinuirani monitoring.

Invazivno mjerenje krvnog tlaka, kontinuirano praćenje 5-kanalnog EKG-a i mjerenje tlaka plućne cirkulacije, uz upotrebu transezofagijskog ultrazvuka, danas su nužnost kod svakog operativnog zahvata prirođene srčane greške. Izbor anestetika već može uzrokovati značajne komplikacije s obzirom na promijenjene fiziološke odnose, te je od iznimne važnosti znati samu fiziologiju srčane greške kojoj pristupamo, te imati postavljen adekvatni monitoring. Napredak u tehnici monitoringa omogućava otkrivanje hemodinamskih promjena, dijagnosticiranje njihovih temeljnih uzroka i optimiziranje terapijskih intervencija kao što je primjena vazoaktivnih lijekova.

Cilj ovog predavanja je prikazati vrstu monitoringa koja je nužna u praćenju pacijenata podvrgnutih operaciji prirođene srčane greške, ali i u njihovom poslijeoperacijskom tijeku.

KLJUČNE RIJEČI: monitoring, dječja kardijalna anestezija, kongenitalne srčane greške

AB30

Neopioidna anestezija bolesnika s prekomjernom tjelesnom težinom : prikaz dva slučaja

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UVOD: Pretilost je često povezana s komorbiditetnim stanjima (OSA, hipertenzija, šećerna bolest tipa 2) i rizični je čimbenik za opioidima induciranu respiratornu depresiju. Opioidi povećavaju rizik razvoja kritičnih respiracijskih događaja tijekom poslijeoperacijskog oporavka, pogoršavaju OSA, učestalost i težinu PONV i dovode do opioidima inducirane hiperalgezije. Neopioidnom anestezijom postižemo odgovarajuću kontrolu boli uz sprečavanje s opioidima povezanih poslijeoperacijskih komplikacija.

METODE: Prikazana su 2 bolesnika kod kojih je učinjena laparoskopska sleeve gastrektomija u OFA uz pomoć TPVB postavljenog na razini Th4, Th7 obostrano, uz pomoć UZV:

1. Bolesnica (48 god, BMI 46,06): 50ml 0,44% levobupivacaina uz 8 mg deksametazona i 200mcg adrenalina
2. Bolesnik (31 god, BMI 46,1): 56ml 0,44% levobupivacaina uz 8 mg deksametazona i 240mcg adrenalina

Kod oba bolesnika za indukciju i održavanje anestezije koristili su se propofol i esmeron. Na početku zahvata dobili su Analgin 2,5 mg, a na kraju operacije Paracetamol 1 g iv. Ekstubirani su u sobi za buđenje 70 minuta, odnosno 46 minuta nakon operacije.

REZULTATI: Nakon buđenja oboje su bili bez bolova, mučnine, osjećali su zatezanje šavova i drena kod pomicanja. Bolesnica: VAS 2, ustala se i hodala isti dan nakon operacije, imala stolicu sljedeći dan.

Bolesnik: VAS 1, bez bolova u trbuhu, samo zatezanje šavova i drena, na dan operacije ustao i hodao.

ZAKLJUČAK: Neopioidnom anestezijom ostvarili smo odgovarajuću kontrolu boli, brz oporavak peristaltike, bez nuspojava te ranu mobilnost bolesnika.

AB31

Perioperative delirium monitoring: current guidelines and future perspective

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INTRODUCTION: Postoperative delirium (POD) is one of the most common postoperative complications, particularly in elderly patients, and may have long-term consequences. It is important to identify patients at risk for delirium and prevent it by choosing the anaesthesia technique and monitoring. This overview summarizes the latest evidence in the detection and prevention of POD.

METHODS: The PubMed database was systematically searched for the literature investigating the pathophysiology of POD, and diagnostic and anaesthetic procedures aimed at reducing the risk of POD.

RESULTS: In total, 96 articles were analysed. The analysis showed that the pathogenesis of delirium is associated with anaesthesia, surgery and patient-related risk factors. Findings suggest that the systemic inflammatory response and impaired cholinergic function may be associated with neuroinflammation and POD, but the pathophysiology is not sufficiently understood. Studies conclude a significant reduction in the incidence of delirium for dexmedetomidine treatment and avoidance of too deep anaesthesia. Therefore, the last guidelines recommend the depth of anaesthesia monitoring. But new studies indicate that burst suppression is a 'marker' of an abnormal brain response to anaesthesia and surgery, not a causal mediator. Numerous inflammatory cytokines, TNF- α , S100B, NSE, cholinesterase, different microRNAs have been investigated as markers of POD but the evidence regarding their roles remain inconclusive.

CONCLUSION: It is still necessary to conduct further studies on the etiology, molecular mechanisms, biomarkers and interventions of POD

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Clinical significance of automated pupillometry during anaesthesia and intensive care – University Hospital Osijek experience

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ABSTRACT

INTRODUCTION: Automated pupillometry is shown to be a superior method for a reliable examination of pupillary light reflexes compared to traditional light reflex examination with penlight torch. Despite that it is not widely used in clinical practice and clinicians still rely on subjective assessment of pupil reactivity. The aim of this poster is to incentivize the use of automated pupillometers in critical care and anaesthesia by presenting the benefits and shortcomings of this method.

METHODS: Relevant literature research was conducted using PubMed database, with focus on articles regarding automated versus manual pupil light reflex assessment. Articles and reports on the use of automated pupillometry for detection of raised intracranial pressure, secondary brain damage, early prognosis of cardiac arrest outcome and assessment of analgesia adequacy were further used to guide the implementation of the method into the intensive care unit practice.

RESULTS: One Neuroptics NPi-200 Pupillometer was acquired by our Critical Care Unit and so far is being used for the monitoring of traumatic brain injury and post cardiac arrest patients. We developed a protocol for frequency of measurements which is prescribed by admitting physician. Pupil size, NPi, GCS, MAP and ICP (when possible) are being recorded.

CONCLUSION: Automated pupillometry is an inexpensive, reliable, and objective method for assessment of pupillary light reflex which has multiple clinical benefits, especially for patients with brain injury. We are highly recommending the use of this method for improving the quality of intensive patient care.

KEYWORDS: automated pupillometry, NPi, traumatic brain injury, GCS, critical care monitoring, cardiac arrest prognosis

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Povijest dječje kardijalne anestezijologije

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Ovaj pregled usredotočen je na glavne povijesne prekretnice u razvoju dječje kardijalne anestezijologije u svijetu i Hrvatskoj te njeno trenutno stanje.

Moderna kardiokirurgija započela je operacijama na intratorakalnim krvnim žilama, a ne na samom srcu i to upravo na pacijentima s prirođenim srčanim greškama. Trenutno oko 95% djece s prirođenim srčanim greškama doživi odraslu dob, upravo zbog napretka u ranom otkrivanju i kirurškom liječenju, što podrazumijeva razvoj i napredak anestezioškog pristupa i zbrinjavanja tih pacijenata.

Merel Harmel bio je prvi anesteziolog koji je proveo anesteziju za palijativnu operaciju prirođene srčane greške, a izveo ju je Alfred Blalock. Počeci dječje kardijalne anestezije mogu se točno odrediti upravo prema opisu Harmel-a i Lamont-a iz 1946. godine. Iako su otvoreni ductus arteriosus i koarktacija aorte bili kirurški zbrinjavani i ranije, nije postojao anestezioški osvrt. Harmel i Lamont su opisali njihova iskustva s Blalock - Taussig operacijama u prvih 100 pacijenata, od kojih je 23 umrlo, što je bio izvrstan rezultat s obzirom da su dijagnoze postavljane bez kateterizacije srca, a anestezioška oprema za dojenčad i djecu nije bila na zadovoljavajućoj razini. Od tada slijedi napredak dječje kardijalne anestezije, a danas se uspješno operiraju i najteže prirođene srčane greške.

U Hrvatskoj se dječja kardijalna anestezija sustavnije razvija posljednjih 30-tak godina, a najvećim dijelom pod vodstvom doc.dr.sc. Višnje Ivančan, tako da se danas u KBC Zagreb operiraju i najsloženije prirođene srčane greške. Broj peracijskih zahvata progresivno raste i sve je manji broj djece koju je potrebno uputiti u inozemne centre.

U radu je izložen kratak prikaz povijesti svjetske i hrvatske dječje kardijalne anestezije te njeno sadašnje stanje.

KLJUČNE RIJEČI: dječja kardijalna kirurgija, povijest, dječja kardijalna anestezijologija, Hrvatska

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Povijest pedijatrijske anestezije u Hrvatskoj

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Prva anestezija u Hrvatskoj bila je izvedena u Zadru, svega pet mjeseci nakon prve eterske narkoze u Bostonu. Ubrzo nakon primjene etera za anesteziju odraslih, počela je i primjena u djece.

Nakon uporabe etera i kloroforma, otkriće dušičnog oksidula 1870. unaprijedilo je anesteziju djece. Primjena halotana kao najčešćeg inhalacijskog anestetika kao i kontrola dišnog puta putem trahealne intubacije omogućila je daljnji razvoj pedijatrijske anestezije.

Dječja bolnica u Klaićevoj Zagreb osnovana je 1952. godine s dva glavna odjela pedijatrijom i dječjom kirurgijom. 1968. godine osnovan je Odjel dječje anestezije, a nedugo zatim 1970. godine formiran je odjel intenzivnog liječenja djece sa 3 kreveta i jednim inkubatorom, prije nego u na primjer, u Johns Hopkins bolnici u Baltimoreu (1976) ili dječjoj bolnici u Bostonu 1980.

U KBC Zagreb razvijala se dječja kirurgija gdje se osim neonatalne kirurgije kongenitalnih anomalija i uroloških zahvata dječje dobi velikim trudom i zalaganjem, te edukacijom u vanjskim centrima uvela transplantacijska kirurgija te kardiokirurgija. Rad dječjih kirurga pratio je razvoj pedijatrijske anestezije. Neonatološka i pedijatrijska jedinica intenzivnog liječenja, koje vode posebno educirani pedijatri-intenzivisti vodeća je u Hrvatskoj.

I u ostalim hrvatskim gradovima razvija se pedijatrijska anestezija, tako je u Karlovcu 1968. godine osnovan odsjek za anesteziju i zabilježeno je da su se dječje tonzilektomije počele izvoditi u endotrahealnoj anesteziji 1973. godine.

U Rijeci se razvijala dječja kirurgija i paralelno dječja anestezija, u dječjoj bolnici Kantrida koja 1962. godine dobiva status Klinike za dječje bolesti, a 1965. god osnovan je odjel za dječju kirurgiju sa službom za anesteziju i reanimaciju s operacijskim blokom.

U Osijek 1969. godine dolaze dvije specijalistice anesteziologije te 5 tehničara nakon dvogodišnje edukacije u VMA u Beogradu. Školovani anesteziolozi preuzimaju vođenje anestezije i potpunu brigu o pripremi za anesteziju, o anesteziji i neposrednoj poslijeoperacijskoj skrbi djece.

Uvođenjem suvremenih postupaka pedijatrijske anestezije - preoperativne pripreme, premedikacije, infuzijske terapije i monitoriranja tijekom anestezije, poslijeoperacijskog nadzora i analgezije kao i razvoj jedinica intenzivnog liječenja djece osigurana je sigurnost primjene anestezije u djece.

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Pozicioniranje preoperativne optimalizacije bolesnika kroz Dnevnu bolnicu za anesteziju
Zašto? Kome? Kako?

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Perioperativnom pripremom optimaliziraju se individualne potrebe visoko rizičnih bolesnika kroz sve faze kirurškog liječenja multidisciplinarnim pristupom. Primjenjuje se preoperativno, intraoperativno i postoperativno sa svrhom boljeg postoperativnog ishoda. Zahtjeva personalizaciju pristupa svakom bolesniku. Preoperativna optimalizacija obuhvaća:

1. Procjena rizika: prepoznavanje komorbiditeta, uz promjenu životnih navika
2. Kirurški put: rana suradnja bolesnik – kirurg – anesteziolog
3. Prehabilitacija: program preoperativnih vježbi, nutritivna procjena, psihološki suport
4. Optimalizacija komorbiditeta: anemija, starost/krhkost, dijabetes

Formiranjem Dnevene bolnice za anesteziju u OB Karlovac omogućeno je provođenje preoperativne optimalizacije anemije i nutritivnog statusa bolesnika. Za isto su načinjeni hodogrami i algoritmi liječenja. Daljnji razvoj treba obuhvatiti sve segmente preoperativne optimalizacije bolesnika.

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Protective mechanical ventilation – evidence from randomised clinical trials

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Postoperative pulmonary complications (PPCs) are associated with increased morbidity, length of hospital stay, and mortality after major surgery. PPCs are as common as cardiac complications following non-cardiac surgery and are even more costly. Protective ventilation is strongly recommended in international guidelines for ICU patients with ARDS. Recent randomized controlled trials also show that the use of lower tidal volumes is the most important determinant of protection in intraoperative mechanical ventilation of nonobese patients. Intraoperative lung-protective mechanical ventilation has been reportedly able to attenuate ventilator-induced lung injuries (VILI) by employing a low tidal volume, an appropriate level of PEEP, and recruitment maneuvers. The goals of these interventions are to minimize alveolar overdistention, to prevent repeated collapse and reopening of alveoli and to reduce atelectasis. There have been several randomized controlled clinical trials (RCTs) that compared a protective strategy of ventilation with a conventional strategy in various surgical procedures. Several RCTs found tidal volume reduction to be associated with a lower number of pulmonary complications in patients without ARDS, and some individual patient data meta-analyses suggested that tidal volume reduction may shorten the time spent on the ventilator and duration of stay in the ICU and hospital. However, the use of low tidal volumes could lead to an increased need for sedation because of higher respiratory rate or patient-ventilator asynchrony and, possibly, self-inflicted lung injury due to compensatory injurious inspiratory efforts. In addition, it has been suggested that low tidal volumes may increase the risk of delirium. Results of recent up to date RCTs are presented in this review.

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Povijest Odjela za anesteziologiju, reanimatologiju i intenzivnu medicinu OB Karlovac

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Prije anesteziologa (D. Jerinić, V. Kiseljak, 1965.) o anesteziji skrbe karlovački kirurzi koji su poticali razvoj anestezije. Završetkom specijalizacije anesteziolozi organiziraju 1965. god. na kirurškom odjelu „šok sobu“, Odsjek za anesteziju i reanimaciju 1968. (voditelj D. Jerinić) i Službu za anesteziju i reanimaciju 1974. (voditelj V. Kiseljak). Prva ETA uvedena je 1954., halotan 1963., dvadesetak godina poslije kava kateteri. Prim. Jerinić sudjeluje u organizaciji jedinica intenzivne medicine, Prim. Persoli-Gudelj usavršava se u Njemačkoj, dr. Vergot u Ljubljani. Ambulanta za anesteziološki pregled i Ambulanta za akupunkturu i liječenje boli počinju s radom 1979. god. Razvoj 80-tih vezan je uz nabavu respiratora, monitara, prijem kadrova, aktivnosti Povjerenstva za lijekove i suradnju s KBC Zagreb (J.Žunić). Voditelj Službe 1991. postaje J.Žunić, a Služba priprema Medicinski centar za rad u ratnim uvjetima, organizira Ratnu bolnicu Topusko, broj anesteziologa se smanjuje s 11 na 6. Anesteziolozi tijekom rata rade u bolnici ili odlaze na teren.

Poslije Domovinskog rata slijedi prijem kadrova, uređenje JIM-a. J. Žunić uvodi nove metode u nadzor organskih sustava, 1996. se napušta primjena dušičnog oksidula, uvode niski/minimalni protoci plinova, organizira studij sestrinstva. Aktivnosti Prim. Persoli u liječenju boli i palijativnoj medicini rezultiraju osnivanjem Hrvatskog društva za liječenje boli, a Doc. Lončarić organizira palijativnu skrb u županiji. Godine 2017. voditelj odjela postaje Doc. Mirjana Lončarić-Katušin, nastavljajući sa razvojem i organizacijom COVID-JIM-a za liječenje respiratorno ugroženih bolesnika. Djelatnici aktivno sudjeluju na stručnim sastancima i organiziraju ih. Šest primarijusa i tri doktora znanosti rezultat su rada svih anesteziologa, a zajednička je maksima „sincere et constanter“.

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Severe euglycemic diabetic ketoacidosis induced by dapagliflozin in COVID-19 patient

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ABSTRACT

INTRODUCTION: Euglycemic diabetic ketoacidosis (EDKA) is recognized as adverse effect of sodium-glucose co-transporter 2 (SGLT2) inhibitors, a newer class of type 2 diabetes drugs. Untreated, it can become life-threatening condition particularly in patients with COVID-19 infection.

CASE DESCRIPTION: A 48-year-old male patient with history of type 2 diabetes mellitus and newly diagnosed COVID-19 infection was admitted to the Intensive Care Unit (ICU) due to unconsciousness and acute respiratory failure requiring intubation and mechanical ventilation. His regular therapy included metformin and dapagliflozin and was stopped on admission. An infusion of crystalloid solutions, glucose and insulin was immediately started. Initial chest radiograph showed interstitial pneumonia and laboratory assessment noted elevated C-reactive protein (CRP), interleukin 6 (IL-6) and ferritin levels, severe EDKA and metabolic acidosis refractory to standard therapy. Due to clinical deterioration, hemodynamic instability and markedly increased inflammatory biomarkers, continuous renal replacement therapy (CRRT) with Oxyris filter was initiated. In addition to treating acidosis, he was also treated according to the current COVID-19 treatment guidelines. In the next 48 hours ketoacidosis and metabolic acidosis were resolved, the patient became conscious and hemodynamically improved. In the next days his course was complicated by acute respiratory distress syndrome (ARDS) which required extracorporeal membrane oxygenation (ECMO). After all therapeutic measures, the patient recovered and after 30 days was discharged from the ICU.

CONCLUSION: SGLT2 inhibitor dapagliflozin might be a trigger for severe COVID-19 in this case.

KEYWORDS: diabetic ketoacidosis, sodium-glucose co-transporter 2 inhibitors, COVID-19, type 2 diabetes mellitus

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Severe postpartum hemorrhage after cesarean section as a complication of pulmonary infection treated with antibiotics and ROTEM-guided transfusion therapy

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INTRODUCTION: Postpartum hemorrhage (PPH) is the leading cause of maternal mortality. Persistent postpartum hemorrhage is frequently complicated by coagulopathy which may contribute to massive hemorrhage. Early assessment of coagulation status and identification of infection could significantly improve the outcome of women with postpartum hemorrhage.

CASE REPORT: We present case of a severe postpartum hemorrhage in 25 years old women who underwent emergency cesarean section in 39 weeks of gestation due to suspected fetal hypoxia in another institution. Because of postoperative intraabdominal bleeding she was given massive transfusion, and hysterectomy was performed. The next day, there was a decrease in RBC and abdominal CT showed large hematoma in the pelvis. A gynecologist performed surgical evacuation of hematoma. Inflammatory markers were suggestive for persistent infection, despite all cultures were sterile. During treatment in ICU ROTEM was performed several times and helped guide transfusion therapy. Due to the severe pulmonary infection with consumptive coagulopathy, the patient received antibiotic therapy and was transfused antithrombin III concentrate, vitamin K, fibrinogen concentrate, tranexamic acid, erythrocyte concentrate, fresh frozen plasma, platelet concentrate and cryoprecipitate. As thromboprophylaxis, Clexane 2x20 mg was administered. During the further stay she was improving and breathing on her own and was hemodynamically stable. On the abdominal drains there was a minimal amount of blood secretion.

CONCLUSION: Early recognition and treatment of infection followed by massive transfusion were efficient in the treatment of postpartum hemorrhage and improved maternal outcomes.

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Neuroanestezija kroz stoljeća

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Jedno od najstarijih medicinskih umjeća ljudskog roda pripisujemo neurokirurgiji. Njene korjene pratimo od vremena prapovijesti. Artefakti koji nedvojbeno dokazuju prve pokušaje trepanacije sežu do 6500 godina prije Krista, a arheološke lokacije su Europa, Južna Amerika, Afrika i Azija. No tek u novijoj povijesti, sredinom 19. stoljeća, zahvaljujući upotrebi inhalacionih anestetika, škotski pionir neurokirurgije, sir William Macewen izvodi prvu uspješnu kraniotomiju i ablaciju tumora 1879. Sir Macewen uveo je i orotrahealnu intubaciju u anesteziološku praksu, te promovirao ideju upotrebe kloroforma u Glasgow Royal Infirmary. Sljedeća važna osoba je Sir Victor Horsley, također neurokirurg sa znanstvenim, stručnim, a vjerojatno i praktičnim interesom za neuroanesteziju. U istom razdoblju u Sjedinjenim Američkim Državama, Harvardski diplomant Harvey Cushing razvija prve anesteziološke liste u koje uvodi mjerenje fizioloških parametara, te ujedno shvaća koliko je važno posvećeno i školovano osoblje u domeni neurokirurške anestezije. Njegov suvremenik, neurokirurg Charles Fraiser izjavljuje sljedeće: „No cranial operation be undertaken unless the services of a skilled anesthetizer are available“ (nijedna neurokirurška operacija se ne bi smjela izvoditi ukoliko nema izučenog anestezičara). Uvođenje tiopentala, kurarea i halotana je unaprijedilo kako opću, tako i neurokiruršku anesteziju, no tek metodama mjerenja moždane električne aktivnosti, cerebralnog protoka, metabolizma prema Kety i Schmidtu, te mjerenjem intrakranijskog tlaka prema Lundburgu udareni su temelji neuroznanstvenim istraživanjima. Znanstvenici poput Johna D. Michenfeldera, kasnije znanog kao oca neuroanestezije, provodili su znanstvena i klinička istraživanja cerebralnog protoka krvi, moždanih funkcija i neuroprotekcije kao odgovora na različite anestetike i anesteziološke tehnike. Tako su postavljeni temelji moderne neuroanestezije.

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Spinalna anestezija za endoskopski urološki zahvat kod pacijenta s ishemijskom kardiomiopatijom i ejakcijskom frakcijom od 20%

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UVOD: Najvažniji perioperacijski cilj kod pacijenata s niskom ejakcijskom frakcijom je održavanje hemodinamske stabilnosti zbog već ionako visokog rizika od razvoja velikih kardioloških komplikacija.

