Quadratus Lumborum Block for Postoperative Pain Management After Inguinal Hernia Repair

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Background. growing popularity of quadratus lumborum block is explained by it's very easy to learn and perform technique as well as the fact that it is very effective in providing pain relief after various abdominal operations. Quadratus lumborum (QL) block is an abdominal truncal block that provides analgesia to the abdominal wall (Th7-L1). Effective postoperative analgesia after abdominal surgeries is important for early ambulation and patient comfort. The aim of this pilot project was to investigate the effectiveness of QLB on postoperative pain after conventional inguinal hernia repair.

Methods. lateral QLB block was administered to a total of 16 patients (ASA I-II) who had undergone inguinal hernia repair. Patients were in the supine position under general anesthesia; we injected 30 ml of 0.25% levobupivacaine under US control. Eight patients received QLB 15 minutes before incision; eight patients received QLB after surgery. At the end of surgery all patients received 50 mg dexketoprofene i/v for visceral pain. For all patients the pain level was evaluated using visual analog scale (VAS) at 30min, 1st, 3rd, 6th, 9th, 12th, 24th hour.

Results. no patients required additional opioid dosage during first 24 hours. For 14 patients VAS were no higher than three. Two patients needed additional dexketoprofene after 8 h after surgery because of VAS were ≥3. Performance of QLB before surgery required in average fentanyl 0.15 mg, performance after surgery required in average 0.3 mg during anesthesia. Fourteen of 16 patients were satisfied with the quality of pain relief.

Conclusion. Quadratus Lumborum Block is an effective method in pain control after conventional inguinal hernia repair and is easy to perform and its effect lasts at least 24 hours. Quadratus Lumborum Block significantly reduce opioid use. No complications were observed.

Peripheral Nerve Blocks in Ambulatory Knee Arthroscopy: Choice of Nerve Blocks and Local Anesthetic

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Background. Knee arthroscopies are mostly performed in ambulatory setting, expecting short acting anesthesia with maximum patient satisfaction. We aimed to assess benefits of supplementary obturator nerve block with 1% lidocaine.

Methods. Prospective analysis of 31 patients, undergoing knee arthroscopy under regional anesthesia. Patients were divided into two groups: first group received femoral, sciatic and obturator nerve blocks (FSO), second – femoral and sciatic (FS). Lidocaine dosage, quality and duration of blockade, numeric pain rating score, tourniquet pressure sensation (0-10), patient's satisfaction and surgeon's comfort (0-10) were assessed. Statistical analysis: SPSS programme (Chi-square test, Independent-Samples T-test and non parametric Independent-Samples Mann-Whitney U test).

Results. Additional obturator nerve block was performed for patients with higher body weight (p=0.03), though the body mass index did not differ (p=0.09) between groups. A total used dose of lidocaine was higher in FSO group: 678.8±56.4 vs 602.0±8.6 mg (p=0.02), without systemic toxicity signs. However, there was no difference between groups on average dosage of lidocaine per kilogram: 8.3±0.4 vs 8.2±0.5 (p=0.89). Installation and quality of motor and sensory blockade in sciatic and femoral zones at 15th minute did not differ (p=0.17, p=0.38). The sensation of tourniquet was stronger in patients without an obturator nerve block (p=0.03). Mean motor block duration was 273.0±88.0; 358.6±162.7 min and analgesia lasted to 343.2±99.0; 402.3±130.4 min without significant difference between groups. Although maximum postoperative pain was 5.4±2.8; 5.5±1.8 (p=0.78), overall patient's satisfaction 9.3±1.2; 9.2±1.5 (p=0.54) and surgeons comfort 8.7±2.5; 9.1±1.6 (p=0.65) were very good.

Conclusions. For knee arthroscopies, peripheral nerve blockade performed only with lidocaine is suitable to patients and surgeons. An obturator nerve block diminishes the tourniquet pressure sensation and it could be added for patients with higher body weight with a higher total dose of lidocaine. Individual lidocaine dosage per kilogram reduces the risk of local anesthetic toxicity.

Ultrasound guided bilateral rectus sheath block with multimodal analgesia versus intrathecal morphine in gynaecological oncology surgery – A non inferiority trial

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**Introduction.** Rectus sheath block (RSB) is an effective modality for provision of midline somatic analgesia(1). The objective of this study was to evaluate whether multimodal analgesia in combination with ultrasound guided bilateral RSB provides similar analgesia as compared with intrathecal morphine (ITM) in women undergoing gynaecological oncology surgery with a midline incision. The primary outcome was total postoperative morphine consumption as administered by intravenous patient-controlled analgesia (PCA) at 24 hours. The secondary outcomes included time to first request for analgesia, VAS scores for pain at rest and on movement, adverse effects of opioids and patient satisfaction.