METODE: U ovom kratkom prikazu obradit ćemo slučaj 59ogodišnjeg pacijenta s ishemijskom kardiomiopatijom i kongestivnim zatajenjem srca (s procijenjenom ejakcijskom frakcijom od samo 20%). Kod pacijenta je u sklopu obrade za napredne metode liječenja srčanog popuštanja pronađen tumor mokraćnog mjehura uz indikaciju za hitnu transuretralnu resekciju istog.

REZULTATI: Operativni zahvat učinjen je u regionalnoj anesteziji, točnije spinalnom bloku, uz hiperbaričnu otopinu lokalnog anestetika, glukoze i opioida. Radilo se o maloj dozi lokalnog anestetika baš zbog osiguranja hemodinamske stabilnosti. Primjenom navedene otopine osigurana je osjetna blokada do razine Th9, potvrđena pinprick testom, koja je bila dostatna za obavljanje zahvata. Po Bromage ljestvici, nije bilo motoričkog bloka. Zahvat je prošao uredno, bez ikakvih neželjenih događaja uz hemodinamsku stabilnost pacijenta tijekom i nakon zahvata, do povratka na Kliniku za kardiologiju prvi postoperativni dan.

ZAKLJUČAK: Vjerujemo da je izbor regionalne anestezije, kod ovog pa tako i kod svih sličnih pacijenata bez kontraindikacija za neuroaksijalni blok, bio optimalan izbor. Primjena spinalne anestezije uz pomoć hiperbarične otopine s niskom dozom lokalnog anestetika i selektivnim spinalnim blokom omogućila je održavanje hemodinamske stabilnosti te smanjenje rizika od razvoja komplikacija.

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Otežani dišni put kod orofacijalnih rascjepa – prikaz slučaja

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UVOD: Orofacijalni rascjepi najčešće su prirođene maksilofacijalne malformacije. Od 1000 novorođene djece u Hrvatskoj se rodi 1,71 djeteta s nekim oblikom rascjepa, oko 60-70 novorođene djece godišnje. Klinički se navedene malformacije javljaju kao izolirani rascjep usne, nepca ili kao njihova kombinacija. Rascjepi su kao takvi ne samo estetski i socijalni problem s kojim se suočavaju pacijenti i obitelji, već i funkcionalni jer uključuju probleme s hranjenjem, poremećeni dentoalveolarni razvoj, smetnje razvoja govora i poremećaje sluha. Za anesteziologa predstavljaju izazov prvenstveno zbog osiguravanja dišnog puta, a potom i činjenice da se radi o pedijatrijskoj populaciji koja je sama po sebi izazovna za zbrinjavanje. U našoj se ustanovi operiraju djeca minimalne životne dobi od 3 mjeseca i tjelesne težine 5 kg.

METODE: Prikazujemo slučaj tromjesečnog djeteta kod kojeg je bila planirana operacija rascjepa usne u općoj endotrahealnoj anesteziji.

REZULTATI: Nakon uvoda u anesteziju, uz otežani prikaz laringealnih struktura, pokušana je intubacija koja nije bila izvediva zbog nemogućnosti plasiranja tubusa kroz preusku rimu glotidis. Operativni zahvat je odgođen za mjesec dana. U drugom pokušaju djeteta je uspješno intubirano i operirano, bez ikakvih komplikacija.

ZAKLJUČAK: Zbog anatomskih varijacija vezanih za životnu dob zahvaćene djece, različitih vrsta i opsega rascjepa, potreban je individualizirani pristup svakom djetetu. Važno je prepoznati i situacije u kojima ne treba inzistirati na kirurškoj/anesteziološkoj intervenciji, već pustiti da vrijeme i somatski razvoj kod djeteta učine svoje.

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Croatia
(AB43 – AB50)

AB43

Perioperative management of adult patients undergoing major head and neck surgery with free flap tissue reconstruction – our experiences

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ABSTRACT

The perioperative care of adult patients undergoing free flap tissue transfer during head and neck surgical reconstruction is inconsistent among different hospitals as well as physicians. Surgery for head and neck cancer usually requires reconstruction to restore tissue integrity, structure, and function. A patient's own tissue is transposed from 1 anatomic site to another along with its vascular supply to optimize reconstruction and is termed free tissue transfer or a "free flap." Microvascular reconstruction restores essential functional anatomy after ablative surgery, and a critical determinant of flap success is predicated on the patency of the vascular anastomosis and adequate tissue perfusion. Patients with head and neck cancer are typically of older age and usually have comorbidities such as arterial hypertension, cerebrovascular disease, ischemic heart disease, peripheral vascular disease, chronic obstructive pulmonary disease, diabetes mellitus, intravascular volume depletion, decreased muscle mass, and reduced physical mobility (1). The perioperative and anaesthesia care of this patient group can be challenging, considering potential requirements for complex airway management techniques and the typically prolonged duration of surgical procedures. As standardized approaches to perioperative care serve to optimize patient outcomes and reduce costs, it is imperative that reasonable guidance of care is explored for this patient population too (2).

We conducted a retrospective study at Zagreb University Hospital Centre from 2018 till 2022. A total of 206 patients were included. Regarding preoperative considerations, we assessed general data such as age, gender, height, weight, perioperative nutritional status, preoperative tobacco cessation, management of alcohol cessation as well as BMI, preoperative hypoglycemia and anemia to research if it reduces the risk of adverse outcomes in this patient population.

Since this is ongoing study and we still don't have specific data, as a conclusion we can only enhance the importance of preoperative preparation based on our current clinical experience. We hope our study will help to reduce perioperative risks and in hospital stay by careful preparation and optimization of patients before free flap tissue transfer surgery.

KEYWORDS: head and neck surgery; free flap reconstruction

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AB44

Patient safety in the quality assurance program in the Zagreb University Hospital Centre

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ABSTRACT

During the last 12 years University Hospital Centre Zagreb develop quality assurance plan and program based on the recommendations of the Ministry of Health and with the purpose to ensure, improve, promote and monitor the quality of healthcare in our hospital. Quality assurance program is written in the form of the Quality manual that include policies and procedures in accordance with the requirements of the standards contained in the Rulebook on health care quality standards and the manner in which they are applied (DVI-NN 79/11). The Quality manual also include all corresponding national and international standards in health. Application of the procedures specified in the manual is mandatory within all clinics, clinical institutes and other organisational units. A large part of the manual is devoted to the issue of patient safety that include: measurement, analysis and monitoring of clinical, non-clinical medical services of each organizational unit at planned intervals (<12 months); systematic review/analysis at the level of individual institutes and organizational units; conduction of internal, administrative quality assessment; application of clinical guidelines, algorithms and/or protocols through clinical/surgical systematic reviews; use of antibiotics and other drugs; use of blood products; review of medical documentation; infection control; use of uniformed informed consents for all high-risk procedures; monitoring and reporting of adverse and serious adverse events; follow-up of deaths and autopsies; follow-up of drugs side effects; follow-up of patients and employees rights, satisfaction and experiences.

AB45

Criteria for surgical intensive care unit admission in the University Hospital Centre

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Intensive care unit (ICU) is a specialist area of the hospital with resources and expertise to look after critically ill patients. The decision to admit patients to intensive care or discharge them is a daily task for intensivists. No set criteria exist for admission, although there are multiple scoring systems designed to assess severity of illness, all with significant limitations. Admission to surgical ICU can be warranted by nature of operating procedure, level of operation emergency, patients medical condition that requires constant hemodynamic monitoring or support of vital functions and acute deterioration of a surgical patient on the ward. Among the surgical population, patients at high risk of complications should be admitted to intensive care postoperatively. Increasing age, comorbidities, poor exercise tolerance, major surgical interventions and emergency surgeries are associated with adverse outcomes.

In our hospital surgical ICU is highly specialized unit which provides educated personnel and resources for taking care of variety of surgical patients. Patient population presenting for elective and emergency surgery in recent years became even older, with multiple comorbidities that require postoperative admission to ICU. That puts a lot of strain on our ICU capacities, which haven't significantly increased during that time. Elective surgeries are often being cancelled due to lack of available intensive care beds. Therefore, decision whether patient should be admitted to ICU must be guided both by available objective tools and practitioners clinical expertise, with the goal of optimizing health care in our hospital.

AB46

Successful resuscitation after cardiac arrest in anaphylaxis and post-resuscitation care in a remote location

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INTRODUCTION: Cardiac arrest following anaphylactic reaction is a rarity happening in only 0.7-2% in all of anaphylactic reactions. Common causes of cardiac arrest in anaphylaxis are: hypovolemic - distributive shock, asphyxia and respiratory failure (angioedema, laryngoedema, bronchospasm). Usually the pathophysiology is intertwined. Chances of successful resuscitation in such case are around 50% by known literature. This is a presentation of a case of a successful cardiac resuscitation after anaphylaxis with no residual neurological deficit, a medical intervention in an outpatient emergency medicine setting in a remote location and intensive post resuscitation care in amedical vehicle lasting for 75 km of drive to the nearest hospital.

CASE REPORT: 47 year old patient in out-patient emergency setting got stung by a wild bee in the chest, previously known to have severe allergic reactions to this particular allergen. The first call to the emergency institute was made by the family of the patient from a location approximately 40 minutes drive to the nearest medical team. The patient during the call presented with symptoms of heavy breathing. Medical team responded immediately by driving to the meeting point, while the family was driving the patient to meet the medical team halfway to buy the precious time since it is crucial to act as fast as possible in such cases. Next call was that the patient was convulsing in the car and then the third call was that the patient has stopped breathing and the family started with chest compression. On the point of meeting patient was laying in the passenger seat, no respirations, no palpable central or peripheral pulse. Medical team resumed with cardiac resuscitation, starting rhythm ventricular fibrillation. After a series of defibrillation's and intravenous adrenaline application, there was a successful conversion to sinus rhythm and return of spontaneous circulation and breathing. During laryngoscopy and tracheal intubation there was no laryngeal edema. Patient was given oxygen, intravenous saline and was kept hemodynamically stable throughout the drive for 75 km to the nearest hospital, a drive on a bad local roads. There was a transitory right sided bronchospasm and impending slow desaturation of oxygen on pulse oximetry which was reversed by application of intramuscular adrenaline. After arriving to the hospital, patient was admitted in the ICU and days later discharged without any neurological deficit.

AB47

How to reduce central line-associated bloodstream infections to zero (and keep it there)

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INTRODUCTION: Central Line-Associated Bloodstream Infections (CLABSI) cause 12-15% mortality rate and add additional cost of 45,000 USD. Bundles were developed to decrease incidence. Here we present our centre bundle and 10 year incidence of CLASBI.

METHODS: Over observed period bundle in our Clinic was regularly updated and improved. At the time of this report universal unification of prepping set, central lines, discontinuing line suturing, using needle less connectors, alcohol cap stoppers, chlorhexidine dressing and external monitoring and validation system for CLASBI in in place.

RESULTS: There is various adherence to bundle with clear correlation to CLASBI with low adherence to bundle.

CONCLUSION: With strict adherence to bundle CLASBI incidence can be minimised or CLASBI can be eliminated altogether.

AB48

Preživjeti ARDS – case report?

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SAŽETAK

Godina 2023. je vrlo signifikantna za područje mehaničke ventilacije. To je godina prestanka COVID pandemije(1), koja je pokazala potrebu za edukacijom iz područja mehaničke ventilacije, godina nove definicije ARDS(2) te godina novih smjernica za liječenje bolesnika sa ARDS-om(3). ARDS je i dalje vrlo heterogen sindrom sa više etioloških uzroka i više lica kliničke slike. Unatoč sveopćem poznavanju definicija i simptoma vrlo često je kasno dijagnosticiran, a ponekad i krivo dijagnosticiran. Tomu doprinosi i nedostatak opipljivih parametara pa nam uglavnom ostaje Horowitzov indeks kao jedini matematički parametar za dijagnozu ARDS-a, koji nas zna zavarati. (4)

Ovdje želimo prezentirati slučaj bolesnika starog 62 godine, koji je na imunoterapiji zbog hepatocelularnog karcinoma (BCLC C Vp3) liječenog u našoj Jedinici intenzivne medicine. 2 dana prije prijema javlja se u bolnicu zbog crvenila potkoljenice te je primljen i opserviran, kada je indiciran operacijski zahvat drenaže apscesa. Perioperacijski se pojavljuje potreba za kisikom na masku, te je bolesnik 48h nakon operacije primljen u JIL u slici akutnog respiratornog zatajenja te hipotenzivan. Pri prijemu je odmah intubiran i postavljen na mehaničku ventilaciju. Unutar 24h od prijema učinjen je UZV pluća koji pokazuje bilateralne infiltrate, uz Horowitz indeks od 56 mmHg, te anamnezu celulitisa i sepse i naglo nastalog respiratornog zatajenja postavljena je dijagnoza teškog ARDS-a. Učinjena je dijagnostika plućne mehanike tj. P/V loop te je po njoj učinjen recruitment manevar u ukupnom trajanju 35s sa pauzom od 10s na maksimalnoj vrijednosti tlaka te postavljena mehanička ventilacija sa 15 PEEP-a. Obzirom na visoke vrijednosti proteina akutne faze i upalnih markera zaključeno je da se radi o hiperinflamatornom tipu ARDS-a što je dodatno potkrijepilo potrebu za recruitmentom i ventilacijom na višim vrijednostima PEEP-a. Osim etiološkog liječenja antibioticima, također je u terapiju uključena i hemoperfuzija Seraph filterom u trajanju 8h te kasnije Oxiris filterom u trajanju ukupno 3 dana. Njegov boravak možemo podijeliti u 3 faze. U prvoj akutnoj fazi koja je trajala 3 dana bolesnik je bio u prone poziciji, sediran i relaksiran, kontrolirano mehanički ventiliran zbog izrazitog respiratornog drive-a, te na visokim dozama vazoaktivne potpore. Nakon inicijalno burnog prvog dana prati se normalizacija vrijednosti paO₂ i paCO₂ kao i pH. Nakon 3. dana dolazi do stabilizacije stanja te se bolesnika prevodi u spontani modalitet disanja i dalje na visokim vrijednostima PEEP-a, kada se postupno smanjuje frakcija inspiratornog kisika. Započeta je prvo pasivna a kasnije i aktivna terapija te je bolesnik u kasnijoj fazi u kontaktu i aktivno provodi fizikalnu terapiju. Nakon 12 dana prelazi se u treću fazu liječenja sa postupnim skidanjem respiratorne potpore; na niskom FiO₂ postupno se smanjuje razina PEEP-a prateći respiratorne parametre, SpO₂ te bolesnikov respiratorni drive i razinu ugone. Tijekom 16. dana boravka bolesnika se prebaci na potporu nosnom kanilom visokog protoka koja se u narednih nekoliko dana potpuno smanji. 19. dana bolesnik je otpušten iz JIM-a na odjel te je nakon nekoliko dana otpušten kući i u daljnje kontrole hematologa kako bi liječio osnovnu bolest.

Ovaj prikaz slučaja naglašava važnost ranog prepoznavanja ARDS-a, sveobuhvatnog i složenog pristupa liječenju te implementaciji medicine utemeljene na dokazima. Potvrda je potrebe za daljnjim istraživanjem pojedinih fenotipova ARDS-a zasebno jer se radi o heterogenom sindromu.

AB49

Surgical APGAR score – identification of high risk patient need ICU in operating room

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Surgical APGAR score (SAS) is reliable index for identification of high risk patient who need ICU. Based on patient's estimated amount of blood loss, lowest heart rate, and lowest mean arterial pressure it predicts major complication and death after the surgery. In fact, all these variables are measure of hemodynamic instability. In patients with a score ≤ 4 (total amount is 10), major complications or death occurred in more than every second patient within 30 days. Advantages of this score that it is simple, consists of only three variables, easily calculated immediately after the operation, and can help anesthesiologist to decide about further monitoring and treatment without advanced technology. Furthermore, management of patient should be tailored to prevent low SAS. Besides preventing hemorrhage, it is important to maintained mean blood pressure and normal heart rhythm where pulse above 85/min has negative impact. Different studies show that SAS can predict postoperative complication and death within 30 days after intraabdominal, vascular, trauma surgery, both in elective and in emergency situations.

AB50

Individualized approach and management of coagulopathy in patients with liver cirrhosis and portal hypertension admitted in ICU

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ABSTRACT

Individualized approaches and a better understanding of coagulopathy complexity in patients with end-stage liver disease (ESLD) evolved over the last decades, allowing us to treat patients successfully when undergoing any kind of invasive interventions. ESLD patients are at risk of thrombosis and bleeding during minimally invasive interventions or surgery, which is associated with a worse outcome in this patient population. Despite deranged quantitative and qualitative coagulation laboratory values, prophylactic coagulation management is not necessary for patients who do not bleed. Transfusion of blood and blood products carry its own independent risks for morbidity and mortality, including modulation of the immune system with increased risk for nosocomial infections. Transfusion of fresh frozen plasma (FFP), which was routine in past for correction of hemostasis disorders in ESLD patients, is additional volume overload and can aggravate portal venous pressure. Increased portal venous pressure might significantly increase bleeding. Successful coagulation management in these complex patients should be based not only on standard coagulation tests (SCT) but also on viscoelastic tests (VET) analysis, as VET reflects on such way coagulation dynamics that enables immediate (10 min after starting an analysis) reaction and individualized approach to patients.

This narrative review will examine the pathophysiology of deranged hemostasis in ESLD, difficulties with evaluating the coagulopathies in patients with liver disease, use of VET assays and management of coagulopathy using coagulation factors in timely manner, preventing complications with overload with FFP.

METHODS: A selective literature research in PubMed as the main database was performed with the following keywords: ESLD, coagulopathy, cirrhosis, portal hypertension, Viscoelastic tests.

KEY WORDS: ESLD, coagulopathy, cirrhosis, portal hypertension, Viscoelastic tests.

8.

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(AB51 – AB69)

AB51

“Fast-track” operacija za totalnu endoprotezu kuka kod pacijenta s teškom kroničnom opstruktivnom plućnom bolesti i ovisnosti o opijatima

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UVOD: “Fast-track” operacije (FTS, fast-track surgery) obuhvaćaju različite tehnike s ciljem poboljšanja oporavaka i smanjenja postoperativnih komplikacija nakon elektivnih operacija. To se postiže odgovarajućim odabirom pacijenata, preoperativnom optimizacijom stanja pacijenta, anesteziološkim tehnikama, ranom mobilizacijom i kontrolom boli (1). Jasni kriteriji selekcije pacijenata s teškim komorbiditetima nisu definirani. Ovaj slučaj prikazuje pacijenta s teškim komorbiditetima koji je uspješno otpušten na kućno liječenje 48 sati nakon operacije.

PRIKAZ SLUČAJA: Prikazujemo slučaj 60-godišnjeg pacijenta hospitaliziranog zbog elektivne operacije totalne endoproteze kuka (TEP). Liječi se od KOPB-a stadija GOLD-D, ovisnosti o opijatima, kroničnog hepatitisa C te je dugogodišnji pušač. Dva sata prije operativnog zahvata pacijent je dobio preemtivnu analgeziju – celekoksib i paracetamol, tijekom zahvata deksametazon, ketamin i lidokain kao dio multimodalne analgezije, a operacijski rez je infiltriran lokalnim anestetikom. Zahvat je učinjen u spinalnoj anesteziji kloroprocainom (50 mg). Postoperativno je dobio analgeziju prema lokalnom FTS protokolu i vertikaliziran je isti dan. Otpušten je na kućno liječenje 48 sati nakon zahvata dobrog općeg stanja.

RASPRAVA: Perioperativna priprema pacijenata s KOPB-om i ovisnošću o opijatima predstavlja izazov za FTS protokol. Kod takvih pacijenata se preporučuje multimodalna analgezija bez opioda te regionalna anestezija (2). Primjena kratkodjelujućih lokalnih anestetika za spinalnu anesteziju i dobro planirana postoperativna multimodalna analgezija omogućuje ranu postoperativnu mobilizaciju (1). Prikazom ovog slučaja želimo istaknuti da se indikacije za FTS mogu proširiti i na pacijente s teškim komorbiditetima uz dobro perioperativno planiranje.

ZAKLJUČAK: Suradnja pacijenta, anesteziologa, kirurga i fizioterapeuta je važan preduvjet za uspješnu provedbu FTS protokola kod pacijenata s teškim komorbiditetima.

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AB52

Croatian national audit on videolaryngoscopes and alternative intubation devices in the era of COVID-19 pandemic

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INTRODUCTION: Videolaryngoscopy (VL) is the recommended strategy for airway management in COVID-19 patients and guidelines recommends that all anesthesiologists should be trained to use and have immediate access to the device. However, the availability of VL in hospitals and its use may vary, as well as the choice of the device and necessary training. Our primary aim was to investigate data on availability of VL in Croatia, its use, the choice of the device and its implementation, with special consideration of COVID-19 management.

MATERIALS AND METHODS: An electronic survey was sent to all Croatian hospitals that have anaesthesiology service available. The survey was designed to examine data on availability and use of VL with special consideration of COVID-19 wards. The survey was conducted between 1.03.2021 and 30.08.2021.

RESULTS: Response rate was 83%. VL was available in 86% of hospitals and the best supplied areas were intensive care units, general surgery and gynecology/obstetrics. The most common VL devices were Bonfils, C-MAC and C-MAC D-blade. The choice of VL was mainly based on centralized hospital procurement and informal introduction was found to be the most frequent training method. The VL was mainly used in Croatian hospitals in cases of difficult airway or as a backup method after failed intubation. Only 16% of hospitals reported regular use in everyday practice. Even though, VL was available in 64% of COVID-19 wards, only 21% of hospitals reported routine use.

CONCLUSION: Although VL is available in the majority of Croatian hospitals, its use is still mainly restricted to difficult airway scenarios. Use of VL in COVID-19 management is also low and education on the method is still mainly informal. Based upon our results better implementation in practice should be targeted, as well as formal skill trainings especially regarding COVID-19 care.