**Methods.** The study was a prospective, randomized, parallel group, concealed allocation, non-blinded, non–inferiority trial. 90 ASA physical status 1 and 2 patients aged 18-80 years, scheduled for elective gynaecological oncology surgery with a midline incision were included in trial. Patients were randomized to one of the following two study groups: 1) Group ITM: 4 μg/kg morphine administered intrathecally preoperatively 2) Group RSB: 20 ml of 0.375% Ropivacaine injected into rectus sheath space on either side under ultrasound visualization along with intravenous dexamethasone, paracetamol and diclofenac sodium. Postoperative analgesia was administered with IV morphine via a PCA pump for 24 hrs.

**Results.** PCA morphine used over 24 hours was more in group RSB than in Group ITM [27.20 ± 7.74 mg versus 21.73 ± 7.79 mg (P=0.001). Postoperative pain scores at rest and on movement were higher in group RSB at 6, 12 and 24 hours and 2, 4, 6, 12, 24 hours respectively (P <0.05). The mean time to passage of flatus was significantly more in group ITM as compared to group RSB [46.96 ± 11.88 versus 29.29 ± 5.95 hours (P=0.01)].

**Conclusion.** The present study failed to show the non-inferiority of RSB combined with multimodal analgesia in comparison to ITM in terms of post-operative pain relief in gynaecological oncology surgery.

Analysis of back pain management at the Pauls Stradiņš Clinical University Hospital, Emergency Medicine Center

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Background. The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”. Back pain is one of the main causes affecting the patient’s quality of life, functional condition and ability to work. Back pain, regardless of localization, has experienced, at least once in a year, 60-90% of the industrialized populations. In European countries, one in five people suffer from chronic backache. In contrast, a potentially serious illness can be about 2% of patients with lower back pain requiring surgical or specific treatment. OBJECTIVE: To analyze the care of patients with back pain at the primary care level at the Emergency Medical Center from 1 January 2017.

Methods. Analysis of primary medical documentation, determining the quantity and proportion of patients, the extent of the examinations and treatment, the validity of diagnoses and conclusions, and assessing the quality of care provided in patients with back pain.

Results. For two months (from 01.02.2017 to 28.02.2017), 456 patients with a history of complaints of pain in the back were analyzed. On a daily basis at the Emergency Medicine Center (EMC), patients complaining of pain in the back account for 5-11% of the total number of patients (on average 163 people per day), t. i., 7-18 people per day. After primary medical examination, 1% of the patients complaining of pain in the back do not receive the pain therapy at the EMC stage, but are released with preions. A large proportion of patients (23% or 107 patients) receiving analgesics do not have a record of therapeutic efficacy in the medical records. 25% of patients (116 patients), according to the records (more specifically, their deficiency) in the history of the disease, the back is not palpated and the localization, intensity and nature of the pain are not specified. All patients with traumatic pain in the back (172 or 37.7% of the total number of patients over two months), a CT scan was performed (100%), of the other 284 patients, the CT examination was performed in 152 cases. Blood and urine tests were performed in 318 out of 456 cases (69% cases). Predominantly the blood and urine tests were not performed for the patients with back pain defined as a mild traumatic event (115 patients with traumatic pain genes - 25% of the total number of patients, or 67% of all traumatic patients). Clinically unfounded diagnosis according to ICSC-10 classification was detected in 292 out of 456 cases (64% of cases).

Conclusions. 1. At the EMC stage there are many patients with complaints of back pain. 2. Diagnosis does not always match the clinical situation (64% of cases). 3. Patient care is not in line with the clinical guidelines for back pain. 4. In order to improve patient care, educate doctors (for example, medical documentation), patients’ surveys (including an analogue pain scale to objectivize the therapeutic efficacy) on back pain should be introduced and criteria for the minimum amount of examinations for patients with back pain should be established.

Anatomical Relationship Between The Common Carotid Artery And The Internal Jugular Vein During Head Rotation: An Ultrasonographic Study

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Background. Injury to common carotid artery (CCA) is a frequent complication of internal jugular vein (IJV) catheterisation. We suggest there exists an angle for head rotation to minimise risk of arterial puncture. We aimed to identify head rotation angle for optimal and safe IJV catheterisation.

Methods. We conducted a prospective study in the intensive care unit at the university hospital. 82 patients admitted during two-month period were included. Ultrasound examination of right IJV and CCA was performed for patients in supine position. Vessels were visualised in transversal plane, middle-triangle level. Ultrasonographic images were taken at 0°, 15°, 30°, 45°, 60° head rotation angle at end-point of tidal volume exhalation. IJV puncture angle, CCA puncture angle, overlapping angle, real puncture angle, IJV flattening were evaluated. Statistical analysis was carried out with the SPSS package, t-test, ANOVA were used. Statistically significant when p value <0.05.

Results: 46 out of 82 patients were male, 31 were mechanically ventilated. Mean age – 65.46±17.19 yrs. IJV puncture angle was largest at 60° rotation (87.33±21.71°), differed significantly from 0° (63.69±19.07°; p<0.001) and 30° rotation (77.27±20.78°; p=0.001). IJV puncture angle at 0° and 30° rotation differed significantly (p=0.001). Overlapping angle was largest at 60° rotation (41.62±13.56°), differed significantly from 0° (20.76±11.41°; p<0.001) and 30° rotation (22.88±12.27°; p<0.001). Overlapping angle at 30° and 0° rotation differed significantly (p<0.001). Real puncture angle at 30° was largest (57.39±18.91°), differed significantly from 0° (42.93±17.15°; p=0.002) and 60° rotation (45.71±20.94°, p=0.049). Flattening was smallest at 60° rotation (0.2±0.17), differed significantly from 0° (0.39±0.17; p<0.001) and 30° rotation (0.31±0.16; p<0.001). Flattening at 0° and 30° rotation differed significantly (p=0.017).

Conclusions: While IJV becomes more rounded and puncture angle increases with head rotation, peaking at 60°, CCA covers larger area of vein, consequently real puncture angle peaks at 30°, indicating safest position for IJV catheterisation.

Can Inferior Vena Cava Respiratory Variability Be Useful to Predict Hypotension and Bradycardia During Spinal Anaesthesia in Spontaneously Breathing Patients?

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Background. Hypotension and bradycardia are the most common hemodynamic disorders and side effects of spinal anaesthesia (SA) on the cardiovascular system [1]. SA-induced sympathetic denervation causes peripheral vasodilatation and redistribution of central blood volume that may lead to decreased venous return to the heart [2, 3]. The aim of the study was to evaluate the changes of inferior vena cava collapsibility index (IVC-CI) during spinal anaesthesia in spontaneously breathing patients undergoing knee arthroplasty surgery to prognose manifestation of intraoperative hypotension and bradycardia.

Methods. 60 patients (American Society of Anesthesiologists (ASA) physical status I or II, no clinically significant cardiovascular pathology) of both sexes undergoing knee arthroplasty under SA were included in the prospective study. Inspiratory and expiratory inferior vena cava (IVCin, IVCex) diameters were measured using an ultrasound device in supine position before and immediately after SA, then 15 min, 30 min, and 45 min after SA was performed. The heart rate, along with systolic, diastolic, and mean arterial blood pressures were collected. The parameters were measured at the baseline and at the next four time points.

Results. There were no significant changes in IVCin, IVCex, and IVC-CI compared to baseline and other time point measurements in hypotensive versus nonhypotensive and bradycardic versus nonbradycardic patients (p > 0.05). Changes in IVC diameter do not prognose hypotension and bradycardia during SA: the area under the curve (AUC) of the receiver operating characteristic (ROC) curve for IVC-CI at all measuring points was < 0.7, p > 0.05.

Conclusions. Reduction in IVC diameters and increase in IVC-CI do not predict hypotension and bradycardia during SA in spontaneously breathing patients undergoing knee arthroplasty surgery. It seems SA does not affect circulating blood volume and heart preload by increasing variability of IVC.

Comparison of Two Continuous Non-invasive Hemodynamic Monitoring Techniques in Perioperative Setting

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**Background and Goal of the Study.** Basic hemodynamic variables are fundamental, however inaccurate in assessing the volume status [1]. The appropriate advanced evaluation of intraoperative hemodynamics enables the prevention of cardiovascular complications associated with hypoperfusion [2]. The aim of the study was to identify validity of measurements obtained in perioperative setting using two non-invasive hemodynamic monitoring techniques, comparing thoracic electrical bioimpedance (TEB) and ClearSight (CS).

**Materials and Methods.** The study included high-risk surgical patients; >30 years; major elective colorectal surgery; the duration of surgery >120min. Data were analyzed using SPSS software version 24.0. Parametric quantitative data were expressed as mean ± SD. The Shapiro-Wilk test was used to test the normality of the distributions. Linear regression model was used to measure the strength of a linear relationship between TEB and CS. Bland-Altman analysis was performed to assess mean difference, precision, limits of agreements (LOA). Critchley and Critchley method was used to calculate percentage error (PE), and if <30%, was considered clinically acceptable.

**Results.** 10 patients were involved in our study. During 21 measuring time points: 210 measurements were collected from the CS and 164 from the TEB; 46 of TEB measurements were lost due to electrocautery. The mean CO with TEB was 6.15±1.14L/min vs 4.78±1.40L/min with CS (p<0.01). The relationship was significant (n=144; r²=0.7; p<0.01). The mean bias, LOA and PE were 1.37±1.01L/min, 3.35L/min and -0.61L/min and 36.22%, respectively. The mean SVI with TEB was 48.64±9.8ml/beat/m2 vs 37.12±9.14ml/beat/m2 with CS (p<0.01). The relationship was significant (n=144; r²=0.65; p<0.01). The mean bias, LOA and PE were 11.52±7.92ml/beat/m2, 27.04ml/beat/m2 and -4ml/beat/m2 and 36.19%.