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AB53

Anesteziološki pristup kod iBEVAR metode liječenja aneurizme torakoabdominalne aorte – prikaz slučaja

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UVOD: Od prvog postavljanja aortalnog stent grafta prošlo je 30 godina. Endovaskularna metoda iBEVAR (inner branched endovascular aortic repair) razvija se kako bi dijelom mogla zamijeniti uobičajeni otvoreni kirurški zahvat liječenja torakoabdominalne aneurizme, koji inače nosi povišen rizik razvoja perioperacijskih komplikacija.

PRIKAZ SLUČAJA: Prezentiramo slučaj 73-godišnje bolesnice s torakoabdominalnom aneurizmom aorte (TAAA), Crawford V, koja uz pridružene komorbiditete ima učinjenu rekonstrukciju aneurizme uzlazne aorte i luka Frozen Elephant Trunk (FET) graft stentom i postavljen TEVAR, a kod koje je postavljena indikacija za naprednu metodu liječenja iBEVAR-om, prvi puta u Hrvatskoj. Zahvat je učinjen u općoj balansiranoj anesteziji u operacijskoj dvorani za digitalnu supstrakcijsku angiografiju (DSA) s hibridnim uvjetima. U prijeoperacijskoj pripremi postavljen je prošireni anesteziološki monitoring (invazivno mjerenje tlaka, centralni venski kateter, dijalizni kateter, monitoring bispektralnog indeksa, centralna i periferna regionalna oksimetrija, grijač infuzija, temperaturna sonda, nazogastrična sonda, satna diureza, spinalni kateter uz kontinuirano mjerenje intrakranijalnog tlaka). Anesteziološki monitoring bio je prilagođen endovaskularnim pristupima (desna brahijalna arterija i obje femoralne arterije). Unatoč endovaskularnom pristupu, intraoperativni gubitak krvi procijenjen je na 1000 ml, a bolesnica je tijekom cjelokupnog zahvata hemodinamski stabilna uz transfuzijsko liječenje.

Metodom iBEVAR po postavljanju tri središnja grafta, implantirano je 11 komponenti za visceralne ogranke. Pacijentica je ekstubirana istoga dana te se trećeg postproceduralnog dana otpušta na odjel. ZAKLJUČAK: Zahvaljujući modernoj tehnologiji i multidisciplinarnoj suradnji, minimalna invazivnost metode liječenja iBEVAR-om dolazi do punog izražaja. Rezultira manjim brojem kirurških komplikacija, kraćim boravkom u jedinici intenzivne medicine, minimalnim trajanjem mehaničke ventilacijske potpore te značajno manjom potrebom za dugotrajnom perioperacijskom analgezijom.

AB54

Cardiothoracic intensive care units and regional anaesthesia – a review

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Cardiac surgeries are considered extremely painful procedures. Traditionally, opioids have been used in these particular surgeries due to their cardioprotective and haemodynamic properties. However, there has been a trend towards fast-track surgery and large quantities of opioids diminish the possibility of early extubation. In the past two decades the analgesic paradigm has shifted to an opioid-sparing, multimodal approach.

Neuraxial anaesthesia has scarcely been used due to the threat of neuraxial hematoma and haemodynamic instability caused by sympathetic blockade. Local anaesthetics (LA) and regional anaesthesia should have no effect on haemodynamic stability, but would supplement the fast-track approach by positively affecting the analgesic profile of these patients. Most blocks have seen an upstroke in their popularity due to ultrasound-guided techniques, whereas certain ones such as the parasternal block are possible because of them. In this review, we provide an overview of the currently used regional blocks in cardiothoracic patients.

There has been a trend towards enhanced recovery after surgery (ERAS) and regional blocks are one of the pillars of it. Opioid-heavy analgesia is associated with delayed extubation, respiratory complications, nausea and vomiting, urinary retention in the perioperative period.

Aforementioned regional blocks are comparable to neuraxial ones in pain control, but with a much safer haemodynamic and anticoagulation profile.

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AB55

Preoperativni pristup bolesnicima s posebnim potrebama u jednodnevnoj oralnoj kirurgiji

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UVOD: Poznato je kako preoperativno pripremati bolesnika za anesteziju. Međutim, ono o čemu se malo govori je pristup bolesniku neposredno pred ulazak u anesteziju i sam zahvat, što je možda najvažnija stavka u pripremi djece i odraslih s posebnim potrebama. Pozicija s koje kreće odnos anesteziologa i bolesnika uvelike određuje kojim će smjerom dalje teći anestezija. Nepoznat prostor, gladovanje, invazivni postupci ponekad predstavljaju nepremostiv problem. Što je boravak stresniji, suradnja bolesnika je slabija. Plakanje i opiranje koje često bude agresivno i opasno po bolesnika i osoblje mogu dodatno ugroziti pacijenta. Pojačava se sekrecija, iritabilnost dišnog puta, uz veću mogućnost razvoja laringospazma i bronhospazma. Borba pojačava i rad disanja, metaboličke zahtjeve organizma te potrošnju kisika. Za nas je izazov dobiti bolesnika da bude miran i suradljiv, s tim da brzo nakon buđenja iz anestezije mora biti svjesan, bez bolova i mučnine, spreman da u kratkom roku bude otpušten iz bolnice.

REZULTATI I METODE: Prikazujemo naše iskustvo iz KB Dubrava koje se temelji na dugogodišnjoj praksi liječenja stomatoloških bolesnika s posebnim potrebama.

ZAKLJUČAK: Dijete koje mirno ulazi u salu nosi znatno manji rizik za respiratorne komplikacije. Poželjno je da se bolesnicima s posebnim potrebama liječenje učini što prihvatljivijima i manje stresnim. S naše strane, kod odraslih bolesnika nužno je maksimalno se prilagoditi potrebama pacijenata, dok je za malu djecu važno prisustvo roditelja, njihova involviranost u skrb i adekvatna psihološka priprema. Time se uvelike može olakšati uvođenje u anesteziju uz manji postotak komplikacija za anesteziologa i samog pacijenta.

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Ultrasound-guided internal jugular vein catheterization with wire-in-needle technique and lateral oblique approach – A safe choice in different patient positioning

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ABSTRACT

Ultrasound-guided internal jugular vein (IJV) catheterization is mostly performed as in the blind technique of insertion. Supine position is sometimes improper or impossible. With ultrasound employment, catheterization can be performed in different situations, including lateral decubital, sitting or prone position.

MATERIALS AND METHODS: We approach the internal jugular vein from its lateral side, using a lateral oblique US view, at the level of the cricoid cartilage. With „wire-in-needle” technique a preloaded needle-wire complex is advanced by the “in-plane-technique”. When the tip of the needle becomes visible in the vein, the wire can be positioned at the desired depth, without laying down the US probe. The position is checked by US transversal view. Only after that the dilatator can safely be advanced, and the central venous catheter placed in position.

RESULTS AND DISCUSSION: This technique provides a simultaneous view of both the body and the tip of the needle, as well as surrounding structures. Wider transversal diameter of the IJV is seen, with safer and easier needle insertion, and better visualization of the guidewire. Preloaded needle-wire complex enables continuous US estimation of a needle and a guidewire position. There is no need to put down the probe in order to disconnect a syringe from the needle, risking unwanted needle movements and complications. Pneumothorax is avoided by IJV cannulation at the cricoid level.

CONCLUSION(S): Ultrasound guided IJVC can be performed quickly and safely in any patient position, both in emergency and elective circumstances. This procedure is performed by only one operator.

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Jednodnevna kirurgija za ORL zahvate Kliničkog bolničkog centra Zagreb – sedmogodišnje iskustvo
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UVOD: Od veljače 2016. godine u sklopu Zavoda za jednodnevnu kirurgiju, Kliničkog bolničkog centra Zagreb obavljaju se i kirurški zahvati adenotomije, miringotomije, ispravljanje stršećih uški, septoplastike. Zahvati se obavljaju u lokalnoj ili općoj anesteziji u jutarnjim satima, a nakon operativnog zahvata pacijenti se uz pratnju smještaju u sobu za buđenje, a potom u opservaciju do otpusta.

METODE: Pregled knjiga protokola, analiza i obrada prikupljenih podataka od veljače 2016. godine do veljače 2023. godine.

REZULTATI:

Rezultati su prikazani u Tablici 1.

Tablica 1. Operativni zahvati u jednodnevnoj kirurgiji Klinike za otorinolaringologiju (BJK), KBC-a Zagreb. U tablici je naveden broj i vrsta zahvata po godinama te korištene anesteziološke tehnike

BJK	2016. (OD 08.02.2016)	2017.	2018.	2019.	2020.*	2021.	2022.
OETA	93	66	59	85	58	26	112
LMA	2	0	17	50	1	5	5
OA MASKA	0	0	0	0	0	2	4
MAC/LOK.P OT	0	4	7	18	8	51	25
UKUPNO ANESTEZIJ A	95 (100%)	70 (100%)	83 (55%)	153 (26%)	67 (19%)	84 (12%)	146 (21%)
UKUPNO BJK	95	70	150*	597*	344*	696*	694*
BROJ DANA U TJEDNU	1	2	2	2+1	2+1	2+1	2+1
OTOKLIZA	n/a	n/a	11	26	9	4	21
ADENOIDE KTOMIJA	n/a	n/a	51	59	18	16	58

BJK	2016. (OD 08.02.2016)	2017.	2018.	2019.	2020.*	2021.	2022.
SEPTOPLA STIKA	n/a	n/a	11	44	31	8	33
OSTALO [#]	n/a	n/a	1	24	9	56	34

*ostatak zahvata su mali kirurški zahvati učinjeni u lokalnoj anesteziji

resekcija frenuluma, kožni tumori

ZAKLJUČAK: Za dobre rezultate rada u jednodnevnoj kirurgiji, osim opreme i prostora, ključan je i timski rad svih dionika, uz visoko educirano i iskusno osoblje. Prema našem iskustvu, educiranost, znanje i vještine anestezioloških timova ključne su za dobru implementaciju i ustroj jednodnevne

kirurgije u otorinolaringologiji s obzirom da je dišni put nerijetko zajedničko polje rada i operatera i anesteziologa.

AB58

Masivna plućna embolija nakon frakture potkoljenice konzervativno liječene privremenom imobilizacijom sadrenom udlagom – prikaz slučaja

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UVOD: Venska tromboembolijska bolest (VTE), koja se klinički manifestira kao duboka venska tromboza ili plućna embolija (PE), je treći kardiovaskularni sindrom po učestalosti, nakon infarkta miokarda i moždanog udara. Poznat rizični čimbenik su frakture donjih ekstremiteta (1). Ovaj slučaj prikazuje pacijenticu konzervativno liječenu zbog frakture donjeg ekstremiteta koja je razvila masivnu PE.

PRIKAZ SLUČAJA: Prikazujemo 60-godišnjakinju koja dolazi na redovitu kontrolu radi frakture kondila tibije i glavice fibule bez pomaka. Ozljeda je nastala 10 dana prije kontrole, a fraktura je liječena konzervativno imobilizacijom. Osim prekomjerne tjelesne težine, pacijentica nije imala drugih komorbiditeta. Tijekom kontrolnog pregleda postaje dispnoična, a posljednja 3 dana navodi slabu toleranciju napora i otežano disanje. Periferna saturacija kisika je bila 60 %, tlak 90/60 mmHg i puls 120/min. CT angiografija je pokazala bilateralan embolus u glavnom lijevom i desnom bronhu. Pacijentica je premještena u KBC Zagreb gdje je učinjena hitna embolektomija te je nakon oporavka otpuštena na kućnu njegu dobrog općeg stanja.

RASPRAVA: Incidencija DVT-a nakon privremene imobilizacije donjeg ekstremiteta varira 4% to > 16% (2), a posljedica može biti razvoj PE. U smjernicama ne postoji jasan stav o primjeni farmakološke trombopofilakse kod konzervativno liječenih fraktura donjih ekstremiteta. Dok neke smjernice ne preporučuju farmakološku trombopofilaksu u takvim slučajevima (3), druge preporučuju kada rizik VTE nadilazi rizik krvarenja (4). Potrebno je osvijestiti mogućnost razvoja komplikacija čak i kod konzervativno liječenih fraktura.

ZAKLJUČAK: Prikazom ovog slučaja želimo istaknuti da čak i konzervativno liječene frakture potkoljenice predstavljaju rizik za razvoj PE, osobito kod pacijenata koji imaju više rizičnih čimbenika.

AB59

Metforminom uzrokovana metabolička acidoza kod bolesnice s infekcijom kirurške rane nakon osteosinteze potkoljenice – prikaz slučaja

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UVOD: Metforminom uzrokovana laktacidoza rijetka je i ozbiljna komplikacija, čiji rizik raste kod bolesnika starije životne dobi, a povećava se kod patoloških stanja kao što su sepsa, dehidracija, preoperativno gladovanje, oštećenja bubrežne funkcije i sl.

PRIKAZ SLUČAJA: Bolesnica u dobi od 83 godine hospitalizirana je zbog infekcije kirurške rane nakon prethodno učinjene osteosinteze zbog trimaleolarnog prijeloma potkoljenice. Inače je bolovala od šećerne bolesti tipa dva liječene peroralnih antidiijabetikom (linagliptin/metformin), koji je ukinut 24 h prije planiranog operacijskog zahvata ekstrakcije osteosintetskog materijala i vanjske osteosinteze potkoljenice te je ponovno uveden prvi poslijeoperacijski dan. Antimikrobna terapija je uvedena prema antibiogramu uzetog brisa rane. Poslijeoperacijski tijek se komplicira svakodnevnom mučninom, povraćanjem, a zatim i poremećajem svijesti, respiracijskom insuficijencijom, akutnim bubrežnim zatajenjem uz hemodinamsku nestabilnost te se bolesnica pod slikom septičkog šoka prima u jedinicu intenzivnog liječenja. U laboratorijskim nalazima pratio se porast kreatinina i metabolička laktacidoza (pH 6,7 BE – 31, bikarbonati 3, laktati 16 mmol/L). Uz suportivnu terapiju se odmah započne sa cvvhdfom. Unatoč svim poduzetim mjerama dolazi do smrtnog ishoda.

ZAKLJUČAK: Prikazom ovog slučaja želimo ukazati na mogućnost prevencije metforminom uzrokovane laktacidoze ukidanjem lijeka 48 h prijeoperacijski, a u slučaju dugotrajnijeg gladovanja, dehidracije, pojave sepse, pogoršanja bubrežne funkcije i ranije uz ponovno uvođenje lijeka po prestanku navedenih rizičnih čimbenika.

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AB60

Biomarkers of mild traumatic brain injury (TBI) – current position and future perspectives

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INTRODUCTION: Around 50% of the general population will suffer a traumatic brain injury (TBI) during their lifetime and about 80-90% of those will be mild TBIs. Currently the main diagnostic modality for TBI is computed tomography (CT). However, CT scans are costly and expose the patients to radiation. Therefore, a need exists for biochemical biomarkers that may detect mild TBI with reliable diagnostic accuracy.

MATERIALS AND METHODS: A literature search was performed using the MEDLINE, Scopus, Web of Science and Google scholar databases with the keywords “biomarkers” and “mild traumatic brain injury”. Original research articles were included that describe the diagnostic accuracy and characteristics of select biomarkers in mild TBI.

RESULTS: If performed within 3 hours from the traumatic event, S100B is a reliable marker of mild TBI (96.4% sensitivity, 33.4% specificity, negative predictive value 99.6%). Glial fibrillary acid protein (GFAP) has been shown to predict the need for CT scans with an area under the curve (AUC) of 0.86 and the need for neurosurgical intervention with an AUC of 0.94. Combinations of biomarkers are showing promising results: a combined assay of heart fatty acid binding protein (H-FABP), GFAP, S100B and interleukin-10 (IL-10) demonstrated 100% sensitivity and 55.9% specificity for diagnosing mild TBI.

CONCLUSION: Although biomarkers for mild TBI have satisfactory sensitivities, their clinical use is limited due to their low specificities. Combined assays show promise and higher specificities than singular biomarkers, without sacrificing sensitivity. Future research should be aimed at discovering the optimal combination of mild TBI biomarkers.

AB61

Neuromuskularni monitoring u jednodnevnoj kirurgiji

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SAŽETAK

Upotreba neuromuskularnih blokatora tijekom opće anestezije nosi rizik od rezidualne neuromuskularne blokade u poslijeoperacijskom periodu, a obilježava je slabost mišića nakon prethodne primjene blokatora. Rezidualna blokada može ugroziti bolesnika uzrokujući ponajprije respiratorne komplikacije zbog neodgovarajućeg oporavka funkcije respiratornih mišića i neodgovarajuće zaštite dišnog puta tijekom gutanja. Posljedice mogu biti aspiracija, nastanak opstrukcije dišnog puta, hipoksija i razvoj atelektaza. Rezidualna blokada je jedan od vodećih razloga hitnog prijema bolesnika u jedinicu intenzivnog liječenja nakon operativnog zahvata.

Tijekom operativnih zahvata u jednodnevnoj kirurgiji gotovo redovito se koriste neuromuskularni blokatori. Broj zahvata u jednodnevnoj kirurgiji, a time i broj bolesnika koji se nakon opće anestezije isti dan otpušta kući u stalnom je porastu. Stoga je važno precizno praćenje neuromuskularne blokade koja omogućuje dobre uvjete za rad operateru, ali i brz i pouzdan oporavak bolesnika na kraju operativnog zahvata.

AB62

Zbrinjavanje otežanog dišnog puta – "awake" intubacija u bolesnika s ranijom radikalnom disekcijom vrata – prikaz slučaja

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UVOD: Predstavljamo slučaj zbrinjavanja otežanog dišnog puta u bolesnika s ranijom radikalnom disekcijom vrata. Radi se o pacijentu koji je podvrgnut operativnom zahvatu perkutane stabilizacije L1 kralješka uslijed frakture istog. U sklopu prijeoperacijske pripreme pacijent je ocijenjen kao ASA (American Society of Anesthesiologists) score 4 uslijed multiplih komorbiditeta. Po učinjenom kliničkom pregledu postavi se sumnja na otežani dišni put te se pristupi prema važećim smjernicama Američkog društva za anesteziologiju (American Society of Anesthesiologists) te Društva za otežani dišni put (Difficult Airway Society).

METODE: Prethodno postupku indukcije u anesteziju učinjena je adekvatna priprema za postupak "awake" intubacije uz "spray as you go" tehniku te uz sedaciju Remifentanilom (20 mcg/1mL) na TCI (Target Controlled Infusion) pumpi kao lijekom izbora za analgosedaciju pacijenta.

REZULTATI: Kod navedenog pacijenta učinjena je "awake" intubacija prema smjernicama te postupak protekne uredno, po učinjenom pacijent se uvede u opću balansiranu anesteziju te se učini navedeni operativni zahvat. Po završenom zahvatu pacijent se probudi te ekstubira, u nastavku diše spontano i suficijentno.

ZAKLJUČAK: "Awake" intubacija je postupak koji bi trebao postati zlatni standard zbrinjavanja otežanog dišnog puta kod pacijenata kod kojih imamo opravdanu sumnju na mogući otežani dišni put. Svakako spada u jednu od vještina koje je potrebno usavršavati, pogotovo u situacijama elektivnog operacijskog programa kako bi mogli adekvatno reagirati u situacijama hitnog zbrinjavanja dišnog puta.

AB63

Assessment of patients' readiness for discharge in ambulatory surgery

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ABSTRACT

INTRODUCTION: Over the past few decades ambulatory surgery has become the standard of elective surgical practice in healthcare systems of many developed countries. Admission to hospital, surgical procedure and discharge home on the same day have provided many advantages, economical (medical costs savings) and medical (reduced risk of hospital acquired infections and venous thromboembolism, reduced perioperative stress, etc.). Patients' safety remains the absolute imperative of such medical practice.

DISCUSSION: Patients' safety in ambulatory surgery is based on careful anaesthetic preoperative assessment and preparation, improved anaesthetic and surgical techniques, protocol-driven discharge home, precise verbal and written instructions on how to behave after surgery and same day discharge and all members of the multidisciplinary team trained in ambulatory surgery practice. Scoring systems evaluating patients' readiness for discharge, some of which have been used since 1970s, are the base of numerous current ambulatory surgery discharge protocols. Advanced and locally customized scoring systems, complemented with clinical judgment, are reliable and easy to practice means of discharge readiness evaluation. Incidence of postoperative complications and consequential hospital re-admissions are hence reduced to merely sporadic cases what makes safe and effective ambulatory surgery.

CONCLUSION: Good patient-medical staff communication, fast postoperative recovery with no significant complications, informed and safe discharge based on clear discharge criteria and fast resumption of normal preoperative activities are fundamental to successful ambulatory surgery and patients' satisfaction.

AB64

Post ICU syndrome

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Life expectancy increases, numerous comorbidities, more severe disease stages and advances in medical techniques have resulted in an increase in the need for intensive care medicine, especially in the surgical profession. The success of acute treatment of life-threatening patients is increasing due to advances in medical technology and therapy. On the other hand, it has been shown that intensive treatment leaves numerous chronic health consequences that prevent healing and a quality life with increased mortality and morbidity. Chronic consequences of intensive care medicine are called post-intensive syndrome - PIS (eng. Post ICU syndrome). PIS includes newly acquired or worsened cognitive function, mental status, post-traumatic stress syndrome, myopathy, neuropathy and general weakness of the patient. PIS occurs in 50 to 70% of patients. Risk factors include long-term mechanical ventilation, metabolic disorders, steroids, sepsis, inadequate sedation and analgesia, late rehabilitation and other undefined factors. Despite awareness of the importance of PIS, its prevention and treatment in practice is unsatisfactory and difficult due to the interaction of numerous risk factors, difficult diagnostics, non-compliance with guidelines and poor patient monitoring. The long-term health consequences of PSI compromise the progress and success of acute intensive care and increase healthcare costs. Clear guidelines for the evaluation, prevention, diagnosis and treatment of PSI are needed in order to improve not only acute survival, but also to enable maximum recovery. The paper will comment on the procedures that can affect the prevention and treatment of PSI.

AB65

Can Artificial Intelligence classify patients' perioperative risk?