**Conclusions.** The two methods of non-invasive hemodynamic monitoring are not compatible in the perioperative setting. However, CS system has more advantages in terms of continuity and simplicity of monitoring, while measurements of TEB are interrupted with electrocautery.

Reduction of Cardiovascular Mortality Using Innovative FFRct Evaluation in Patients Undergoing PAD Surgery

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Introduction. Patients with peripheral artery disease (PAD) have limited physical activity and may not have coronary artery disease (CAD) symptoms. They are at greater risk for perioperative myocardial infarction, mortality due to coexisting CAD. There is not available any non-invasive test for patients with PAD to reveal CAD. We performed a study to test coronary CT-derived fractional flow reserve (FFRCT) effectiveness to decrease 30 days MACE (major adverse cardiac events).

Methods. Prospective study was done from October 2017. Patients with no CAD symptoms, no cardiac history admitted to hospital for elective vascular surgery were included in study. They were randomly divided into two groups – FFRCT group (102) and control group (108). FFRCT group was prepared for coronary CT angiography with beta-blockers, ivabradine and nitroglycerin. Acquired CT study was processed by HeartFlow Analysis. CAD was defined as FFRCT measurement below 0,81. Patients with CAD received Vascular Heart Team care and individually selected CAD treatment. Control group received perioperative care as recommends present guidelines. Continuous variables were described as the mean ± standard deviation and categorical variables as percentages. The parametric Student t-test was used for variables with regular distribution and Pearson Chi-Square was used as non-parametric test. Statistical significance was defined as a p < 0.05.

Results. Both groups did not differ statistically (age 66 in FFRCT group vs 65 years, p=0,755, BMI 25 vs 26, p=0,583, males 79,4% vs 81,5%, p=0,659, smoking 69,6% vs 69,4%, p=0,979, diabetes 12,7% vs 17,8%, p=0,315). The overall prevalence of CAD in PAD patients with no CAD symptoms was 75%. At 30 days MACE was 8 (7,4%) in control group vs 0 (0%) in FFRCT group, p=0,005.

Conclusion. CAD is observed in 75% patients without cardiac history undergoing elective peripheral vascular surgery. Proactive PAD patient examination, CAD treatment and close perioperative care could reduce MACE.

The influence of peri-operative factors on the complication rates and in hospital stay length following gastric resection due to malignancy

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**Introduction.** A variety of studies have been carried out aiming to investigate if we can improve the complication rates, outcomes and shorten the in hospital stay for patients following total or partial gastric resections due to malignancy. The aim of the study was to evaluate the influence of peri-operative factors on the complication rates and in hospital stay following total and partial gastric resections due to malignancy.

**Materials and methods.** We collected the data retrospectively in a university hospital. We analysed the medical records of all patients who underwent subtotal or total gastrectomies due to gastric malignancy over a five year period. Altogether 115 patients were included in the study. After the statistical analysis was performed we evaluated what influence the peri-operative factors have on short term complication rates and in hospital stay length.

**Results.** Preoperative blood test results did not corresponded to the complication rates or in hospital stay (p>0.05). There was no statistically significant relationship between the ASA grade (p=0.07), neoadjuvant chemotherapy (p=0.81), cancer stage (p=0.40), length of operation (0.96), anaesthetic (p=0.14) or postoperative pain management technique (p=0.66) and the complications. The average intraoperative iv fluid dose was 2533 ml and did not influence the postoperative complications (p=0.9). The only factors which were found to be related (p<0.05) to the in hospital length of stay were patients’ age (p=0.02), pre-operative upper GI bleeding (p=0.001), pre-operative (p=0.001) and intraoperative (p=0.002) red blood cell transfusions.

**Discussion.** It could be argued that pre-operative bleeding signifies deleterious progression of the condition, however, the cancer stage did not have any statistical significance. Considering that neither intra-operative blood loss, nor pre-operative blood test results had any significance, it is worth to consider if the transfusion itself could have negative effects. Further studies are needed to investigate this hypothesis.

Dynamics of Coagulation Biomarkers in Long Term Follow-up after Bariatric Surgery

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Background. Obesity is an established risk factor for developing postoperative thrombotic events [1]. Deep vein thrombosis and pulmonary embolism are the major risk factors of mortality after bariatric surgery (BS) [2]. The aim of the study was to determine hypercoagulable states in patients undergoing BS and evaluate the dynamics of TEG parameters, clotting factors and inflammatory markers in the long term follow up in relation to weight loss after BS.

Methods. We included 60 consecutive patients undergoing BS. Hypercoagulable state was defined when patients showed clot strength (G) of ≥11 dynes/cm² or maximum amplitude (MA) ≥68 mm on TEG. TEG measurements, protein C, protein S, FVII, ATIII, CRP and hs-CRP were assessed at three time points: prior to surgery, one month and one year after surgery.

Results. Fourteen patients (23.3%) had G≥11 dynes/cm² and seventeen (28.3%) had MA≥68 mm at baseline. One-year post-surgery average MA values were significantly lower (63.04 mm) when compared to baseline (65.60 mm; p=0.001). G values have significantly decreased both one month (9.19 dynes/cm²; p=0.018) and one year (8.71 dynes/cm²; p <0.001). ATIII activity increased significantly from baseline (106.3%) compared to one month (115.6%; p<0.001) as well as one year post-surgery (119.2%; p<0.001). FVII activity was reduced from baseline (132.7%) compared to activity one month (122.8%; p=0.038) and one year after the surgery (123.6%; p=0.043). Hs-CRP decreased from 7.1 mg/l to 2.3 mg/l one year after the surgery (p<0.001). CRP significantly decreased from 6.1 mg/l to 2.6 one year after surgery (p<0.001).

Conclusions. A considerable proportion of patients referred to BS show a trend towards hypercoagulability on TEG. Significant changes of MA and G values on TEG analysis, as well as dynamics of FVII factor activity, ATIII and inflammatory markers suggest reduced pro-coagulatory activity in relation to weight loss after BS.

Background. this is primary results of randomised double-blinded study comparing postoperative changes in cognitive functions and desflurane and sevoflurane effect on these changes.

Methods. study included at least 40 year-old patients undergoing elective thyroid surgery under general anesthesia. Patients were randomly allocated to either sevoflurane or desflurane group. Cognitive testing was performed a day before the surgery and repeated 24 hours postoperatively. Tests consisted of 10 memory, attention and reasoning tasks. 20% decrease in postoperative score was considered as postoperative cognitive dysfunction. Analysis included descriptive statistics, non-parametric tests, correlation and logistic regression where appropriate.

Results. at present we have the results of 38 patients. Median decrease in postoperative cognitive testing was -2.72% (IQR 16.72). Only 1 patient (2.63 %) had been diagnosed with postoperative cognitive dysfunction. However, 6 patients (15.79%) had significantly lower memory scores. Both sevoflurane and desflurane groups were comparable based demography, duration of anesthesia, intraoperative opioids, postoperative pain and well-being. No difference was found in cognitive tests comparing sevoflurane and desflurane groups, except for memory tasks, where sevoflurane group performed worse ($p = 0.01$). Desflurane group actually showed an increase in postoperative memory score ($p = 0.03$).

No correlation was observed between age or duration of anesthesia. There was weak negative correlation between postoperative well-being and memory score ($r = -0.35$, $p = 0.03$). Medium negative correlation found in sevoflurane group between postoperative well-being and reasoning tasks ($r = -0.55; p <0.01$), as well as overall score ($r = -0.42; p = 0.03$). Temperature correlated with memory scores ($r = -0.58; p = 0.02$) in sevoflurane group.

Conclusions. desflurane group performs better in memory tasks, however, no difference is found between two inhalational anesthetics in overall cognitive result. In contrast to age or anesthesia duration, intraoperative temperature and postoperative well-being may have implications on postoperative cognitive performance.
Fast track anaesthesia for liver transplantation: our experience

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Early investigators believed that prolonged intubation allowed patients after liver transplantation to adequately recovery from the stress of surgery. Advocates of this practice argue that these surgeries are associated with large fluid transfusions and patients often have multiple significant comorbidities. As surgical and anaesthetic techniques have improved, a growing number of centers have begun the practice of early extubation following transplantation. According to Mayo Clinic Florida, there are extubated in the operating room ~ 60% of patients after liver transplantation (World Journal of Hepatology 2015 September 18, 7(20):2303-2308). We have evaluated our cases since 2015. There were performed 30 liver transplantations and 33.33% (10) of patients were extubated in the operating room (first group), others 66.67% (20) were left intubated and transported in intensive care unit (second group). We used fentanyl, propofol for induction of anaesthesia, remifentanil infusion, sevofluran/desfluran for maintenance and rocuronium for relaxation. In first group blood loss was: 80% (8 patients) 10000 ml. All of anaesthesiologist base determination of extubation on clinical experience after consultation with the operating surgeon. Studies observed that anaesthesiologist who were specialist in field of liver transplantation attempted extubation in more recipients - we worked 4 anaesthesiologists, all extubated patients were by the same anaesthesiologist. Contraindications to early extubation were active bleeding and high volume transfusions with significant coagulopathy, hemodynamic instability, preoperative mechanical ventilation, severe encephalopathy, prediction of graft dysfunction.

References: World Journal of Hepatology 2015 September 18
Factors Associated with Fear and Opinion on Anesthesia and Surgery

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Background. Patients are seldom fully informed about all potential risks of procedure [1]. Fear of anesthesia tends to occur among younger patients due to lack of experience and information [2], therefore it is important to determine attitudes, expectations and unclarities related to anesthesia [3].