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INTRODUCTION: Recent developments in artificial intelligence (AI) have allowed computers to carry out many tasks previously reserved for humans.¹ The newest addition to the AI family comes from OpenAI in the form of a chatbot. ChatGPT is a service built on multi-layer transformer networks built to ingest large amounts of text and allow human-like conversation.² American society of anesthesiologists (ASA) maintains a 6-degree classification system for perioperative risk management.³ This study attempts to test the viability of this chatbot to correctly classify patients into ASA classes.

METHODS: 28 patient assessments were generated. Each examination consisted of age, sex, past history, current status and symptoms, current therapy, and planned surgical and anaesthetic management. The synthesized assessments were given to three anesthesiologists for them to classify according to the ASA classification and to ChatGPT.

RESULTS: ChatGPT performed as well as anesthesiologists. There was some divergence in human classification as their classes matched in 73.8% of cases and ChatGPT agreed with those estimates 72.6% of the time, making it comparable.

DISCUSSION: Though the sample tested is small it still demonstrates the power of ChatGPT and new AI tools. Taking random guesses ChatGPT would have been correct only 20% of the time. Agreeing with an anesthesiologist on every assessment would have yielded a 73.8% result due to the study methodology. Tools like this will become a valuable tool in therapy as well as patient education.

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AB66

Ruptura torakoabdominalne aneurizme aorte – prikaz slučaja

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UVOD: Disekcija aneurizme torakoabdominalne aorte (TAAA) predstavlja iznimnu hitnoću i nezbrinuta vodi do gotovo stopostotne smrtnosti, te zahtijeva hitno kirurško ili endovaskularno liječenje. Sam postupak je zahtjevan, kako za operatore, tako i za anesteziologe. Obilježen je značajnim gubitkom krvi te hemodinamskom nestabilnošću. Patient blood management (PBM), kao multidisciplinarni pristup temeljen na dokazima, ima ulogu u hitnim velikim vaskularnom zahvatima u ciljanom davanju krvnih pripravaka, te istovremenom izbjegavanju nepotrebnih transfuzija.

PRIKAZ SLUČAJA: Prethodno zdrav 52-godišnji muškarac javio se u hitnu službu zbog jakih bolova u abdomenu uz mučninu i povraćanje od jutra. Kliničkim pregledom i slikovnim metodama dijagnosticirana je TAAA s rupturom na razini L2 kralješka i retroperitonealnim hematoma. Pacijent je podvrgnut hitnoj torakofrenolaparotomiji, resekciji i rekonstrukciji abdominalne aorte implantatom. Kako bi se minimizirao gubitak krvi, s kirurške je strane primijenjena pažljiva hemostaza i cell-saver, dok je s anesteziološke strane uloženi napor u liječenje anemije i prevenciju koagulopatije održavanjem normotermije, acidobaznog i elektrolitskog balansa, hemodinamske stabilnosti i optimizacijom mehaničke ventilacije. Transfuzija krvi i krvnih pripravaka davana je ciljano prema kliničkom stanju pacijenta i fazi operativnog zahvata, rezultatima point-of-care testova. Pacijent je postoperativno liječen u jedinici intenzivnog liječenja (JIL), gdje je boravak bio kompliciran razvojem ARDS-a i sepsom, od čega je uspješno liječen.

ZAKLJUČAK: Kod velikih hitnih vaskularnih zahvata strategije PBM-a za minimalizaciju transfuzije su ograničene. Anesteziolog i kirurg moraju biti pripremljeni na mogućnost masivnog krvarenja i transfuzije; no multidisciplinarnim pristupom usmjerenim na minimalizaciju gubitka krvi, održavanje homeostaze i optimizaciju fiziološke rezerve anemije, uz potporu monitoringa i point-of-care dijagnostike, moguće je sigurno zbrinuti pacijenta uz transfuziju manje alogenih krvnih pripravaka nego što se tradicionalno očekuje.

KLJUČNE RIJEČI: patient blood management; disekcija aneurizme torakoabdominalne aorte; transfuzija

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Specifičnosti anestezije za postavljanje intragastričnog balona kod pacijenta s Downovim sindromom – prikaz slučaja

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SAŽETAK

UVOD: Pretilost je složena multifaktorijalna bolest, definirana kao indeks tjelesne mase veći ili jednak 30 kg/m². Intragastrični balon je endoskopski barijatrijski tretman pretilosti. Pretili pacijenti izazov su za svakog anesteziologa zbog povećane mogućnosti razvoja komplikacija.

METODE: Prikazujemo slučaj 25-godišnjeg pacijenta kod kojeg je implantacija intragastričnog balona bila metoda liječenja pretilosti.

REZULTATI: Pacijent, BMI 40.6 kg/m², koji boluje od sindroma Down te posljedično pretilosti NIDDM, liječen je endoskopskom barijatrijskom metodom. Za odabir adekvatnog anesteziološkog pristupa bilo je potrebno uzeti u obzir više čimbenika: anatomske specifičnosti dišnog puta, hipotoniju, OSA sindrom, gastroezofagelani refluks, kognitivne sposobnosti. U periodu od 6 mjeseci ostvaruje gubitak od 20 kg na težini i normoglikemiju. Individualiziranim pristupom, sve procedure protekle su bez komplikacija.

ZAKLJUČAK: U literaturi ne postoji konsenzus o najprikladnijoj anestezijskoj tehnici za pozicioniranje i uklanjanje intragastričnog balona, stoga predstavljamo naša iskustva.

KLJUČNE RIJEČI: pretilost, anestezija, intragastrični balon, sindrom Down

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AB68

Usporedba duljine operacijskog zahvata i duljine boravka u bolnici

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UVOD: Izbor lokalnog anestetika (LA) kod spinalne anestezije za aloartroplastiku kuka može utjecati na više faktora, između ostalog na duljinu trajanja operacijskog zahvata i duljinu boravka u bolnici (1). Kloropropain je kratkodjelujući LA koji je uglavnom korišten u ambulantnim uvjetima, a odnedavno se koristi kod FTS (fast track surgery) za aloartroplastiku kuka (2). Njegove prednosti su brzi početak djelovanja, relativno kratko djelovanje, brži oporavak te kraći boravak u bolnici (3).

METODE: Kroz naše istraživanje uspoređivali smo gore navedene perioperacijske faktore kod bolesnika kod kojih je za spinalnu anesteziju korišten kloropropain (skupina 1) sa onima kod kojih je za spinalnu anesteziju korišten bupivakain (skupina 2). U svakoj skupini je bilo 30 ispitanika. Kloropropain je korišten u dozi 50 mg intratekalno, a bupivakain u dozi 15 mg intratekalno, bez intratekalnih adjuvansa.

REZULTATI: U prvoj skupini bolesnika je prosječno trajanje operacije 84.83 ± 16.27 minuta te prosječno vrijeme boravka u bolnici $6,3 \pm 2.99$ dana. U drugoj skupini bolesnika je prosječno trajanje operacije 103.5 ± 35.33 minuta te prosječna duljina boravka u bolnici 10.83 ± 4.19 dana. Bolesnici kod kojih se upotrebljavao kloropropain je prosječna duljina boravka u bolnici statistički bila značajno kraća ($t = -4.82$, $p < 0.0001$) kao i trajanje operacijskog zahvata ($t = -2.63$ $p < 0.05$).

ZAKLJUČAK: Kod bolesnika kod kojih je za spinalnu anesteziju korišten kloropropain je vrijeme trajanja operacije kao i duljina boravka u bolnici kraća u odnosu na bolesnike kod kojih je za spinalnu anesteziju korišten bupivakain. Razlozi za to su brži rad kirurga, multimodalna analgezija u sklopu FTS protokola te raniji povratak motorike i vertikalizacija bolesnika poslijeoperacijski, čime je omogućen raniji otpust kući.

KLJUČNE RIJEČI: spinalna anestezija, kloropropain, aloartroplastika kuka

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AB69

Supraclavicular block resistant to local anaesthetics?

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INTRODUCTION: The success rate of supraclavicular brachial plexus block (BPB) is high thanks to the concomitant use of ultrasound imaging and neurostimulator. In this article we will present a very rare case of resistance to local anaesthetics.

CASE REPORT: Supraclavicular BPB was performed on a 35-year-old man, planned for extraction of osteosynthetic material from his left radius. The patient denied previous local anaesthesia complications. Supraclavicular BPB was performed using ultrasound imaging and nerve stimulator (motor response at 0.5 mA, 0.1 msec). Injection of local anaesthetic was spread around the brachial plexus. Total of 35 ml mixture of local anaesthetic (2% lidocain 300 mg, 0.5% levobupivacain 100mg) was applied. No change in sensation and motor function of the left hand was reported 15 minutes after administration of 20 ml of local anaesthetic. We decided to add another 15 ml of the remaining local anaesthetic, 15 minutes from the application of the first dose. In next 15 minutes, no effect on the supraclavicular brachial plexus was reported. Then the patient informed us that usually, when undergoing dental procedures, even after 30 minutes he feels pain even though he receives an injection of local anaesthetic. After an unsuccessful BPB, it was decided to use general anaesthesia. The surgical procedure lasted 2 hours and 30 minutes. In the postoperative course, we checked the motor response and sensation of the left limb, which remained completely intact.

DISCUSSION: Resistance to local anaesthetic is uncommon, but should be seriously considered in our patient with failed BPB. In this case, the brachial plexus was well visualized by an ultrasound and infiltrated with local anaesthetic. Additional confirmation of good infiltration with local anaesthetic was a positive response to neurostimulation.

CONCLUSION: It is important to know that there are patients with resistance to local anaesthetics. One should suspect possible local anaesthetics resistance if the patient mentions previous painful experiences during medical procedures.

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AB70

Breaking Bad News as a Shakespearian Tragedy: a structured approach

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BACKGROUND: Over the past two decades life-sustaining treatment limitation and withdrawal decisions have been integrated into the practice of many European intensive care units. (1,2) The UK is one such European country, where family input into these decisions is mandated. This poster presents an approach, developed by NHS Blood and Transplant, the UK organ donation organisation, for teaching intensive care doctors how to break bad news on intensive care in donation and non-donation cases. (3) While breaking bad news well may appear as an art form, it is, in fact, a technical skill that can be learned through deliberate practice and structured training.

The UK 'Shakespearian Tragedy' approach structures the delivery of the bad news into a discreet prologue and 3 acts and is built upon the premise that human beings are story tellers. (4) Good delivery, that is accepted by families, requires the telling of a truthful story that makes sense.

WHERE ARE WE?: In Croatia, decisions regarding the limitation of life sustaining therapy are seldom openly discussed or extensively communicated with families with most discussions occurring between physicians. (5) The absence of a robust legal framework complicates end-of-life decisions, with the first guidelines for end of life care in the ICU published in December 2021. (6) One key aspect of these guidelines is the need to effectively communicate with families when considering decisions about life-sustaining treatments, yet it is an aspect of medical practice that is often underemphasized in traditional education. This leaves healthcare professionals uncertain and means that decisions to withdraw or withhold LST are much less common. (7)

CONCLUSION: Breaking bad news is arguably the most delicate element of medical communication. Now, more than ever, it is imperative to deliver bad news in a clear and coherent way, understandable to families, so together we can make decisions that align with the best interests, as well as the wishes, values, and beliefs of our patients. Adopting a communication model such as "Breaking Bad News as a Shakespearean Tragedy" could be used to provide intensive care specialists with an invaluable toolkit for navigating these sensitive situations, ultimately improving palliative care in Croatian intensive medicine.

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AB71

Comorbidities of patients in the intensive care unit with Candida isolates

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ABSTRACT

INTRODUCTION: Invasive candidiasis is a common cause of secondary infections in critically ill patients and it is responsible for increasing morbidity and mortality. This research aims to evaluate the patient's age, type of admission, and comorbidities of patients in whom Candida is isolated and the impact on the survival rate.

METHODS: We conducted a cross-sectional study in which we included adult patients hospitalized in the intensive care unit from 2016 to 2023 who were positive for Candida. A total of 498 patients were included, of which 236 (47.4%) had isolated Candida, and 262 (52.6%) were the control group.

RESULTS: In patients with isolated Candida, emergency admission to the intensive care unit is significantly more frequent, and amounts to 90% of admissions, while in the control group it is 56%. In patients with isolated Candida, mortality is significantly higher and reaches 42%, while in the control group it is 19%. The most common comorbidities were vascular diseases, and the most common diagnosis was arterial hypertension. Among the patients in the Candida group, there are significantly more cardiological, respiratory diseases, renal, coagulopathies, hepatobiliary, sepsis, soft tissue infections and metabolic diseases, whereas neoplasms were less common.

CONCLUSION: In recent years, invasive candidiasis has become an increasing challenge in intensive care units, and early diagnosis and therapy of candidiasis are crucial in improving the survival of patients. Although there have been improvements in diagnostics and antifungal therapy, mortality from invasive candidiasis remains very high. It is still necessary to work on better identification of patients with an increased risk of invasive candidiasis.

KEYWORDS: invasive candidiasis, intensive care unit, candida species

AB72

Case report of severe metabolic acidoses

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INTRODUCTION: Acute intoxications account for 0.6-2% of all emergency department (ED) visits. Ethylene glycol poisoning is relatively rare, approximately 0.3% of intoxication cases. However, it can cause severe symptoms and ingestion of 1g/kg of ethylene glycol is potentially lethal. Ethylene glycol metabolites can cause acute kidney injury, severe metabolic acidosis, and hypocalcemia. The detrimental effects of acidosis on all organ systems can ultimately lead to coma and death.

CASE REPORT: We present a case of a 50-year-old male patient who was admitted to the ED of a general hospital with a decline in overall health and impaired consciousness. Upon initial examination, the patient was conscious, oriented, blood pressure was 115/76 mmHg and pulse 94 beats per minute. Diffuse abdominal tenderness was present. Laboratory findings revealed severe metabolic acidosis (pH 7.096, lactate 15.98 mmol/L, base excess -26.6 mmol/L) and an anion gap of 31 mEq/L. Chest X-ray and abdominal/pelvic CT scans were normal. During observation, the patient developed hematuria. After three hours of renal replacement therapy (RRT), due to the high suspicion of acute ethylene glycol poisoning, the patient was transferred to the tertiary medical centre where additional investigations were performed. Toxicological screening was negative, osmolar gap of 19 mOsmol/kg, and a lactate gap of 6.5 mmol/L (after RRT). A random urine test revealed calcium oxalate crystals. Based on the results, ethylene glycol poisoning was strongly suspected and treatment with medical alcohol as an antidote was initiated, as fomepizole is unavailable in Croatia. Normalization of lactate levels and gradual clinical improvement were observed. No additional hemodialysis sessions were required.

CONCLUSION: Ethylene glycol poisoning requires prompt recognition, accurate diagnosis, and appropriate management to prevent life-threatening complications. Laboratory confirmation of ethylene glycol intoxication relies on gas chromatography, the method which is mostly performed in reference laboratories. In clinical practice, this often leads to delayed analysis results and subsequent treatment initiation. Therefore, initial diagnostics rely on simpler tests such as lactate measurement, osmolal gap assessment, and urine analysis.

KEYWORDS: toxicology, ethylene glycol, testing for toxins, metabolism, metabolic acidosis, lactate gap, osmolal gap

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Challenging management of massive postpartum hemorrhage after emergency C-section

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INTRODUCTION: Postpartum hemorrhage (PPH) is excessive bleeding after childbirth, with blood loss over 500 mL in vaginal delivery and 1000 mL in C-sections. PPH is a leading global cause of maternal mortality, occurring in up to 18% of deliveries, with uterine atony responsible for 70-80% of cases. Underestimating and insufficient assessment of blood loss make diagnosing PPH challenging and can endanger patients' lives.

CASE PRESENTATION: A 34-year-old primigravida at 41 weeks' gestation was admitted to the labor ward after onset of labor, during which fetal bradycardia (50 bpm) was observed on the EFM strip. An emergency C-section was indicated due to the impending fetal hypoxia. Before the procedure, her BP was 160/100 mmHg and Hb was 139 g/L. In the fourth stage of labor, despite the administration of uterotonics, fluids and tranexamic acid (TXA), the patient suffered excessive bleeding. Revision laparotomy was indicated. During the procedure, blood products and coagulation factors concentrates were administered intensively and hemorrhage control surgery was performed. Despite previous efforts, the bleeding continued profusely, necessitating the placement of a Bakri balloon under ultrasound guidance. In the ICU, the patient was hemodynamically stable (BP 110/80 mmHg), but her Hb was 71 g/L. Given the patient's life-threatening state and the ineffectiveness of conservative treatment, a hysterectomy was necessary, resulting in a successful recovery. Total estimated blood loss was 3.5L.

CONCLUSION: Even though hysterectomy is considered a definitive treatment of postpartum hemorrhage, ensuring hemodynamic stability and promptly administering blood products remain crucial for improving patient outcomes in such cases.

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Consumption coagulopathy in neonate with ECMO support – case report

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INTRODUCTION: Consumption coagulopathy, better known as disseminated intravascular coagulation is a clinicopathological syndrome characterized by abnormally increased activation of procoagulant pathways. This results in intravascular fibrin deposition and decreased levels of hemostatic components, including platelets, fibrinogen, and other clotting factors which results in bleeding and intravascular thrombus formation that can lead to tissue hypoxia, multiorgan dysfunction, and death.

CASE REPORT: Male one-day old neonate was diagnosed with transposition of the great arteries (d-TGA). Subsequently, the patient underwent Jatene's procedure, a surgical correction of the transposition („arterial switch“) during which he developed iatrogenic subepicardial hematoma of the anterior right ventricular wall. Patient became hemodinamically unstable which prompted placement of central veno-arterial ECMO support. First post-operative day was uneventful but second day's laboratory results showed a decrease in platelet count and an increased concentration of d-dimers. Over the next two days, further decrease of platelet count and fibrinogen concentration and an increased d-dimers was noted. Since heparin was administered continuously, a test for heparin induced thrombocytopenia was conducted showing negative results indicating a development of a consumption coagulopathy due to ongoing thrombus formation within the ECMO system. Therapeutic approach over next two days was a total of four doses of platelet concentrate and 300 mg of fibrinogen concentrate which were unsuccessful in maintaining a satisfactory platelet count leading to a whole ECMO system replacement sixth day post-op. However, morning after the replacement, the patient presented with apical toe necrosis which clinically confirmed the development of disseminated intravascular coagulopathy. Laboratory results further affirmed the diagnosis, with platelet count of $9 \times 10^9/L$, fibrinogen 0,4 mg/L and d-dimers >35. Urgent weaning from ECMO was carried out, followed by administering 6 doses of platelet concentrate, 290 ml of red blood cell concentrate, 150 ml of fresh frozen plasma and 600 mg of fibrinogen. Adequate coagulation was achieved with the administered therapy. The patient was discharged from the hospital on the 54th day post-op.

CONCLUSION: When it comes to iatrogenic consumption coagulopathy in neonates, there are no strict guidelines for managing this rare condition. In this case, conservative approach by replacing clotting factors and platelets was firstly followed with very limited and short-term results. Major improvement was only seen when the main cause of coagulopathy, ECMO, was removed followed by an extensive recouplement of clotting factors, platelets, red blood cells and plasma.

KEYWORDS: coagulopathy, neonate, ECMO, arterial transposition

AB75

Does paracetamol really decrease empathy? Debunking the „social painkiller“ – review

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INTRODUCTION: Paracetamol is well-known physical analgesic, which is widely used in clinical practice. Research on empathy suggests that observing others experiencing pain activates brain regions that are also activated during one's own experience of pain. This review examines the very sparse literature in order to evaluate the strength of evidence on does paracetamol decrease empathy levels.

METHODS: Pub-med search engine was used in collecting the available literature which resulted in only four applicable articles. Three articles are clinical studies and one is an experimental study done on rats.

RESULTS: The first clinical study conducted in 2016. showed that paracetamol reduces empathy for pain in others. The authors tested these hypotheses on healthy college students who received either 1 gram of paracetamol or a placebo. Then they watched scenarios of other people being hurt physically and socially and had to answer the empathy questionnaires. The authors conducted the same study on a larger portion of students three years later and found similar results. The experimental study on rats also found similar results, while one clinical study tested that theory in healthy and headache individuals using fMRI. The findings derived from the trial indicate that the empathy for pain exhibited a notable elevation within the headache-afflicted population, whereas such an increase was not observed within the control group.

CONCLUSION: Several authors have unveiled a new effect of paracetamol, suggesting its potential capacity to attenuate an individual's empathy for pain. Contrasting studies suggest small distinctions in the experiences of those who endure pain and those who don't. Further studies are needed to validate the complex relationship between paracetamol use, pain and empathy.

KEYWORDS: paracetamol; pain; empathy

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AB76

Usporedba ASA-e i Clinical frailty scale u prijeoperacijskim ambulantama kod elektivnih pacijenata starijih od 65 godina

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Clinical frailty scale(CFS) je nastao kao ideja skaliranja pacijentove sposobnosti oporavka na temelju njegove sposobnosti prije nego ga je bolest zahvatila. Najviše se koristi u području hitne medicine kao alat u odabiru između aktivnog i palijativnog liječenja. Prema analizi literature, CFS najbolji samostalni prediktor za operativne i postoperativne komplikacije kod gastrointestinalnih operacija, a kombinacija ASA-e i CFS-a postiže najbolju predikciju operativnih ishoda. Potvrđeno je također da je CFS najbolji prediktor mortaliteta, otpuštanja u ustanove za skrb, umjesto povratka kući iz bolnice te da je precizan i jednostavan alat koji procjenjuje krhkost pacijenta.

Cilj ove prospektivne opservacijske studije je procjena korisnosti CFS-a kao prediktora peri i postoperativnih ishoda u elektivnih pacijenata starijih od 65 godina. Svakome pacijentu je isti ispitivač odredio CFS. Sve pacijente je u preoperacijskoj ambulanti pregledao anesteziolog, koji je odredio ASA status. Nakon toga, iz medicinske dokumentacije će se preuzeti podaci o ishodima operacijskog liječenja.