Methods. 141 female patients at maternity home of Pranas Mažylis in Kaunas were given a questionnaire. Age, education, previous anesthesia experience was evaluated. Patients chose certain advantages or disadvantages of minor hospital, marked medical personnel job importance on four-point scale. Five-point scale evaluated fear regarding anesthesia, surgery and postoperative period. Statistical significance (p<0.05) was calculated with IBM SPSS statistics 23 using Pearson's χ², Fisher's linear, Cronbach α and T criteria. Aim of the study: To evaluate attitude of patients and its determining factors towards anesthesia, surgery and procedures in a small hospital.

Results. Majority were 20–40 (77.3 pct.) years old, had higher or vocational education (78.6 pct.), local (90.7 pct.) and general (60 pct.) anesthesia experience. Mostly agreed that small hospital provides more homelike environment (90.8 pct.), less stress (87.9 pct.), more attentive personnel (82.3 pct.). Majority disagreed that nursing (95.7 pct.) and post-operative care (98.5 pct.) quality is poorer. 91.7 pct. felt adequately informed, 90 pct. – safe prior to anesthesia. 23.9 pct. thought of equipment not as innovative. 37.4 pct. stated variety of procedures and 30.8 pct. – abilities to react in critical situation as poorer. 18.5 pct. had unanswered questions considering anesthesia.

Most participants over 30 years old already experienced local (p=0,041) and general (p=0,041) anesthesia. Higher or vocational education influenced view of anesthesiologists (p=0,048), nurses (p=0,046) and support staff (p=0,046) as more important. Anesthesia inexperience increased fear of postoperative wound pain (p=0,029), nausea (p=0,014), awakening from anesthesia (p=0,002), needle punctures and other instruments within bodily cavities (p=0,002).

Conclusions. 1. Majority of patients were 20–40 years old, had higher or vocational education and have already had local and general anesthesia. 2. The general attitude of participants towards anesthesia, surgery and procedures performed in a minor hospital was positive. 3. Age, education and anesthesia history influenced patient attitude.

Association between serum biomarkers and postoperative delirium after after cardiac surgery

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Background. In cardiac surgery, patients have an increased risk of developing postoperative delirium (POD), that is associated with poor outcomes. Neuron specific enolase (NSE) and glial fibrillary acidic protein (GFAP) have shown some promising results as potential tools for POD risk stratification, diagnosis, monitoring, and prognosis (1;2). Our study aims to examine the association between serum biomarkers and POD after cardiopulmonary bypass (CPB).

Method. Prospective single-center non interventional study enrolled 44 pts undergoing elective CABG and/or valve procedures using CPB. The blood levels of NSE and GFAP were measured before and after surgery. The early POD was assessed by CAM-ICU and patients were assigned to POD group (with POD) or to NPOD group (without POD) retrospectively.

Results. The incidence of POD was 18.2% (8 of 44 pts). After the surgery NSE significantly increased in the whole sample (6.98 (4.831) vs 9.19 (5.14) μg/L, p = 0.002). Comparing between groups NSE significantly increased in POD group after surgery (8.48 (4.66) vs 12.42 (6.35), p = 0.042). ΔGFAP (before/after operation) for the whole sample was statistically significant (0.0032 (0.0081), p = 0.022). The lowest mean arterial pressure (MAP) was kept within empirically acceptable ranges (63.50 (4.6) mmHg; median 65 [min. 56, max 68]). Anyway there was significant correlation between ΔGFAP and the lowest MAP during the surgery in POD group (r = 0.794, p = 0.033).

Conclusions. Our study demonstrated that NSE and GFAP are associated with early POD. An increase in NSE level during the perioperative period may be associated with subclinical neuronal damage due to recurring causes such as diffuse microembolism or increased permeability of the blood-brain barrier. Serum GFAP levels show the damage of glial cells. Our results suggest that further studies are needed to find the factors influencing the individual limits of optimal MAP during the surgery.

Extracorporeal Membrane Oxygenation Therapy in Patient with H1N1

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Background. Acute respiratory distress syndrome (ARDS) is devastating complication of severe sepsis. Majority of patients require mechanical ventilation to avert hypoxemia and hypercapnia. Thou MV per se can cause lung injury, accelerating disease progression. The use of extracorporeal membrane oxygenation (ECMO) in ARDS patients has grown considerably since 2009.

Method and result. Patient V, 38 years, male. Hospitalized 16.02. in emergency department with complaints of chest pain, shortness of breath, febrile temperature for a month. Physical examination: RR 20x min, HR 90x min, TA 125/80 mmHg, GCS 15, T-38,5°C. qSOFA 0 points (80%). Because general clinical condition improved, spontaneous ventilation was maintained with high-flow oxygen mask. Sternotomy on 12.03. with ASA IV, CV Euroscore 4.4%, APACHE II 12% (mitral and aortal bioprosthetic valve replacement). Patient was discharged on 28.03.