Tijekom 3 uzastopna mjeseca sakupljeni su podatci ispitanika prosječne starosti bila $71,9 \pm 4.9$ god, od čega je 54% muškaraca. Medijan CFS-a je bio 4(IQR 3-4), a medijan ASA-e je 3(IQR 2-3). Potvrđena je korelacija između CFS-a i ASA($r=0.437$, $p=0.005$).

Prema dobivenim rezultatima, CFS je jednostavan alat za određivanje krhkosti pacijenta koji se lako može implementirati u svakodnevnom radu anesteziologa, a dobro korelira s ASA statusom. On bi mogao biti dobar prediktor ishoda elektivnih operacija u starijih pacijenata.

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AB77

Perioperacijska anemija i transfuzijsko liječenje kirurških bolesnika-jesmo li spremni za nove izazove? Melita Buljan¹, Kristina Medved¹, Inga Mandac Smoljanović², Darko Kučan³, Mario Starešinić⁴, Tomislav Dujmović⁴, Martina Lukić⁵

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UVOD: Transfuzija alogene krvi vrlo često predstavlja prvi izbor u liječenju anemije i gubitka krvi kirurških bolesnika, usprkos znanstveno dokazanoj povezanosti transfuzije i lošijeg ishoda bolesnika. Danas se smatra da transfuzijsko liječenje spada među 5 prekomjernih (overtreated) liječničkih intervencija. Zbrinjavanje anemije bolesnika starije životne dobi (>65 godina starosti), koji se primaju u bolnicu zbog prijeloma kuka i planirane operacije, jednako kao i zbrinjavanje anemije bolesnika u kojih se planira operacijsko liječenje zloćudne novotvorine probavnog trakta, predstavljaju veliki izazov u njihovu liječenju.

BOLESNICI I METODE: Retrospektivno su evaluirani podatci 132 bolesnika koji su radi kirurškog liječenja tumora probavnog trakta boravili na Klinici za kirurgiju KB Merkur u razdoblju od 01.01.2022. do 01.09.2023. Isto tako su evaluirani podatci 73 bolesnika starije životne dobi (>65 godina) koji su u istom razdoblju hospitalizirani radi operacije prijeloma kuka.

Anemija je definirana koncentracijom hemoglobina <130 g/L pri prijemu u bolnicu u svih bolesnika.

Kriteriji za transfuzijsko liječenje su bili: Hb <80g/L ili u slučaju kliničkih simptoma anemije, kao što su tahikardija, hipotenzija, promjene mentalnog statusa ili vrtoglavica.

U analizu nisu uključeni podatci bolesnika koji su imali bilo kakav urođeni ili stečeni poremećaj zgrušavanja krvi, te bolesnici s proširenom malignom bolesti.

ZAKLJUČAK: Prijeoperacijska anemija predstavlja važan i korekciji podložan rizični čimbenik kirurških bolesnika. Napore treba usmjeriti prema implementaciji PBM-a, pogotovo njegovog I stupa (optimizacija stanja bolesnika prije operacije što uključuje detekciju i liječenje anemije). Tako će liječenje anemije transfuzijom alogene krvi postati zadnja, a nikako prva opcija liječenja anemije kirurških bolesnika.

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AB78

Importance of implementing Delirium clinical practice guidelines on preventing Post-intensive care syndrome

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ABSTRACT

The Society of Critical Care Medicine recently completed the Intensive Care Unit (ICU) Liberation strategy improvement collaborative that formalized dissemination and implementation strategies to promote effective adoption of the ICU care bundles (ABCDEF). ICU care bundles provide a new paradigm for liberating critically ill patients from mechanical ventilation (MV) and ICU environment, while optimizing post-ICU outcomes. Assess, prevent and manage the delirium is one of the five pivots of ICU Liberation strategy. Delirium is a complex but common phenomenon in the ICU. Its diagnosis is challenging with potential long-term adverse outcomes and there is no "gold standard" for diagnosing delirium in the ICU, but two extensively validated tools, the confusion assessment method for the ICU and the intensive care delirium screening checklist. Delirium has an impact on occurrence of particular neurocognitive and psychiatric state of survivors called post-intensive care syndrome (PICS). PICS refers to an ICU survivor who has either a new impairment or a pre-existing impairment that got worse in at least one of these: cognitive impairment – acquired dementia, mental health impairment – depression and Post traumatic stress disorder (PTSD) and physical impairment – muscle and nerve disease.

Increased understanding of risk factors in ICU setting, especially across different types of ICU patients has improved our ability to potentially identify high-risk patients for screening and intervention.

KEYWORDS: ICU liberation, ICU care bundles, delirium, post-intensive care syndrome,

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Management of haemorrhagic shock following endometriosis surgery

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INTRODUCTION: Current estimates posit that approximately 10% of women of reproductive age suffer from endometriosis globally. Endometriosis is a common cause of infertility, as it is estimated that between 21 and 65% of women seeking treatment for infertility get diagnosed with endometriosis.

CASE REPORT: The patient was a 25-year-old female scheduled for a laparoscopic removal of a left ovarian endometrioma. During the procedure, an endometriotic cyst of the left ovary was excised and three small endometriotic nodules on the bladder were cauterized. On the first postoperative day, the patient presented with pallor, tachypnea and abdominal tenderness. Her blood pressure was 80/50 mmHg. An ultrasound of the pelvis and abdomen was performed, showing abundant free fluid. Hb was 88 g/L. The patient was urgently transferred to the operating theatre for an exploratory procedure. During the procedure, clots and liquid blood were found in the abdomen, with an estimated blood loss of 1.5L. The area where the cystectomy was performed was determined to be the bleeding source and hemorrhage control surgery was performed. The patient received three doses of packed red blood cells (total volume 750 mL) and 3L of balanced crystalloids.

A follow-up transabdominal ultrasound showed normal findings with no free fluid in the abdomen. The postoperative course was uneventful and the patient was discharged home 5 days following the procedure.

CONCLUSION: Despite the procedures for the surgical management of endometriosis being undertaken on young and predominantly healthy women, caution and vigilant monitoring in the early postoperative period are imperative.

AB80

Prijepori u primjeni kliničkih smjernica za liječenje sepse u životno ugroženih bolesnika – prikaz slučaja Ivana Bureš Valentić¹, Robert Baronica^{1,2}, Tina Tomić Mahečić^{1,2}, Jana Kogler^{1,2}, Martina Čalušić^{1,2}, Loredana Divjak¹, Ivona Hanžek¹, Marija Planinić¹, Dora Karmelić¹

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UVOD: Smjernice za liječenje sepse donesene su kako bi se kliničaru pružio okvir za zbrinjavanje bolesnika oboljelih od sepse i septičkog šoka, a s ciljem smanjenja morbiditeta i mortaliteta.

PRIKAZ SLUČAJA: Prikazujemo slučaj 60-godišnje bolesnice koja je primljena u Jedinicu za intenzivnu medicinu kirurških bolesnika u slici teškog septičkog šoka uzrokovanog difuznim sterokoralnim peritonitisom. U početnoj fazi zbrinjavanja, uz obilnu volumnu nadoknadu, vazoaktivnu potporu i hemodijalizu započeta je i purifikacija krvi. Empirijski uvedena antibiotska terapija prilagođena je prema upalnim parametrima (L, CRP, PCT, IL-6) i mikrobiološkim kulturama, a naknadno je primijenjen i antivirusni lijek. Hemodinamski nadzor vođen je uz krevet bolesnice minimalno invazivnim monitorom te ultrazvukom srca i pluća. Elektroforezom proteina potvrđena je hipoglobulinemija te je primijenjen intravenski pripravak imunoglobulina (IgG, IgM, IgA).

RASPRAVA: U najnovijim smjernicama iz 2021. g. i dalje postoje značajni prijepori koji se odnose na mnoge klinički važne odluke. U našem slučaju to se prvenstveno odnosilo na početak, trajanje i praćenje antibiotske terapije, praćenje hemodinamskih parametara, uvođenje purifikacije krvi i primjenu imunoglobulina.

ZAKLJUČAK: Iako su smjernice za liječenje sepse olakšale odluke u svakodnevnom kliničkom radu sa životno ugroženim bolesnicima, još uvijek postoje odluke koje se moraju donositi na individualnoj bazi uz razmatranje koristi i štete za pojedinog bolesnika te dostupnosti resursa u bolničkim ustanovama i Jedinicama intenzivne medicine.

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AB81

Zbrinjavanje atonije maternice kod trudnice s transplantiranim srcem

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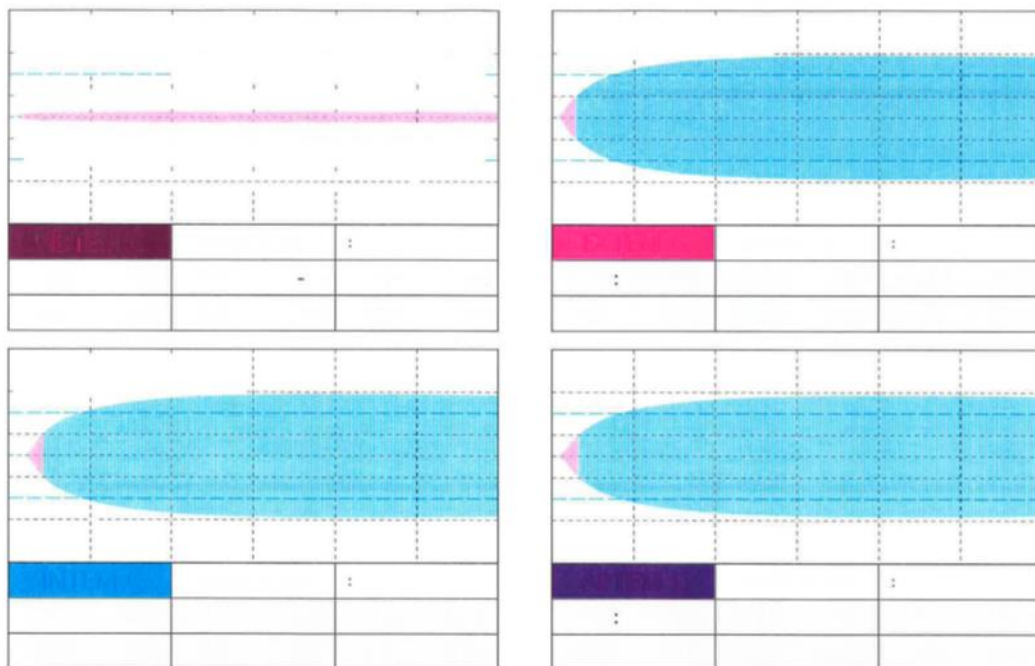
UVOD: U ovom prikazu slučaja riječ je trudnici kojoj je u mladosti transplantirano srce kao posljedica dilatacijske kardiomiopatije, te je u 38. tjednu trudnoće učinjen carski rez nakon kojeg je razvila atoniju maternice.

RASPRAVA: Trudnica je bila kardiopulmonalno kompenzirana tijekom čitave trudnoće koja je bila urednog tijeka te je u sklopu kardio-opstetričkog tima dogovoren porođaj carskim rezom u općoj endotrahealnoj anesteziji, nakon čega je trudnica prebačena na kardiološku jedinicu intenzivnog liječenja, primarno zbog nadzora potencijalnih komplikacija kao posljedice vaskulopatije presatka. Tijekom carskog reza, trudnica je razvila atoniju maternice koja se brzo stabilizirala, a gubitak volumena je procijenjen na otprilike 1 L. Nekoliko sati po porođaju dolazi do ponovnog razvoja atonije maternice uz privremenu hemodinamsku nestabilnost te je započeta volumna nadoknada i hitni transfer pacijentice u operacijsku dvoranu gdje je učinjena manualna eksploracija maternice i evakuirano više od 2 L krvi, nakon čega je pacijentica premještena u opstetričku jedinicu intenzivnog liječenja. U sklopu hemostatskog zbrinjavanja, ukupno je primijenjeno 6 grama fibrinogena, 1 gram traneksamične kiseline, 5 doza koncentrata eritrocita, 2 doze svježe smrznute plazme i 2500 IU FXIII, uz kontinuiranu primjenu uterotonika. Postoperativno su titrirane doze imunosupresivnih lijekova, primjenjivani profilaktički antibiotici te jednokratno intravensko željezo. Nakon tjedan dana, pacijentica je otpuštena kući u dobrom stanju.

ZAKLJUČAK: Zbrinjavanje trudnica sa srčanim bolestima predstavlja izazov za anesteziologe, osobito u slučaju razvoja komplikacija poput masivnog krvarenja. U opisanom slučaju, za spomenuti je i značajan logistički izazov u vidu transfera pacijentice između dvaju operacijskih dvorana i jedinica intenzivnog liječenja koje se nalaze na udaljenim lokacijama.

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AB82

Acute lung injury – clinical presentation, management, consequences

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ABSTRACT

BACKGROUND: Chest trauma is one of the most serious and difficult injuries, after which, various complications can develop and can lead to ventilation - perfusion (V/Q) mismatch and systemic hypoxia.

CASE REPORT: A 53-year old male with no comorbidities or chronic therapy was admitted to the Intensive Care Unit due to severe respiratory failure after chest trauma. He developed right - sided pneumothorax and then thoracic drain was placed. On admission, the patient was hemodynamically unstable and tachypneic. The patient was intubated and mechanically ventilated with high FiO₂ and moderate PEEP. Empirical broad-spectrum antimicrobial therapy was immediately initiated. After *Stenotrophomonas maltophilia* was identified and treated with sulfamethoxazole/trimethoprim his general condition gradually improved, and he was weaned from mechanical ventilation.

CONCLUSIONS: In conclusion, both ventilatory and antibiotic therapy were needed to improve oxygenation and outcome of the patient with pneumonia due to the resistant *S. Maltophilia* with V/Q mismatch. With the extensive lung injury, structural changes in the lungs may occur as well as impaired lung function which require further monitoring and treatment.

KEYWORDS: Hypoxia; Intensive care; Pneumonia; *Stenotrophomonas maltophilia*; Ventilation, pulmonary; Lung Injury

10.

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(AB83 – AB103)

AB83

Pre-hospital pain management – done deal or work in progress?

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ABSTRACT

INTRODUCTION: Adequate pain management should be an integral part of patient care. Even though occurrence of pain is quite frequent in pre-hospital care, it is often underestimated. The aim of this paper is to define the frequency of application and type of analgesic administered in pre-hospital pain management.

METHODS: Data was retrospectively analysed during the five-year period in Emergency department of Krapina-Zagorje County and was obtained through the „e-Hitna“ programme. Inclusion criteria was possible occurrence of pain associated with the diagnosis by International Classification of Diseases (ICD). By these criteria, in 86 573 patients the type of analgesic, frequency of administration defined by age, gender, main diagnosis, emergency index, the visual analog scale (VAS) and assigned doctor's in charge years of experience were analysed.

RESULTS: Out of all the patients where the occurrence of pain associated with the diagnosis could be expected, in only 24,99% analgesia was administered. In patients who did not receive analgesia, 16,56% were not asked about the pain occurrence. Opioid analgesia is usually the treatment of choice in palliative care (54,92%) . It is also the group of patients where the most potent opioids are given.

CONCLUSION: Despite high prevalence of pain in pre-hospital treatment and wide accessibility of analgesics, pain is still not treated adequately. Improved education, defining and implementing pain management protocols and individual knowledge self-assessment are necessary for pain to be recognized, measured and treated successfully.

AB84

Epidural anaesthesia for abdominal hysterectomy: is it a good choice for fragile patient with pacemaker? Case report

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ABSTRACT

BACKGROUND: Laparotomy surgeries in gynaecology can be performed under epidural anaesthesia. However, haemodynamic deterioration might be expected especially in vulnerable patient. We present the case of epidural anaesthesia for abdominal hysterectomy in patient with implanted pacemaker due to sick sinus syndrome.

CASE REPORT: 64-year-old woman was scheduled for abdominal hysterectomy and adnexectomy due to large uterine myoma, dimension 14.6x12.7x14.4cm and metrorrhagia. She presented with a history of ischaemic stroke with residual spastic hemiparesis and disarthria, permanent atrial fibrillation and implanted pacemaker. According to attending cardiologist, VVIR mode of pacemaker was switched into V00 mode a day before surgery. She was prescribed DOAC which was withheld 4 days before neuraxial anaesthesia. Her chest CT scan showed pulmonary nodular lesions of unknown origin. Upon examination, her height was 145 cm and she weighed 57 kg. Besides distended abdomen due to tumour mass, her physical status was unremarkable. In operation room standard monitor was initiated. Epidural catheter was inserted at the level of L3-L4, followed by a bolus of 0.5% bupivacaine of 17 ml. The course of epidural anaesthesia was uneventful. There was no significant blood loss during surgery. Intraoperatively 1000 ml of cristalloid solution was given, alongside the three ephedrine boluses of 5 mg in order to keep MAP above 65 mmHg. Operation was completed after 45 minutes, there was no need for epidural top-ups. Upon completion of surgery, patient was transferred to the hospital ward.

DISCUSSION: We considered our patient unfit for general anaesthesia. The choice of epidural anaesthesia in this fragile patient showed favourable features in terms of adequate anaesthesia during entire surgery. Intraoperative administration of intravenous anaesthetics and/or analgesics was deemed unnecessary. Respiratory and haemodynamic stability was maintained, while the epidural boluses of bupivacaine and morphine provided excellent postoperative analgesia without side effects.

CONCLUSION: Learning points: In our opinion, epidural anaesthesia for abdominal hysterectomy is more favourable option in comparison with general anaesthesia, especially in case of challenging patient with multiple co-morbidities.

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AB85

The impact of perioperative dexamethasone in thyroid surgery

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INTRODUCTION: Thyroidectomies are one of the most common elective surgical procedures in the modern medicine. Performed under general anaesthesia, thyroidectomies are associated with high incidence of postoperative nausea-vomiting (PONV). Other common complications after thyroid surgery are postoperative pain, postoperative sore throat (POST), postoperative voice dysfunction and transient hypoparathyroidism combined with hypocalcemia. Dexamethasone is a steroid commonly used as adjuvant in anaesthesia. The aim of this review was to investigate and critically evaluate the effect of dexamethasone on the PONV, pain, voice dysfunction, postoperative sore throat and hypocalcemia in patients undergoing thyroid surgery.

METHODS: Review of major trials and other studies investigating the postoperative effect of dexamethasone in patients older than 16 undergoing thyroid surgery, with no limitation to anaesthetic techniques used. Studies published during 1999 – 2023 were included.

RESULTS: Thirty-nine studies were included in the analysis. Literature review demonstrated that preoperative, intravenous dexamethasone in doses 8-10mg may be beneficial for PONV prophylaxis. Although, there are studies that supported the use of dexamethasone for significant postoperative pain reduction after thyroid surgery, exact dose and timing of administration should be further investigated. Furthermore, there are insufficient data for definite conclusions to be drawn regarding the effectiveness of a single perioperative administration of dexamethasone to reduce voice disturbances, postoperative sore throat and hypocalcemia after thyroid surgery.

CONCLUSION: Intravenous administration of dexamethasone 8 - 10 mg is safe and effective for PONV prophylaxis, but effect of dexamethasone on reduction of postoperative pain, voice disturbances, postoperative sore throat and hypocalcemia should be further investigated.

AB86

Can intubate, but not ventilate nightmare

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Nemogućnost ventilacije bolesnika najgora je noćna mora anesteziologa. Ovim prikazom želimo predstaviti bolesnika kojeg smo normalno ventilirali na masku, intubiran je bez teškoća (Cormack Lehane 1), no mehanička ventilacija bila je nemoguća. Djelomično zadovoljavajuće ventiliran je samoširećim balonom, uz dosta otpora, upuhani zrak izlazi kroz usta. Provjeren je cuff i zamijenjen tubus, bez učinka te je napravljena hitna bronhoskopija, uočen je kolaps distalne traheje i lijevog glavnog bronha.

Pozvan je otorinolaringolog, postavljena je tamponada u grlo i dio grkljana, nakon čega ventilacija postaje moguća, propuštanje uz tubus postaje prihvatljivo. Jutro kasnije napravljen je MSCT vrata, opisana je traheomegalija i bronhomegalija; postavljena je sumnja na Mounier Kuhnov sindrom. Kontrolnom bronhoskopijom uočene su mukoidne impakcije koje ispunjavanju bronh donjeg desnog reznja, ispiranjem su aspirirane i poslane na PHD – komadići hrane biljnog podrijetla. Dan kasnije je ekstubiran, postavljen je HFNC, obilno iskašljava uz Cough assist, no prati se pogoršanje oksigenacije. Ponovno je intubiran, Et 10,0 cuff, nakon čega se daljnja ventilacija provodi bez propuštanja. Nakon 15 dana napravljena je perkutana traheotomija i postupno je odvojen od mehaničke ventilacije.

Mounier Kuhnov sindrom je rijedak entitet nepoznate učestalosti. Odlikuje se značajnim proširenjem traheje i bronha i recidivirajućim respiratornim infekcijama. Obično se uočava kod muškaraca (95%) srednje dobi. Etiologija sindroma nije u potpunosti poznata, mogući uzrok je kongenitalni defekt glatkih mišića traheje i bronha, histološki postoji atrofija elastičnih vlakana dišnog puta, zbog čega postaje dilatiran i kolabira u ekspiriju, pa je mehanizam kašlja neefikasan, što dovodi do rekurentnih infekcija.

KLJUČNE RIJEČI: traheomegalija, bronhomegalija, Mounier Kuhnov sindrom

AB87

Time as the enemy of the bleeding patient – successfully managing abdominal gunshot wound

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INTRODUCTION: Abdominal gunshot wounds are emergencies marked with high mortality due to extensive vascular supply of the abdomen which can lead to hemorrhagic shock. The prevention of a fatal outcome involves the interplay of various factors. The most crucial are time, individualized approach, and persistence.

CASE PRESENTATION: We present the case of a 19-year-old male who was brought to the ER after an accidental self-inflicted gunshot wound to the lower left abdomen. The patient was hemodynamically unstable with marbling of the skin on the left leg and macrohematuria. Emergency exploratory laparotomy was indicated and revealed a transection of the left external iliac vein and rupture of the urinary bladder. The patient was administered norepinephrine, high doses of blood products, and intravenous fluids. The vein was ligated, bladder wounds were sutured, and the abdomen was partially closed and covered with a Bogota bag. However, postoperative CT angiography of the abdomen revealed concealed bleeding from the inferior epigastric artery and later left femoral vein. Two additional surgeries were performed on the same day, involving additional hemostasis, ligation of the femoral vein, and further administration of blood products. The patient received approximately five times the recommended doses of blood products in a short period. He fully recovered and was discharged home after 3 weeks.

CONCLUSION: Hemorrhage is the leading cause of preventable trauma deaths. However, the administration of significantly higher quantities of blood products and three emergency surgeries aided the patient in this case to defy the laws of statistics. It has been demonstrated that the combination of adhering to established protocols alongside the pursuit of clinical intuition represents the optimal approach to managing the emergent patient.

KEYWORDS: Wounds and Injuries; Shock, Hemorrhagic; Hemostasis, Surgical; Abdominal Injuries; Fluid Resuscitation

AB88

Dexmedetomidine as an epidural adjuvant for children undergoing open pyeloplasty

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INTRODUCTION: Epidural analgesia is a well-established pain control method for major surgery. In paediatric population, single-shot caudal epidural block is often performed but has a limitation because of limited duration of action. Continuous epidural analgesia is an appropriate alternative. Opioids, ketamine, corticosteroids, 2 agonists have been used to achieve better pain control with less adverse effects compared to local anaesthetics alone.

Open pyeloplasty is a common surgical procedure in children which can cause significant levels of pain. Continuous epidural analgesia is a standard for the procedure in our hospital.

METHODS: We present three patients who underwent open pyeloplasty with continuous epidural analgesia. Dexmedetomidine was used as an adjuvant in doses of 0.06 – 0.18 mcg/kg/h during surgery and 0.042 – 0.072 mcg/kg/h after surgery. Patients pain levels, haemodynamic parameters and side effects were monitored for 72h after surgery.

RESULTS: “Faces” pain rating scale were 0 – 1 both at rest and during movement. No side effects were noted. Rescue analgesia (single dose paracetamol) was used only in 2 patients in the first 24h.

CONCLUSION: Dexmedetomidine as an adjuvant in epidural analgesia in children helps achieve superior level of pain control without causing unwanted side effects, such as nausea and itching following epidural administration of opioids, or bradycardia and hypotension following clonidine administration, both of which are more common in paediatric population.

AB89

Dexmedetomidine use in paediatric anaesthesia in otorhinolaryngology surgical cases

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INTRODUCTION: Dexmedetomidine is an α_2 agonist used as an adjunct and sedative in anaesthesia and intensive care. Its benefits are: providing sedation, analgesic-sparing properties and decreased salivation with little to no depression of respiratory drive.

Perioperative anxiety, both pre- and postoperative, is a potential major issue in paediatric anaesthesia both for the child and their parents. It can affect postoperative delirium, need for additional analgesia both intra- and postoperatively and also induce various conditions upon release from the hospital like separation anxiety, aggression and sleep disturbance.

METHODS: We present a case series of 17 children, 16 were given bolus doses (median dose of 0.83 mcg/kg) and 1 child was given a continuous dose (up to 0.5 mcg/kg/h) due to the length of surgery. In older children Dexmedetomidine was used as mono therapy for anxiolysis if they allowed placement of an i.v. line. Younger or less compliant children were given oral Midazolam, anaesthesia was then induced via Sevoflurane and Dexmedetomidine was administered upon placement of the i.v. line. All patients were given Sufentanil and Propofol i.v. during anaesthesia and it was maintained with Sevoflurane. Paracetamol and a NSAID were given depending on the type of surgery for postoperative analgesia.

RESULTS: Postoperative pain was assessed via the "FLACC" scale for younger children with all scores being under 3. Older children reported minimal to mild discomfort. No side effects were noted.

CONCLUSION: Dexmedetomidine is a useful adjuvant during paediatric anaesthesia providing good preoperative anxiolysis, lowering emergence anxiety as well as aiding analgesia.

AB90

Perioperative and anaesthesiology procedures in a child with glucose-6-phosphate dehydrogenase deficiency

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ABSTRACT

Glucose-6-phosphate dehydrogenase (G6PD) is an enzyme that helps red blood cells work properly; it participates in the production of antioxidants and helps to defend cells against oxidative damage. With all this in mind, patients with G6PD deficiency may be very sensitive and vulnerable to different oxidative stressors, because they can cause some serious medical conditions of which hemolytic anemia is common in adults and severe jaundice in newborns. The most common triggers of hemolysis in G6PD deficiency are infections, drugs, metabolic conditions such as diabetic ketoacidosis, hypothermia, and one of the most important triggers is surgical stress. During the operative period, the anaesthetic goal is to reduce stress and monitor if the hemolysis occurs, and of course, treat it if it occurs. In our case, the combination of sevoflurane inhalation anaesthesia with the addition of sufentanil proved to be safe and effective in the management of a child with G6PD deficiency.

KEYWORDS: glucose-6-phosphate dehydrogenase (G6PD); oxidative stress; perioperative management; anaesthesia management; postoperative monitoring

AB91

Is there a place for subarachnoid anaesthesia in paediatric surgery?

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ABSTRACT

INTRODUCTION: Spinal anaesthesia is a safe and effective method to provide anaesthesia for lower abdominal surgery. Infants and children are at an increased risk for general anaesthesia related complications. Thus, spinal anaesthesia could also be indicated as an alternative to general anaesthesia especially in situations such as chronic respiratory disease, potentially difficult airway, heart disease or risk of malignant hyperthermia. It is commonly used as a sole anaesthetic in premature infants in the interest of avoiding general anaesthesia and opioid medications, but also plays an important role in other children in situations when the risk for general anaesthesia is increased due to the underlying disease of the child.

CASE REPORT: In this case report we will present two very different patients, both successfully managed with spinal anaesthesia: a four-month-old premature infant with bronchopulmonary dysplasia and mild pulmonary stenosis for hernia repair surgery, and a fifteen-year-old boy with Duchenne muscular dystrophy for testicular torsion surgery. Lumbar puncture was done in both patients in lateral position in L4-L5 space using levobupivacaine.

CONCLUSION: It is proposed that spinal anaesthesia is an effective alternative to general anaesthesia in certain paediatric patients, including those with DMD and premature infants, for whom general anaesthesia poses increased risk.

KEYWORDS: spinal anaesthesia, premature infants, Duchenne muscular dystrophy

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AB92

Treatment of chronic knee pain: comparison of the standard interventional GNRFA method according to Choi versus the innovative approach according to Tate.

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ABSTRACT

INTRODUCTION: Genicular nerve radiofrequency ablation (GNRFA) is a minimally invasive procedure used to manage chronic knee pain, particularly in patients who have not responded well to conservative treatments. The original technique described by Choi traditionally targeted the superior lateral genicular nerve (SLGN), superior medial genicular nerve (SMGN), and inferior medial genicular nerve (IMGN). However, recent cadaveric studies have demonstrated additional sensory nerves to the vastus intermedius (NVI), vastus lateralis (NVL), vastus medialis (NVM), common fibular nerve, and recurrent fibular nerve. As such, we present an enhanced protocol for genicular nerve CRFA based on the more recent understanding of neuroanatomy to reduce pain by >50% for up to 12 months.

METHODS: In this prospective study, 56 participants with >6 months of either refractory knee pain were enrolled if they experience >80% numeric rating scale (NRS) pain reduction after a single instance of diagnostic block. All procedures were performed with fluoroscopic guidance according to the described standard technique of Choi or by the novel multi-nerve approach of Tate. Ablations were performed at three standard (Choi) or extended at seven anatomical sites (Tate).

Evaluated outcomes are primarily >50% NRS reduction of pain, reduction of overall pain pharmacotherapy, while the secondary achievement is a significant improvement in the quality of life according to the PGIC scale (Patient Global Impression of Change).

RESULTS: The primary outcome of NRS reduction at 3 months was present above 50% in both groups Choi vs Tate. After 6 months, and even after 12 months, this ratio is twice as high in the Tate group. Secondary outcomes, i.e. reduction of total pharmacotherapy as well as PGIC scale level, were 30%-40% more pronounced in the Tate group over the entire 12 month interval.

CONCLUSION: This expanded GNRFA technique may allow greater involvement of patients with chronic knee pain who do not experience adequate pain relief from the previous standard three-nerve block.

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AB93

The successful use of paravertebral block for the treatment of postherpetic neuralgia – a case presentation

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INTRODUCTION: Postherpetic neuralgia is chronic pain condition that can severely lower patient's life quality and could be particularly challenging to treat. The first-to-third-line treatment is based on various per-oral and transdermal medications, including (opioid) analgesics, anticonvulsants, antidepressants, local anaesthetics and even capsaicin creams. If patient remains unresponsive, invasive interventions could be employed. Here we present a case of successful treatment of postherpetic neuralgia with paravertebral block.

METHODS: A 63-year-old patient with postherpetic neuralgia was unsuccessfully treated in our pain clinic over the 12-month-period of time with sequential maximum daily doses of ibuprofen, transdermal diclofenac (per orally and transdermally), combination of tramadol+paracetamol, pregabalin, tapentadol, diazepam, gabapentine, ten acupuncture sessions, individually and in combination, before we proposed paravertebral block.

RESULTS: We performed ultrasound guided paravertebral block. Following negative aspiration, using a 22G needle in out-of-plane technique, the combination of 0.375% ropivacaine (10 mL) and triamcinolone (40 mg) was infiltrated paravertebrally, at the Th5-Th6 level. Immediately after the infiltration, the patient reported prompt cessation of pain. Two hours after the block was performed, we excluded pneumothorax by chest X-ray, and the patient was discharged. Now, after 5-month-period patient still does not have pain.

CONCLUSION: After the exploitation of standard conservative treatment, we successfully treated our patient with postherpetic neuralgia with paravertebral block. Therefore, our case shows that, although paravertebral block is not widely accepted treatment modality (grade B recommendation), it is good treatment option for postherpetic neuralgia refractory to standard conservative treatment, even with only one attempt, like in our case.

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Multidisciplinarni pristup liječenja onkološkog bolesnika

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UVOD: Bol je najneugodniji i najučestaliji simptom koji spominju onkološki bolesnici u različitim fazama liječenja. Liječenje boli kod onkološkog bolesnika mora biti sastavnim dijelom liječenja u svim fazama bolesti. Kod oko 40% bolesnika oboljelih od zloćudnog tumora bol je prisutna već pri postavljanju dijagnoze a u uznapredovanoj fazi bolesti čak 75 – 90 % bolesnih trpi bol umjerenog do jakog intenziteta. Cilj multidisciplinarnog pristupa je izmijeniti pristup liječenju boli kod onkoloških bolesnika, kao i izmijeniti poražavajuću činjenicu da je bol zadovoljavajuće liječena u svega 50% bolesnika u uznapredovanoj fazi bolesti.

METODE: Bol je subjektivan osjećaj, stoga veliku pažnju treba posvetiti adekvatnoj procjeni boli jer ona predstavlja temelj kvalitetnog analgetskog liječenja. Liječenje maligne boli treba započeti u najkraćem mogućem roku, s naglaskom na odgovarajućoj dozi lijekova i izboru analgetika. Maligna bol je dinamičnog karaktera te potrebna je redovita procjena uz korekciju analgetske terapije.

REZULTATI : Multidisciplinarna ambulanta nastala je u suradnji Odjela za liječenje boli Klinike za anesteziologiju, intenzivno liječenje i liječenje boli i Klinike za tumore koja omogućuje onkološkim pacijentima da na jednom mjestu obave više specijalističkih pregleda. Naime, u prostorima Dnevne bolnice Klinike za tumore jednom tjedno djeluje suradna ambulanta – ambulanta za bol u kojoj ordinira specijalist anesteziologije – algolog. Navedenim pristupom onkološki bolesnici dobivaju sveobuhvatnu skrb u prostorima Klinike za tumore. U organizaciji ove ambulante vodili smo se mišlju da specijalisti dolaze pacijentima, a ne pacijenti specijalistima. Narudžbe za ambulantu za bol koja djeluje kao suradna ambulanta u Dnevnoj bolnici Klinike za tumore vrši onkološka kordinatorica. Nakon više od godine dana od uvođenja ovakvog načina rada onkološki pacijenti su i više nego zadovoljni. Od početka rada u ambulanti je obrađeno više od 300 onkoloških pacijenata.

AB95

Anaesthesia potpourri on paediatric neurosurgical procedures

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INTRODUCTION: Anaesthesia for paediatric neurosurgery presents a unique challenge. There are several issues to address as paediatric neurological evaluation, sitting position, airway management, and peripheral/central venous access. The anesthesiologist must have good knowledges about paediatric neurodevelopment age-related features, hemodynamic variables, and the surgical procedures.

METHODS: I will present the recent literature on this kind of patients, and the experience of my institution during the period 2020 – 2023. The posterior fossa is a common site for neurosurgical lesions in infants and children since 50% of tumors in paediatric age are located there. Posterior fossa lesions removal is mainly done in sitting position. This position has some consequences as reduced cerebral flow, hypotension, venous air embolism. Optimizing cerebral perfusion and oxygenation, prevention of air embolism is of great importance. Patients in the prone position are at increased risk for intraoperative airway complications. These include kinking and dislodgement of the orotracheal tube and macroglossia from pressure injury and herniation through the mouth. Venous airway embolism is rare in children undergoing neurosurgical sitting position procedures. Posterior fossa surgery seems to have the most difficult combination: paediatric age, difficult position, difficult ICU care, and difficult surgery approaches. After surgery is accomplished, the paediatric patients must be carefully evaluated to ensure normal recovery from anaesthesia.

Results: During the period 2020 – 2023 in my institution has been made 20 cases in sitting position for posterior fossa surgery, 12 cases in supine position, and 3 cases in prone position. So, in total 35 paediatric cases, out of 875 neurosurgical cases in total. The patients' ages were from 3 months till 16 years old. The patients were extubated in ICU and discharged in ward the next day.

CONCLUSION: Knowledges about age-dependent variables and the variability of anaesthetic administration in paediatric patients seems to be crucial to minimize complications and decrease perioperative morbidity and mortality.

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Perioperative pain management for appendectomy in Rijeka University Hospital Centre

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INTRODUCTION: An appendectomy is the surgical removal of the inflamed appendix and it is one of the most commonly performed emergency abdominal surgeries in the world. In CHC Rijeka most cases are performed laparoscopically rather than open technique.

Preoperative management requires a wider approach administering NSAIDs combined with opioids, antiemetics and antibiotics preoperatively. Intraoperative, general anaesthesia is used or general combined with regional anaesthesia. For postoperative pain management without opioids, regional anaesthesia or multimodal analgesia with paracetamol and NSAIDs is used.

METHODS: We used retrospective analysis of the recorded data which included adult appendectomies performed from 1.1.2020 until 1.1.2024. In total 746 appendectomies were performed, of which 605 were performed laparoscopically and 141 in open technique.

For laparoscopic technique general anaesthesia and postoperative NSAIDs were used in 405 cases and in 59 cases regional anaesthesia (ultrasound guided quadratus lumborum or bilateral TAP block) combined with general anaesthesia. For open technique combined regional anaesthesia with general anaesthesia was used in 84 cases, and in 57 cases general anaesthesia was used with addition of NSAIDs and paracetamol for postoperative pain management.

RESULTS: Laparoscopic approach versus open technique as well as the use of regional anaesthesia techniques resulted with lower opioid consumption intraoperatively. In the early postoperative recovery period less NSAIDs and no opioids were required after regional anaesthesia techniques were used. In open technique performed in general anaesthesia without regional anaesthesia some opioids were required postoperatively.

CONCLUSION: Perioperative pain management after appendectomy is often restricted because of the underestimation of pain. Laparoscopic approach is recommended because of the lower pain scores. In CHC Rijeka combined regional and general anaesthesia techniques are used. Multimodal analgesia including NSAIDs and paracetamol is used preoperatively as well as postoperatively for an optimal analgesic technique and therefore less opioid consumption.

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AB97

Paediatric tracheostomy in airway management, anaesthesiology point of view – our experience

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ABSTRACT

There is a wide range of basic and advanced techniques and ways of securing paediatric airways nowadays: from invasive to noninvasive, intubating and non-intubation techniques. Growing number of airway devices on the market is a sign that no device is perfect nor one size fits all. Surgical tracheostomy is a life-saving procedure performed for emergent or expectant airway compromise due to upper airway obstruction or to support the need for prolonged ventilation. Although it is generally thought of as safe, morbidity in the paediatric population is higher than in adults due to smaller operating field, immaturity of tissues, anatomical specificities of the child's neck, or presence of craniofacial dysmorphias. In some cases, tracheostomy is also a permanent solution for airway management. According to the literature, indications for tracheostomy in paediatric patients have changed a bit. Retrospective chart review was performed on paediatric patients who had a tracheostomy during the 5-year study period (between 2018 and July 2023) at University Hospital Centre Zagreb (UHC), Croatia. 50 surgical tracheostomies have been done during that period, in paediatric patients (<18 years old). Paediatric candidates for tracheotomy are few and often burdened by their primary diseases, requiring interdisciplinary planning, timing and preparing for the procedure.

AB98

Akutni abdomen u pacijenta pod palijativnom skrbi – pomažemo li uvijek operativnim zahvatom?

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UVOD: Bolesnici s neizlječivom karcinomskom bolesti često razviju akutnu kiruršku hitnoću. Teško je donijeti odluku treba li takvog bolesnika podvrći dodatnoj kirurškoj intervenciji.

PRIKAZ SLUČAJA: 60 godišnji muškarac prezentiran je anesteziološkom timu zbog razvoja akutnog abdomena. Klinički se prati distenzija i bolnost abdomena, MSCT potvrđuje sumnju na pneumoperitoneum i perforaciju crijeva. Kod bolesnika je prethodno učinjena palijativna radikalna cistektomija sa obostranim ureterostomama mjesec dana ranije, nakon čega je dijaliziran. Hospitaliziran je zbog visokih upalnih parametara, izolirana je VRE iz UK i brisa rane. Tijek liječenja se komplicira dehiscencom tegmentuma 17 dana od op zahvata, potrebna je reoperacija. Postaje septičan, hipotenzivan, izrazito lošeg kliničkog stanja. Po telefonskom razgovoru sa kćeri pristupi se hitnom op zahvatu gdje se nađe perforacija crijeva sa difuznim peritonitisom. Tijekom liječenja u JIL-u mehanički ventiliran, ovisan o vazoaktivnoj potpori, anuričan. Liječen je po protokolu za septički šok, hemodijaliziran. Sporog neurološkog oporavka, na CT mozga verificirana ishemijska lezija FP i okcipitalno desno. Prati se pogoršanje statusa abdomena, oligurija, bez oporavka stanja svijesti. Liječnički konzilij donosi odluku o prekidu aktivnog liječenja. Obitelj je informirana o planu palijativnog liječenja.

ZAKLJUČAK: American College of Critical Care Medicine preporučuje ranu palijativnu skrb kao učinkovito sredstvo za smanjenje troškova skrbi i duljine boravka u intenzivnoj njezi. Trebamo li i mi kopirati ovaj model?

KLJUČNE RIJEČI: end of life, palijativna skrb, hitan kirurški zahvat

AB99

Smanjenje boli u onkološke pacijentice nakon provedene palijativne radioterapije sekundarizama kralježnice: prikaz slučaja

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UVOD: Palijativna radioterapija je indicirana kada su prisutne koštane metastaze, a cilj je smanjenje intenziteta boli i simptoma prouzrokovanih samim metastazama čime se poboljšava kvaliteta života bolesnika. Nakon pluća i jetre, kosti su jedno od najčešćih mjesta metastaziranja zloćudne bolesti, posebice kod karcinoma dojke i prostate. Koštane metastaze mogu uzrokovati razne simptome i komplikacije. Prvi simptom koštanih sekundarizama je bol koja je uzrokovana lokalnom destrukcijom kosti, pritiskom na krajeve živaca te otpuštanjem raznih upalnih medijatora, neuropeptida i citokina.

PRIKAZ SLUČAJA: Pacijentica u dobi od 78 godina hospitalizirana je na Klinici za tumore u KBC-u Rijeka radi pogoršanja bolova uslijed metastatskog karcinoma dojke. Bolesnica je započela liječenje zbog karcinoma dojke u KBC-u Rijeka 2013. godine kada je provedena adjuvantna radioterapija desne dojke. Po dolasku u bolnicu navodi bol u području lumbosakralne kralježnice, u lijevom ramenu te trnce u području lijeve podlaktice i šake. VAS po prijemu u bolnicu iznosi 8/10. Prilikom prijema pacijentica je dobrog općeg stanja, slabije osteomuskularne građe, teže pokretna pomoću podlaktične štake. Za bolove u leđima i ruci koristila je NSAR u maksimalnoj dnevnoj dozi. Tražen je konzilijarni pregled anesteziologa algologa radi korekcije analgetske terapije. U terapiju uveden opioidni analgetik (Oksikodon/nalokson 10mg/5mg) uz NSAID u zadovoljavajućoj analgetskoj dozi, a radi izražene neuropatske komponente boli uveden Duloksetin 60 mg.

METODE: Po prijemu u bolnicu učinjen je MSCT cijele kralježnice kojim se verificiraju osteolitične lezije u axisu, kralješku C3, C4, C7, Th1, Th3, Th7-L1, I. rebra lijevo, IX. rebra lijevo te nodus u anteriornom segmentu desnog pluća promjera 6 mm. Lezija dimenzija 59 x 30 mm prominira u spinalni kanal s lijeve strane i komprimira medulu. Odlukom konzilija provedena je palijativna radioterapija.

REZULTATI: Po provedenoj palijativnoj radioterapiji bilježi se znatno smanjenje bolova sa VAS 8/10 na VAS 3/10. Pacijentica prilikom idućeg pregleda u ambulanti navodi bol slabog intenziteta u lijevom ramenu (VAS 3/10) uz prisutne trnce u 4. i 5. prstu lijeve šake. S obzirom na pozitivan učinak radioterapije vrši se deeskalacija analgetske terapije, te se ukida oksikodon/nalokson, a uvodi tramadolklorid/paracetamol uz NSAID (Nalgesin forte 550 mg).