Conclusions and discussion. Since 2009 influenza H1N1 pandemic v-v ECMO has been widely used for potentially reversible ARDS. Extracorporeal Life Support organization recommends early tracheostomy, thou no consensus about best strategy for airway management exists. In literature from 13 studies (494 patients) with ARDS median duration of ECMO was 10, mechanical ventilation 19, length of stay in ICU 33 days. In our case step-down approach for airway management was used (NIV–ECMO–spontaneous breathing). The timing of ECMO initiation is individual and protective ventilation strategy should be considered.

References: https://www.elso.org/Portals/0/IGD/Archive/FileManager/eb07e0ae08cusersshyerdocumentselsoh1n1specificguidelines.pdf https://www.ncbi.nlm.nih.gov/pmc/articles/PMC290688/
Unknown diagnosis, extracorporeal support and the right to choose

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Background Medical ethics remain a controversial topic in the Intensive therapy unit (ITU). Europe-wide studies have been conducted evaluating doctors’ approach to the end-of-life decisions. Even though there is progress in understanding the place of patient autonomy in the ITU, the practices are still very variable [1]. Case report A previously healthy 53 year old woman presented to the hospital complaining of shortness of breath, weakness, cough. Blood tests revealed signs of bacterial infection, respiratory failure and bilateral infiltrates in the chest x-ray. After admission to the , profound carbon dioxide retention persisted. A high-resolution CT scan of the chest showed that most of the lung tissue had been affected by multiple bullae, pneumothoraces and connective tissue proliferation. Since diagnosis and prognosis were not clear, to gain time to make appropriate decisions, extracorporeal carbon dioxide removal was started. The most likely diagnosis was concluded to be lymphangioleiomyomatosis - a condition for which the only definitive treatment is lung transplant. The diagnosis, treatment options and outcomes were discussed with the patient and her family. The following day she expressed the wish to stop the treatment, because future perspectives were not acceptable. After completing a mental capacity assessment, a DNA CPR form was signed, all active treatment stopped and “End-of-Life Pathway” started. She died within an hour, surrounded by her family. Discussion Even though according to medical ethics patient autonomy and beneficence are key in medical practice, [2] local customs and legislation still determine everyone’s stance in end-of-life situations[1]. In United Kingdom patient’s autonomy in the end-of-life decision making is defined in the General Medical Council Ethical guidance. Having a legally-binding and nationwide framework for end-of-life practices allows both the patient and the clinician to maintain their dignity.

Tracheal Diverticulum Rupture and Asystole During Laparoscopic Surgery – a Case Report

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**Background.** Tracheal rupture is rare but serious complication that occurs after tracheal intubation with reported incidence of 0.005% [1]. The clinical manifestation includes subcutaneous emphysema and respiratory distress [2]. Asystole was likely caused by Bezold – Jarisch reflex. We report combined case of tracheal rupture and asystole during laparoscopic cholecystectomy. **Material and Methods.** Case report. 70 y.o. woman (ASA II; body weight 75 kg) had undergone laparoscopic cholecystectomy. Preoperative chest X-ray did not show any abnormalities. Endotracheal intubation was performed without any difficulties (Cormack II, 1st attempt) using a single lumen, 7.0 mm cuffed endotracheal tube by an experienced anaesthesiologist.

**Results.** After 5 minutes of gas desufflation asystole acquired with CPR for 2 minutes followed by return of spontaneous circulation. After 20 h subcutaneous chest emphysema occurred. Patient complained about hoarseness. SpO2 96% without oxygen supply. Chest CT scan had shown massive pneumomediastinitis, bilateral pneumothorax, subcutaneous neck emphysema, pocket-like air filled tissue defect 10 x 32 mm in distal third of trachea with possible rupture. Radiologist suggested it as congenital tracheal diverticulum. Cardiac tests were normal and cardiac cause of asystole was excluded. The emergent surgery of tracheal defect closure was performed after 28 hours from suspected rupture. The patient was completely recovered and discharged from hospital after 15 days.

**Discussion and conclusion.** The incidence of tracheal diverticulum is 2.4% which are usually located at the right posterolateral region of the trachea – 97.1% [3]. We suspect that tracheal injury is associated with congenital tracheal diverticulum. The rupture of diverticulum might be multifactorial: overinflation of the cuff, mechanical ventilation, abdominal insufflation, CPR. We suggest that the rupture of tracheal diverticulum was likely secondary to postintubation barotrauma. Asystole during laparoscopic surgery occurs as override the arterial baroreceptor response. After gas desufflation the ventricular receptors can be excited by abnormal squeezing of the myocardium due to vigorous contraction around a nearly empty chamber [4].