ZAKLJUČAK: Komplikacije uzrokovane koštanim metastazama znatno smanjuju kvalitetu života bolesnika i povećavaju troškove liječenja, stoga je važno, ako je moguće pravovremeno ih spriječiti i što je moguće više ublažiti. Optimalno liječenje koštanih sekundarizama zahtjeva multidisciplinarni pristup. Ciljevi palijativne radioterapije su poboljšanje kvalitete života u vidu smanjenja boli i simptoma prouzrokovanih metastazama, sprječavanje razvoja patoloških fraktura uz mogućnost produžavanja preživljavanja.

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AB100

Remimazolam for paediatric procedural sedation and general anaesthesia

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INTRODUCTION: Remimazolam, an ultra-short-acting benzodiazepine sedative, was first approved in 2020 in Japan as a general anaesthetic for adults and still does not have official paediatric labeling. Without paediatric approval, the off-label use of remimazolam for procedural sedation and general anaesthesia has mostly been limited to published accounts of case reports and small series, but larger studies are being conducted. Remimazolam is primarily used for procedural sedation, but also as a sedative in general anaesthesia for longer surgical procedures. According to literature, the dose of remimazolam recommended for procedural sedation is 0.075 – 0.2 mg/kg and for intravenous anaesthesia induction, 6 – 12 mg/kg/h infusion, with subsequent infusions of 1 – 2 mg/kg/h and intermittent boluses of 0.1 – 0.2 mg/kg, depending on clinical parameters. The dose of remimazolam that was used in our institution is 0.1 mg/kg for premedication, followed by 0.1 – 0.2 mg/kg in slow i.v. bolus for sedation/anaesthesia induction, with intermittent boluses of 0.1 mg/kg during the procedure.

METHODS: Reviewing literature and focus group and case studies in our institution.

RESULTS: Remimazolam demonstrates numerous advantages, such as an impressive half-life of approximately 0.92 h, fewer adverse events, better hemodynamic profile, faster recovery, and quicker return to cognitive function when compared with propofol, ketamine and midazolam.

CONCLUSION: Remimazolam in combination with other sedatives or analgesics presented promising potential as an effective, efficient, and safe IV sedative for paediatric procedural sedation and general anaesthesia.

AB101

Potpuni oporavak svijesti sedam mjeseci po septičkoj encefalopatiji

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UVOD: Septična encefalopatija ima kompleksnu patofiziologiju koja uključuje neuroinflamaciju, disfunkciju neurotransmitera, ishemiju mozga i poremećaj krvno moždane barijere¹. Ona direktno korelira s mortalitetom bolesnika u jedinicama intenzivnog liječenja te potencijalno uzrokuje dugoročne psihičke poremećaje. Procjenjujemo ju GCS ljestvicom², a promjene variraju od promjena ponašanja preko delirija pa sve do kome. Kritično bolesni septički pacijenti su pod visokim rizikom razvijanja dugoročnih kognitivnih poremećaja³. Želimo prikazati potpuni kognitivni oporavak bolesnice nakon 7 mjeseci septične encefalopatije.

PRIKAZ SLUČAJA: Tridesetdvogodišnja bolesnica prima se iz interne intenzivne u anesteziološki JIL septična, hemodinamski nestabilna i analgosedirana. U našu ustanovu javlja se dva dana ranije zbog febriliteta, slabosti, oskudnog kontakta i s flegmonom lijeve šake. Tijekom boravka u SJIL-u rađene su višestruke incizije i nekrektomije lijeve podlaktice, bolesnica je hemodijalizirana, liječena ciljanom antibiotskom terapijom, na vazopresornoj potpori i dugotrajno mehanički ventilirana. Zbog perzistiranja neurološkog deficita (GCS 6 O2, V1, M3) učinjeni su MSCT mozga, a potom i MR mozga na kojem su vidljive promjene koje odgovaraju toksičnoj leukoencefalopatiji u sklopu sepse. Učine se i SSEP na kojem je prisutno generiranje kortikalnih odgovora primarnog senzornog korteksa obostrano uz tešku disfunkciju desno i umjerenu disfunkciju lijevo. Nakon 7 mjeseci bolesnica se oporavlja do potpunog verbalnog kontakta. Pri otpustu u rehabilitacijsku ustanovu bolesnica je urednog kontakta, hemodinamski stabilna, respiracijski suficijentna, dekanilirana, stoji uz pridržavanje na punoj površini oba stopala, lijeve ruke u fleksijskoj kontrakturi.

ZAKLJUČAK: Za septičnu encefalopatiju nema specifičnog načina liječenja, ali ciljanom antibiotskom terapijom, održavanjem hemodinamske stabilnosti i CPP-a te ustrajnom fizikalnom terapijom moguće je potpuni neurokognitivni oporavak.

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AB102

Management of extensive subcutaneous emphysema and complications in polytraumatized patient
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ABSTRACT

Subcutaneous emphysema is the appearance of air in the subcutaneous tissues. It most often occurs as part of thoracic trauma, surgical procedures in the head and neck area, iatrogenic due to mechanical ventilation, placement of a central venous catheter, or in certain medical conditions, such as spontaneous pneumothorax. Subcutaneous emphysema usually does not directly threaten the patient but can lead to significant complications, and the presence of subcutaneous emphysema often indicates serious injuries such as pneumothorax, pneumomediastinum, or cavity perforation. Although often benign, SE can lead to significant complications, especially in critically ill patients admitted to the intensive care unit (ICU).

We present the case report of a patient admitted to the intensive care unit (ICU) following trauma of unknown cause, characterized by extensive subcutaneous emphysema involving the head, neck, thorax, abdomen, and upper extremities. Initial assessment revealed a bleeding wound on the right parieto-occipital region, fresh blood in the right ear, minimal subarachnoid hemorrhage, and pneumothorax on the right. Multidisciplinary treatment involving an intensive care physician, thoracic surgeons, neurosurgeons, abdominal surgeons, cardiologists, and traumatologists was crucial in managing the patient's condition and contributed to a positive outcome.

KEYWORDS: Subcutaneous emphysema, Pneumothorax, Thoracic trauma, Intensive care management

AB103

Usporedba GCS i FOUR ljestvice: Kvalitetnija procjena stanja svijesti u jedinicama intenzivnog liječenja
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UVOD: Procjena stanja svijesti pacijenata u jedinici intenzivnog liječenja (JIL) je važan pokazatelj dinamike akutne faze ozljede ili bolesti. Stanje svijesti je jedan od ključnih pokazatelja težine bolesti i prediktora ishoda liječenja (1). Stoga su iznimno važni pouzdanost i osjetljivost testova u procjeni stanja svijesti. Cilj ovog sažetka jest usporediti Glasgowsku ljestvicu kome (GCS) i Full Outline of UnResponsiveness (FOUR) ljestvicu te prikazati mogućnost njihove kombinirane primjene.

PREGLED: Usprkos širokoj primjeni, GCS ljestvica posjeduje ograničenja poput nemogućnosti procjene verbalnog odgovora kod intubiranih pacijenata, izostanka procjene refleksa moždanog debla, velike varijabilnosti u rezultatu među ispitivačima te upitne pouzdanosti u predviđanju ishoda liječenja (2). Za razliku od GCS, FOUR ljestvica uzima u obzir reflekse moždanog debla te ritam spontanog disanja, istovremeno zadržavajući jednostavnost primjene (3,4). Smjernice preporučuju korištenje FOUR ljestvice za procjenu poremećaja stanja svijesti bolesnika u JIL-u (5). Rezultati istraživanja koja su uspoređivala dvije ljestvice u predviđanju ishoda liječenja nisu zasad dala jednoznačan odgovor (3). Unatoč prednostima FOUR ljestvice, pitanje je može li ta ljestvica u potpunosti zamijeniti GCS. Dodatno je razvijena GCS-P (Glasgow Coma Scale – Pupillary), koji uzima u obzir reaktivnost zjenica i time procjenjuje moguću ishemiju moždanog debla. Kombinacija GCS-FOUR ljestvica bi pružila mogućnost potpunije neurološke procjene, uključujući reflekse moždanog debla, a iskusnom medicinskom osoblju ne bi trebala postavljati dodatne zahtjeve pri procjeni stanja svijesti (6).

ZAKLJUČAK: Iako je GCS danas najkorištenija ljestvica procjene stanja svijesti, liječnici u JIL trebali bi biti svjesni njezinih ograničenja. Korisno je, uz GCS, kombinirati ljestvice koje procjenjuju funkciju moždanog debla. Na taj način dobivamo potpuniju informaciju o kvantitativnom poremećaju stanja svijesti pacijenata u JIL-u te je moguće točnije predvidjeti duljinu boravka u JIL-u i funkcionalni ishod liječenja.

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AB104

Factor XIII: Perioperative Bleeding Management

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ABSTRACT

INTRODUCTION: Factor XIII (FXIII), a plasma transglutaminase, is a coagulation factor that plays a crucial role in blood clotting and patient blood management (PBM). As a final enzyme in the coagulation cascade, FXIII plays a key role in maintaining the functional integrity of fibrin clots.

Besides its crucial role in haemostasis, FXIII plays an important part in various other physiological and pathological processes such as tissue repair, wound healing and immune response to infections.

In some patients, reduced clot firmness was detected before the bleeding occurred. This led to the premise that early administration of FXIII may benefit patients with a risk of perioperative bleeding.

METHOD AND RESULTS: FXIII deficiency is a relatively rare blood clotting disease that is usually diagnosed in patients with severe trauma, patients undergoing major surgery or spontaneously due to other coagulation deficiencies. Specific qualitative and quantitative assays for FXIII deficiency have proven to be useful in identifying patients with an increased risk of perioperative bleeding.

In patients with inherited and/or chronic factor XIII deficiency, long-term prophylactic treatment with FXIII concentrates is advised. Furthermore, replacement therapy should also be considered in patients undergoing surgery with FXIII activity levels lower than 60%.

CONCLUSION: The future of PBM and the importance of coagulation factor XIII is showing great promise. There is yet to be a certain guideline for the use and administration of FXIII; therefore, the use of factor XIII concentrate and replacement therapy is still considered as off-label use and is dependent on the physician.

KEYWORDS: Factor XIII, perioperative management, bleeding, PBM

AB105

Utjecaj okruženja JIL-a na razvoj psihotične epizode nakon primjene ketamina: Prikaz slučaja

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UVOD: Ketamin je poznat kao anestetik koji uzrokuje disocijaciju svijesti od osjetilnih i tjelesnih doživljaja te simptome nalik psihotičnoj epizodi prilikom buđenja iz anestezije. Ovisno o dozi, mogu se javiti simptomi poput zbunjenosti, uznemirenosti, anksioznosti, deluzija, paranoje i halucinacija.

PRIKAZ SLUČAJA: Prikazujemo slučaj 72-godišnje pacijentice s brojnim komorbiditetima (ASA 3 status), koja je podvrgnuta hitnom zahvatu otvorene repozicije i unutarnje fiksacije (ORIF) proksimalnog femura. Operacija je započeta u regionalnoj anesteziji, no zbog trajanja zahvata (4,5 sata) došlo je do popuštanja spinalne anestezije, što je zahtijevalo dodatnu analgeziju višekratnim bolusima ketamina (0,75 – 1 mg/kg), uz dodatak midazolama u bolusima (1 – 2 mg). Nakon operacije, pacijentica je prebačena u jedinicu intenzivnog liječenja (JIL) radi praćenja vitalnih funkcija i nadoknade krvi, s obzirom na značajan intraoperativni gubitak krvi, koji je već počeo biti nadoknađivan tijekom operacije. Tijekom boravka u JIL-u, neposredno nakon buđenja, pacijentica je razvila psihotičnu epizodu s halucinacijama, agitacijom i osjećajem disocijacije. Nikada ranije nije imala znakove psihičkog poremećaja niti joj je ikada postavljena dijagnoza psihičke bolesti, a uz to nije bila niti je ovisna o alkoholu.

ZAKLJUČAK: Iako se psihomimetičko djelovanje ketamina češće javlja u pedijatrijskoj populaciji, ono može biti prisutno i kod odraslih. Stoga je važno osigurati tihu i mirnu sobu tijekom buđenja iz anestezije, što često nije slučaj. Vjerujemo da su buka i svjetlost u JIL-u mogle potaknuti psihotičnu reakciju kod bolesnice, a ti čimbenici, iako ključni za psihofizičko stanje, često su zanemareni. Održavanje smanjene razine buke i prigušenog osvjetljenja tijekom 24 sata može utjecati povoljno utjecati na psihološki oporavak pacijenata.

AB106

Double sequential defibrillation – the more, the merrier, right?

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INTRODUCTION: Cardiac arrests presenting with shockable rhythms such as ventricular fibrillation or pulseless ventricular tachycardia (VF/pVT) are associated with improved outcomes. Double sequential defibrillation (DSD) has been used for refractory VF/pVT cardiac arrests. Refractory VT/pVT is described as the inability to obtain return of spontaneous circulation (ROSC) even after multiple shocks.

METHODS: This review examines the literature to assess whether DSD offers superior outcomes compared to normal defibrillation (ND). The PubMed database was searched using the keywords: double sequential defibrillation. We determined our outcomes of interest as ROSC, survival to hospital discharge, and neurological outcome described by cerebral performance category (CPC).

Results: After filtering the literature, our analysis included three retrospective studies and a pilot randomised controlled trial (RCT). The total number of patients who received ND and DSD in retrospective analyses equalled 717, while the pilot RCT enrolled 405 patients. In the retrospective group, only ROSC showed a statistically significant difference ($p < 0.001$; OR 0.522; 95% CI 0.347-0.778). The pilot RCT demonstrated statistical differences in all outcomes of interest: ROSC ($p = 0.009$; OR 1.72; 95% CI 1.22-2.42), survival to hospital discharge ($p < 0.001$; OR 2.21; 95% CI 1.33-3.67), and neurological outcomes with CPC 1 or 2 ($p < 0.001$; OR 2.21; 95% CI 1.26-3.88), favouring DSD over ND.

CONCLUSION: Recognising that RCTs represent the highest level of evidence in evidence-based medicine, we conclude that ROSC, survival to hospital discharge, and favourable neurological outcomes appeared to be higher with DSD compared to ND among patients with refractory VF/pVT.

KEYWORDS: Electric Countershock, Heart Arrest, Ventricular Fibrillation

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AB107

Role of Factor XIII in cardiac surgery

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ABSTRACT

INTRODUCTION: Approximately 20% of patients undergoing open-heart surgery experience postoperative bleeding, which often necessitates large blood transfusions and, in 2-6% of cases, surgical re-operation. Several risk factors contribute to this increased bleeding risk, including pre-operative use of anticoagulant therapy, pre-operative anemia, and factors related to the perioperative use of cardiopulmonary bypass (CPB), which affects coagulation through mechanisms such as factor consumption and dilution. Achieving a balance between hemostasis and anticoagulation during surgery is challenging. The aim is to determine the clinical significance of Factor XIII (FXIII) in cardiac surgery patients.

Factor XIII and Coagulation: Factor XIII (FXIII) is a calcium-dependent transglutaminase enzyme responsible for cross-linking fibrin in the final phase of coagulation. This action stabilizes the clot and makes it resistant to proteolytic breakdown by plasmin, playing a crucial role in wound hemostasis. Clinical data show that FXIII levels decrease during CPB, primarily due to hemodilution, and that this reduction correlates with increased postoperative bleeding risk. An acquired FXIII deficiency is typically diagnosed when FXIII activity falls below 50 – 70% of normal, according to expert consensus and clinical protocols. Studies have demonstrated that FXIII replacement therapy in patients with acquired deficiency leads to a reduced incidence of postoperative bleeding complications.

CONCLUSION: Incorporating updated FXIII data into patient blood management protocols can help identify those with acquired FXIII deficiencies, leading to improved hemostasis and better postoperative outcomes.

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Successful heart transplantation in a patient with high levels of anti-human leukocyte antigen (HLA) antibodies

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INTRODUCTION: HLA sensitization, defined as high pretransplant levels of anti-HLA antibodies in a recipient, is associated with prolonged waitlist period and increased rate of graft dysfunction or rejection. Transplant candidates can be sensitized through previous pregnancy, transfusion or transplantation. Desensitization protocols targeting multiple aspects of the immune system are mainly derived from kidney recipients. There is no consensus regarding the optimal desensitization regiment in cardiac patients.

CASE REPORT: A 49-year-old woman developed end-stage chemotherapy-induced cardiomyopathy. Since transplantation was initially contraindicated due to recent malignancy, ventricular assist device was implanted as bridge-to-transplant therapy. The procedure-related severe bleeding required massive transfusion. After five years of complete malignancy remission, the patient became eligible for waitlist registration. Pretransplant evaluation uncovered candidate's high anti-HLA antibody levels. Three years after registration, a compatible donor was found. Preoperative desensitization strategy included antibody removal through immunoadsorption and administration of B-cell modulator rituximab. Intraoperatively, due to severe initial graft dysfunction, extracorporeal membrane oxygenator was implanted. Postoperatively, standard immunosuppressants (anti-thymocyte globulin, methylprednisolone, mycophenolate-mofetil, tacrolimus) were introduced. Nine subsequent immunoadsorption procedures were necessary, along with administration of complement inhibitor eculizumab and intravenous immunoglobulins, until anti-HLA antibodies titers declined to acceptable levels and cardiac function improved. The patient was discharged from the surgical intensive unit on the eighteenth posttransplant day with a normal graft function. Subsequent myocardial biopsy showed insignificant cellular and no signs of humoral rejection.

CONCLUSION: Utilization of multimodal desensitization strategies in highly sensitized solid organ recipients improve overall outcomes. Further investigations and protocol standardization in cardiac patients are required.

KEYWORDS: heart transplantation, anti-HLA antibodies, sensitization, desensitization

AB109

Patient Blood Management (PBM) u ginekologiji i opstetriciji: važnost i preporuke Svjetske zdravstvene organizacije

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SAŽETAK

UVOD: Patient Blood Management (PBM) je sustavan, na pacijenta usmjeren i na dokazima utemeljen pristup koji ima za cilj optimizirati razine hemoglobina, minimizirati gubitak krvi i smanjiti potrebu za transfuzijama, uz povećanje sigurnosti i osnaživanja pacijenata (1). U opstetriciji, PBM ima posebno značenje zbog visokog rizika od postporođajnog krvarenja (PPH), vodećeg uzroka maternalne smrtnosti u svijetu, odgovornog za približno 25% svih smrtnih ishoda trudnica (2).

Preporuke Svjetske zdravstvene organizacije (WHO):

Od 2010. godine WHO prepoznaje PBM kao ključnu strategiju u unapređenju maternalnog zdravlja, s fokusom na integraciju u zdravstvene sustave (3). Smjernice obuhvaćaju:

- Prevenciju PPH-a (npr. rutinska primjena uterotonika),
- Liječenje PPH-a (npr. rana intravenska primjena traneksamične kiseline unutar 3 sata od poroda prema rezultatima WOMAN studije) (4),
- Organizaciju skrbi i edukaciju zdravstvenih djelatnika.

Nedostaci u znanju i istraživački prioriteti:

WHO identificira da su mnoge preporuke temeljene na dokazima niske kvalitete, naglašavajući potrebu za daljnjim primarnim istraživanjima, posebice u sredinama s ograničenim resursima (5). Ključni prioritet uključuje ispitivanje učinaka antenatalne distribucije misoprostola trudnicama za samostalnu primjenu tijekom treće faze poroda.

Evolucija smjernica:

WHO kontinuirano ažurira smjernice temeljem novih dokaza:

- 2017.: Preporuka za ranu primjenu traneksamične kiseline (TXA) u liječenju PPH-a (4).
- 2018.: Potvrda oksitocina (10 IU, IM/IV) kao uterotonika prvog izbora za prevenciju PPH-a prema CHAMPION studiji (6).
- 2020.: Uključene nove preporuke o primjeni balonske tamponade, injekciji oksitocina u umbilikalnu venu te distribuciji misoprostola (7).

ZAKLJUČAK: PBM predstavlja ključnu komponentu u prevenciji i liječenju PPH-a te zahtijeva kontinuiranu prilagodbu smjernica prema novim dokazima, edukaciju zdravstvenih djelatnika i primjenu intervencija prilagođenih lokalnim resursima. Efektivna implementacija PBM-a može značajno smanjiti globalnu stopu maternalne smrtnosti.

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AB110

Razvoj sindroma posteriorne reverzibilne encefalopatije u babinjače nakon multiorganskog zatajenja uslijed hemoragijskog šoka: Prikaz slučaja

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SAŽETAK

UVOD: Sindrom posteriorne reverzibilne encefalopatije (PRES) je rijedak kliničko-radiološki entitet karakteriziran nespecifičnim neurološkim simptomima i patognomoničnim neuroradiološkim nalazom. Ukoliko se sindrom na vrijeme prepozna i započne liječenje u 85-90% slučajeva dolazi do potpunog oporavka unutar 7 do 10 dana. U protivnom progredira do trajnih neuroloških oštećenja i smrti.

PRIKAZ SLUČAJA: Na Odjel za intenzivno liječenje Kliničkog bolničkog centra Rijeka primljena je 36-godišnja drugorotkinja koja nakon prijevremenog poroda hitnim carskim rezom iz trudnoće postignute IVF-om razvija hemoragijski šok sa diseminiranom intravaskularnom koagulacijom i multiorganskim zatajenjem. Liječena je masivnom transfuzijom, dvojnomo vazo-presornom terapijom, mehaničkom ventilatornom potporom i bubrežnom hemodijalizom. Desetog dana intenzivnog liječenja dolazi do stabilizacije vitalnih funkcija i bolesnicu se premješta na Odjel za intenzivnu njegu ginekologije gdje nakon deset dana manifestira neurološke simptome encefalopatije, glavobolju, sljepoću, hipertenziju, a potom generalizirani epileptički napadaj. Na temelju kliničkih simptoma prvotno se postavi sumnja na moždani udar te se radiološkom obradom ne prikaže se makromorfološkog akutnog intrakranijalnog zbivanja. Nakon toga postavi se sumnja na PRES koja se u suradnji sa radiolozima potvrdi MR snimkom mozga. Daljnje liječenje nastavlja se u Jedinici intenzivnog liječenja neurologije. Provodi se intenzivno simptomatsko liječenje, duboka analgo-sedacija, mehanička ventilacija, antiedematozna terapija, antiepileptička i antihipertenzivna terapija.

ZAKLJUČAK: Pravodobno postavljena sumnja i pravodobno započeta simptomatska terapija dovela je do potpune regresije simptoma i potpunog oporavka neurološkog stanja bolesnice.

Cilj prikaza ovog slučaja je potaknuti čitatelje na pravovremeno razmišljanje o relativno rijetkoj pojavi kao što je PRES pri liječenju žena s komplikacijama trudnoće i poroda.

AB111

Fasting mysteries: The gastric puzzle of Ozempic patients under anaesthesia

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INTRODUCTION: Semaglutide, a treatment for type 2 diabetes and obesity, may delay gastric emptying, increasing pulmonary aspiration risk during anaesthesia. This summary examines three studies on semaglutide use and residual gastric content (RGC) in patients undergoing anaesthesia.

METHODS: Three studies were analyzed: (1) A case report of a patient on semaglutide undergoing esophagogastroduodenoscopy (EGD), (2) A retrospective analysis of 404 patients (33 on semaglutide, 371 not on semaglutide) undergoing EGD, and (3) A case report of pulmonary aspiration in a patient on semaglutide during EGD.

RESULTS: Patients on semaglutide exhibited prolonged gastric retention, with food residue observed in the stomach even after extended fasting periods of 10 – 18 hours. This led to complications including procedure cancellations and pulmonary aspiration. A retrospective analysis revealed increased residual gastric content (RGC) in 24.2% of semaglutide users compared to 5.1% of non-users ($p < 0.001$). Semaglutide use was significantly associated with increased RGC (OR 5.15, 95%CI 1.92-12.92). These findings suggest that standard fasting protocols may be insufficient for patients taking semaglutide, potentially necessitating adjusted pre-procedure guidelines.

CONCLUSION: Semaglutide use is associated with delayed gastric emptying and increased risk of RGC, potentially leading to pulmonary aspiration during anaesthesia. Standard fasting guidelines may be inadequate for patients on semaglutide. Anesthesiologists should consider additional precautions such as extended fasting periods, prokinetic medications, preoperative ultrasound assessment of gastric content, or temporary discontinuation of semaglutide before procedures requiring anaesthesia. Further research is needed to establish optimal perioperative management for patients on semaglutide to mitigate aspiration risk.

AB112

The use of plasma derived Factor XIII concentrate in the surgical intensive care unit

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ABSTRACT

INTRODUCTION: Factor XIII (FXIII) is an essential component in the final stages of the coagulation process, stabilising blood clots by cross-linking fibrin. Managing bleeding in the surgical ICU is vital, especially for patients undergoing high-risk surgeries or those with coagulation disorders. FXIII deficiency, whether congenital or acquired, can lead to poor wound healing and life-threatening haemorrhages. Consequently, FXIII has become an important therapeutic option, reducing the need for blood transfusions and improving haemostasis in critically ill patients.

METHODS AND RESULTS: In the surgical ICU, FXIII is typically administered to patients who exhibit significant perioperative blood loss or are at high risk of bleeding complications. FXIII is often indicated in cardiovascular surgeries and trauma cases. Dosage and administration are monitored to optimise clot formation while minimising the risk of thromboembolic events. Haemostatic parameters, transfusion requirements, and patient outcomes are evaluated to assess the effectiveness of FXIII in reducing bleeding and stabilising clots. The patient's clinical status is monitored to detect potential adverse reactions.

We present recommendations for the use of FXIII concentrate, developed by a group of experts from UMC Ljubljana and approved by Slovenian Society of Anaesthesiology and Intensive Care Medicine, the Society of Traumatologists, and the Society of Neurosurgeons, in collaboration with haematologists. A case report from our surgical ICU is also included.

CONCLUSION: Factor XIII is a valuable tool in managing bleeding in the surgical ICU, particularly for patients with acquired FXIII deficiency. Its role in enhancing clot stability makes it a viable option in critical care.

KEYWORDS: Factor XIII, Patient Blood Management, ICU

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(AB113 – AB122)

AB113

Uloga regionalnih anestezioloških tehnika u uvjetima katastrofa

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SAŽETAK

Zbrinjavanje pacijenata koje su žrtve prirodnih ili ljudskim faktorom izazvanih katastrofa je izazov za anesteziologa. Takvi pacijenti često imaju višestruke ozljede, otežan dišni put i zahtjevaju kirurško zbrinjavanje ozljeda a time i anesteziju. Za razliku od uobičajene anesteziološke prakse u ovakvim uvjetima svi oni podaci koji su nam potrebni za sigurno izvođenje anestezije (medicinska dokumentacija, laboratorijski nalazi, posljednji obrok) su nedostupni. Prilikom pružanja medicinske skrbi u uvjetima katastrofa ograničene su zalihe lijekova, kisika, opreme (anesteziološki aparat, monitor) i energetskih resursa. Postoji manjak educiranog osoblja za nadzor vitalnih parametara. U takvim uvjetima regionalne anesteziološke tehnike mogu imati prednost pred općom anestezijom. Regionalna anestezija (neuroaksijalna, periferni živčani blokovi) se može izvesti u kratkom vremenskom period te ovisno o primjenjenoj koncentraciji i volumenu lokalnog anestetika može osigurati anesteziju ili analgeziju u trajanju od nekoliko sati. Osiguravanje dostatne analgezije bez primjene opijata ima svoje prednosti u izbjegavanju mogućih komplikacije sistemnog učinka opijata: mučnina, povraćanje, pruritus, opstipacija, te najvažnije respiratorna depresija. Primjena ultrazvuka je omogućila raširenu primjenu regionalnih anestezioloških tehnika za anesteziju, analgeziju i terapiju kronične boli. Također se koristi u hitnoj medicine kao vrijedan alat za brzu dijagnostiku životno ugrožavajućih stanja kod kritičnih pacijenata.

KLJUČNE RIJEČI: Regionalne anesteziološke tehnike, ultrazvuk, uvjeti katastrofa⁶

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AB114

W(h)i(t)ch blocks in the ER?“

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Regional anaesthesia in trauma, especially in isolated trauma, has many advantages over opioids or procedural sedation in the emergency room.

Especially in patients with not- life threatening injuries, delayed analgesia is not acceptable and opioids have many well known side effects like nausea and vomiting, delirium, vasodilation and hypotension in hypovolemic patients, respiratory depression, constipation and pruritus. This leads to an increased length of stay in the ER / emergency department and a higher need for IMC beds (1,2). Musculoskeletal trauma and pain is the most common. Extremity injuries are disproportionately frequent (3,4).

In these situations, ultrasound guided peripheral regional analgesia (USGRA) can improve patients' analgesia, satisfaction and outcome and, furthermore, improve the clinical work flow (3,4,6).

Clinical pathways that include USGRA for analgesia in the ER should be implemented (1,2,3,4). For example in hip fracture, including a femoral nerve block may reduce the incidence of confusion, delirium, pneumonia and opioid requirements (3). Nowadays an opioid- sparing multimodal approach to analgesia should be the standard of care (1,3,4).

In emergency situations and in remote locations, outside of an OR or „block room“, it is important to rely on simple blocks that are easy to teach, to learn and to perform. Though ultrasound allows for a lot of different and new approaches, in emergency it is essential to know the basic blocks for the most important indications. Turbitt et al. state, that it is generally important to identify „high value nerve blocks“, to implement „few blocks for the many“, not „many blocks for the few“, and to end up with „pathway implementation“ as a clinical standard of care (5,6).

The lecture focused on standard, high value blocks for injuries of the upper and the lower extremity, as well as blocks to ease the pain in trunk injuries like rib fractures. One should be aware, that these blocks are not „witchcraft“ and that they may reduce the need for opioids and improve patients' satisfaction and outcomes (1,2,4,6).

Blocks identified as useful for pain therapy in the ER include:

- Supraclavicular brachial plexus block for any injury at the arm. This includes performing lung-ultrasound to exclude pneumothorax
- For shoulder reduction either supraclavicular block with visualization and block of the suprascapular nerve or
- Interscalene block (higher risk of hemidiaphragmatic paralysis and vascular puncture)
- Axillar brachial plexus block for any injury below the elbow, if the patient is able to abduct the arm
- Femoral nerve block for any hip, femoral or knee injury or
- Fascia iliaca block if additional NCFL analgesia is desired
- Motorsparing blocks for hip and knee are normally not necessary in the ER, as mobilization will not occur before surgery
- Distal/ popliteal sciatic nerve block in ankle/ foot injury
- Erector Spine Plane Block for unilateral thoracic trauma and unknown coagulation state
- Serratus anterior plane block for intercostal drainage

The most important seems to maintain the basic safety standards outside of the familiar OR environment in a more challenging work environment. This includes

- Basic hygiene standards, according to society - guidelines and local protocols (7,8)
- Being prepared for LAST in remote workplaces (9)

- Using superficial blocks with no risk of bleeding in unknown coagulation/ anticoagulation (6,10)

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AB115

Zbrinjavanje dišnog puta kod traume lica i vrata – pregled

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Zbrinjavanje dišnog puta kod traume viscerokranija (lica) i vrata izuzetno je važno jer ozljede tih područja mogu uzrokovati opstrukciju dišnog puta, otežano disanje i potencijalno smrtonosne komplikacije. Izravna trauma dišnog puta može se općenito klasificirati kao tupa ili penetrantna. Kod svake od ovih ozljeda dišni put može biti i izravno zahvaćen ili indirektno zbog ozljede okolnih struktura. Ozljeda dišnog puta može se dogoditi na jednoj ili više razina. Maksilofacijalna trauma može ugroziti gornje dišne putove; izravna ozljeda vrata može ugroziti dišni put od hipofarinksa do dušnika; a ozljede prsnog koša mogu zahvatiti i donji dio dišnog puta od traheje do bronha. Unatoč niskoj učestalosti ovih ozljeda, smrtnost zbog traumatskih ozljeda je visoka zbog ugroženosti dišnih putova ili povezanih ozljeda. Procjena traumatiziranog dišnog puta uključuju strukturiranu (ABCDE pristup) kliničku procjenu i nadzor jer se ugroženost dišnih putova može pogoršati tijekom vremena zbog edema, ozljede tkiva i hematoma. Bolesnici s najvećim rizikom za intubaciju ili kiruršku intervenciju uključuju one sa ubodnim ranama ili pokušaj suicida (samoozljeđivanje), prijelom jezične kosti i /ili respiratornim distresom. Pritom je nužno istovremeno voditi računa o mogućoj ozljedi vratne kralježnice i primijeniti odgovarajuće mjere imobilizacije.

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AB116

Invisible pain, visible solution: ACNES and ultrasound -guided block

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ABSTRACT

INTRODUCTION: Abdominal cutaneous nerve entrapment syndrome (ACNES) is a condition caused by the entrapment of anterior cutaneous branches of the lower thoracic intercostal nerves as they pass through the abdominal wall. ACNES is frequently misdiagnosed, leading to unnecessary investigations and surgical procedures

METHODS: We present the case of a patient with a history of oncological disease and localized abdominal pain. Based on clinical evaluation and a positive Carnett's sign, an ultrasound-guided anterior cutaneous nerve block was performed. A mixture of local anaesthetic and corticosteroid was injected at the entrapment site. Pain levels were assessed using the Numerical Rating Scale (NRS) before and after the procedure, with follow-up over several weeks to evaluate symptom recurrence and overall efficacy.

RESULTS: The patient experienced immediate pain relief after the first nerve block but symptoms returned after one month, requiring a repeat block. After the second block, the patient experienced complete and sustained pain relief, with no recurrence. No complications were observed.

CONCLUSION: Ultrasound-guided nerve blocks have emerged as a highly effective and minimally invasive treatment for ACNES, providing targeted pain relief with minimal risks.

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Kako je danas biti žena anesteziolog

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SAŽETAK

U radu ću pokušati prikazati ženu anesteziologa u maloj općoj bolnici od samih početaka rada u anesteziji do danas. Problemi na koje nailazi uz naporan i stresan rad, a opet izazovan. Nedovoljni broj anesteziologa, puno prekovremenih sati i dežurstava. Posao koji zahtijeva kontinuirano učenje, stjecanja novih znanja i vještina, uz teškoće u ostvarivanju potrebne edukacije, kao i položaj anesteziologa prema drugim strukama. Kako je bilo nekad i kako je danas. Tu su dileme i vječna pitanja o kvaliteti svog rada, uspješnosti i karijeri, odnosima s kolegama i pacijentima .A s druge strane ostvarivanje privatnog života, bračnog života i majčinstva, odnosi s obitelji i prijateljima. „Jesam li dobar anesteziolog zbog toga što sam se osim posla posvetila brizi o obitelji i pati li moja obitelj zbog moje karijere? Jesam li mogla dati više i bolje? Kakva bi bila moja karijera da možda živim u većem gradu? Ima li anesteziologinja uz težak odgovoran , nadasve stresan posao vremena za sebe i slobodne aktivosti? Kako se rješava stresa? Anketom među kolegicama u općim bolnicama pokušati ću naći odgovore na neka od ovih pitanja-

KLJUČNE RIJEČI: opća bolnica, žena anesteziolog, edukacija, privatni život , anketa

AB118

Sex, medicine, and anaesthesiology: a true Slovenian story

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ABSTRACT

INTRODUCTION: In recent decades, the number of female medical students has been increasing globally, and in many countries, it even exceeds the number of male medical students. Female medical students dominate in Latin American countries such as Argentina and Brazil, as well as in the USA, Canada, the United Kingdom, and most European nations. In the Middle East and Asia, the presence of women in medicine is growing in countries like Iran and Saudi Arabia, while socio-economic barriers still limit female enrollment in India and Pakistan. In some African countries, men continue to be the majority. This trend is likely due to women achieving better academic results in schools and universities.

Although women now constitute the majority of medical graduates, they remain underrepresented in leadership positions worldwide (e.g., as heads of clinics).

METHODS AND RESULTS: In the Republic of Slovenia, the number of female medical students has exceeded that of male students in recent decades, and this gender gap continues to grow in favor of women. This trend is also reflected in the increasing number of female medical doctors and specialists in the country. A notable example is the Department of Anaesthesiology, ICU, and Pain Management at the University Medical Centre Maribor, where the concept of a "glass ceiling" appears to be absent.

CONCLUSION: The future for female medical students, doctors, anesthesiologists, and even department heads looks promising in Slovenia. But what about men?

KEYWORDS: gender differences, medical students, anaesthesiology

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NYSORA protokoli za TEP kuka i koljena te njihova implementacija u Kliničkom bolničkom centru Zagreb

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UVOD: Obzirom na neprestano povećanje broja ugrađenih endoproteza te liječenjem sve starijih pacijenata sa brojnijim komorbiditetima javlja se potreba za boljom i standardiziranijom perioperacijskom skrbi. Cilj je smanjiti broj dana hospitalizacije uz bolji konačni ishod. Stoga su se razvile regionalne tehnike uz LIA-u (lokalna infiltracijska analgezija).

REZULTATI: Prema Nysora protokolu spinalna anestezija je definitivno superioran tip anestezije za ugradnju endoproteze kuka i koljena iako se povremeno u literaturi pojavljuju oprečni rezultati. Na našem odjelu apliciramo sufentanyl ili morfij intratekalno uz 0.5 % levobupivacain. PENG blok ne primjenjujemo za postoperativnu analgeziju jer je više prikladan za anteriorni pristup TEP-a kuka. Kod lateralnog i latero-posteriornog pristupa koji je zastupljen u našoj ustanovi apliciramo ako je potrebno fascia iliaca blok. Određeni broj kirurga na kraju op aplicira LIA-u – mix 0.2 % ropivacaina, ketorolaca i adrenalina.

TEP koljena je značajno bolnija operacija u odnosu na TEP kuka te su regionalna tehnike više zastupljene u svakodnevnom radu. Predmet česte rasprave je mjesto aplikacije lokalnih anestetika oko femoralnog živca – ileopektinalna fossa, distalni femoralni trokut ili aduktorni kanal. Što je mjesto aplikacije distalnije motorička blokada je manja ali istovremeno i analgezija. Stoga je naš pristup spinalna anestezija – sufentanyl ili morfij intratekalno uz 0.5 % levobupivacaine. Na kraju op LIA što je naročito bitno za stražnji dio koljena. Ako je prisutna bolnost i dalje primjeni se femoralni blok.

ZAKLJUČAK: Bitna je standardizacija perioperacijskog protokola naročito regionalnih tehnika-indikacija i način izvođenja.

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Anestezija za kombinirane transplantacije srca i jetre te srca i bubrega

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Kombinirane transplantacije srca i jetre te srca i bubrega globalno se sve češće izvode, a ishodi su usporedivi s izoliranom transplantacijom pojedinačnog organa. Studije pokazuju da su odbacivanje te učestalost vaskulopatije srčanog alografta, rjeđi nakon kombiniranih transplantacija nego nakon izolirane transplantacije srca.

U Kliničkom bolničkom centru Zagreb do sada su učinjene tri kombinirane transplantacije srce-jetra te tri transplantacije srce-bubreg. Svi bolesnici s transplantacijom srce-jetra imali su zatajenje srca kao posljedicu hereditarne transtiretinske amiloidoze kod koje dolazi do taloženja amiloida (mutiranog transtiretina) u srce. Budući da se on pretežno proizvodi u jetri, transplantacija jetre je imperativ u liječenju ovih pacijenata. Pacijenti za kombiniranu transplantaciju srce-bubreg imali su zatajenje srca kao posljedicu ishemijske ili neishemijske kardiomiopatije uz zatajenje bubrega kao posljedicu kronične bolesti bubrega.

Vođenje anestezije tijekom kombiniranih transplantacija je vrlo izazovno, a podrazumijeva kompleksne procedure uključujući postizanje odgovarajuće hemodinamike i hemostaze te odluke o mehaničkoj cirkulacijskoj potpori. Anestezioški tim čine kardijalni anesteziolog u suradnji s anesteziologom koji ima iskustva u transplantaciji jetre, odnosno bubrega. Uobičajeno je da se prvo započne s transplantacijom srca, jer je dopušteno vrijeme ishemije srca znatno kraće u usporedbi s jetrom i bubregom. Intraoperacijski hemodinamski nadzor uključuje primjenu plućnog arterijskog katetera i transezofagijskog ultrazvuka, koji se koriste za preciznu terapiju tekućinom, procjenu ventrikularne funkcije i mjerenje plućnog vaskularnog otpora te podešavanje inotropne i vazoaktivne potpore. Smanjena perfuzija i hemodinamska nestabilnost stavljaju transplantiranu jetru i bubreg pod rizik lošeg funkcionalnog ishoda, a temeljita hemostaza je kritičan dio ovako kompleksnih kombiniranih transplantacija. Zaključno, dobra komunikacija unutar multidisciplinarnog tima je izrazito važna za konačan ishod.

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AB121

When cardiac surgery triggers a cascade: a case of microangiopathic hemolytic anemia and DIC

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This case report presents a 72-year-old female with pre-existing bicytopenia and suspected systemic lupus erythematosus (SLE) who underwent mitral valve replacement surgery for severe mitral regurgitation. Her complex pre-operative hematologic and immunologic status posed significant challenges for perioperative management. Cardiac surgery, with its inherent physiological stress, can trigger an exaggerated immune response, as observed in this patient. Post-operatively, she developed vasoplegic shock requiring escalating vasopressor support, acute kidney injury necessitating hemodialysis, and respiratory failure requiring re-intubation. She also exhibited thrombocytopenia, elevated inflammatory markers, and evidence of microangiopathic hemolytic anemia with disseminated intravascular coagulopathy (DIC). Extensive investigations ruled out heparin-induced thrombocytopenia and autoimmune thrombocytopenia. While atypical hemolytic uremic syndrome (aHUS) was considered, further investigations, including complement studies to evaluate for potential complementopathies, are pending. Treatment included corticosteroids, intravenous immunoglobulin (IVIG), and targeted therapies for DIC. The patient's prolonged and complicated post-operative course underscores the unique challenges faced when managing cardiac surgery patients with underlying hematologic and immunologic disorders. This case highlights the importance of a multidisciplinary approach and the need for heightened vigilance in this high-risk population.

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AB122

Women in regional anaesthesia

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INTRODUCTION: Women in regional anaesthesia remain underrepresented compared to male colleagues are less likely to be in academic and leadership positions. There are many reasons for this in literature. The belief that men are natural leaders with their assertiveness praised and their competency assumed is one of the main reasons of many ones. Regional anaesthesia requires repetitive mastery. Male trainees often get more opportunities to do blocks so the female trainees lose hands on practice. Women's progress is often slowed by family responsibilities or maternity leaves. This often results as lack of female role models and teachers further discouraging other women.

THIS GIRL BLOCKS: This girl blocks is a community that supports and empowers women in regional anaesthesia, bringing women all around the world together. It provides platforms where women can connect and communicate but also welcomes male colleagues.

WOMEN IN REGIONAL ANAESTHESIA AND PAIN MEDICINE: The women in regional anaesthesia and pain medicine was created to encourage recruitment and promote the contributions of women in regional anaesthesia and to recognize the achievements of women in the field and understand the challenges that face women in the profession. Mentorship programs, scholarships, and dedicated funding for women in research can help remove barriers and provide valuable support for their careers. Publishers must adopt policies that promote transparency and fairness, ensuring that the quality of research is the primary basis for publication, rather than the gender or affiliation of the authors.

CONCLUSION: Women in regional anaesthesia should be equal as men in academic publishing, that is not just a matter of equality it is also mandatory for progress and innovation within regional anaesthesia and other medical specialities. By addressing gender bias and providing more opportunities for women, we can bring closer new perspectives, enhance innovation and advance in the field of regional anaesthesia. „This girl blocks“ and „Women in regional anaesthesia and pain medicine“ as women work groups is a great mean to create a more inclusive future in academic publishing and promoting regional anaesthesia.

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