**References:**
Role of Nutritional Immunomodulation in T-lymphocytes Subpopulations Responses in Malnourished Patients Undergoing Cardiac Surgery

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Background. It is considered that specific immuno nutritional therapy could improve immunological status of patients who underwent surgery [1]. The aim of the study is to determine T-lymphocytes responses to nutritional immunomodulation during the postoperative period following cardiac surgery.

Methods. This randomised control study included malnourished and low operative risk patients, who underwent elective cardiac surgery. The patients were randomised into immunomodulation (IM) and control groups. The IM group was supplemented with immune nutrients for 5 postoperative days. The immune function was tested on the surgery and on the 6th postoperative day. The effect of nutritional immunomodulation were evaluated by multivariable linear regression models and ROC curve. Linear regression models and ROC curve were applied for CD3 , CD4 and CD8 cells counts. Statistical analysis was performed with IBM SPSS v21.

Results. Fifty five patients were enrolled into the study, 27(49.1%) of them in IM group and 28(50.9%) in control group. 28(50.9 %) men, mean age was 69.7±6.3, operative risk measured by Euroscore II was 1.98±0.82. Immunonutrition, age, preoperative platelets and preoperative C-reactive protein were included in the multivariable linear regression analysis. Immunonutrition produced activated CD3 cells change by 280.54 units (95%CI: 31.53-529.55, p=0.028 ), age - -21.98(95%CI: -44.01-0.04, p=0.05), platelets – 4.46(95%CI: 2.15-6.78, p

The role of transoesophageal pacing echo-stress test for risk stratification before narcosis and operation of patients with suspected Coronary Heart Disease

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Background. The risk of cardiovascular events and mortality is high during peri-operative period in general surgical clinic. It is counted, approximately, that half of the patients (pts) undergoing operative treatment have associated diseases. Half of them have cardiovascular disorders. Predicting cardiac complications for pts undergoing noncardiac surgery is the biggest task for anesthesiologists and consulting cardiologists. The aims of this paper are: 1) to demonstrate the benefit of transoesophageal pacing echo-stress test (TEP-echo) basing the risk of narcosis and operations, 2) to define the place of stress echocardiography in the plan of perioperative investigations of pts. Materials and methods. For the purposes mentioned above 78 pts (49(62,8%)male, 29(37,2%) female, average 60±12 y.) were investigated by TEP-echo tests. 17(21,8%) pts were investigated before intraabdominal operations, 34(43,6%) pts before arthroplasty of joints or other orthopedic-taumatological operations, 8 (10,3%)pts before gynecological operations, 4(5,1%) pts before vascular (mostly venous resection), 15(19,2%) pts after various operation. 59(75,6%) pts were evaluated prior elective operations and 19(24,4%) pts before undergoing urgent surgery. There were pts with pains in chest, disorders of heart rhythm, with nonspecific ST and T changers or marked ventricular hyperthrophy on ECG. All pts have problems of movement, thus, they couldn't have been investigated by treadmill exercise test. Standard protocol of echo-stress test recommended by American Association of Echocardiography has been applied. Local left ventricle dyscontractility was counted at rest and at loud maximum. For TEP “Cordelectro” pacemaker (made in Lithuania) with bipolar electrode was used. Initial pacing rate was 100 imp./min., later being increased 20 imp/min. every 2 min. until maximum rate 160 imp/min. At the end of each step ECG was recorded too.

Results. TEP-echo-stress test revealed CHD to 52(66%) pts. 17(32,7%) pts with grounded CHD underwent operations under strict monitoring of ECG ST segment. Operative treatment was postponed to 35(47,3%) pts due to low coronary flow reserve or functional capacity of myocardium or heart rhythm disorders. 15 (28,8%)pts were referred to a tertiary care center for a more detail investigation. 20 (38,4%)pts after having been treated for CHD underwent surgery in 6 months. CHD has been confirmed by more than half the pts with risk factors, episodes of chest discomfort and nonspecific ECG changes (ischemic ECG changes vs. metabolic :52(67%) vs. 26(23%), p<0,05). 3(3,8%) pts didn't swallow the TE electrode. 5(6,4%) pts felt severe pain during TE pacing.

Conclusions. 1)TE-echo stress test is valuable safe mean to base the risk of narcosis and operation because of CHD. 2) This test is the only wide-spread one to base the risk before operations when pts have problems with movement (orthopedic pts) or they are too sick to move. The test can be quickly performed in the ward at the pts's bed. 3) It is always recommended to apply TE-echo stress test before or after the operation when there is suspicion of CHD. When stress test is negative the cardiac risk is very low.

References: Word Congress of Cardiology, Rio de Janeiro, Brazil, April 26-30,1998, FREE PAPERS
Posttraumatic stress 5-years after cardiac surgery

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Introduction. Heart surgery is a major stressful event that could have a significant negative effect on patients’ quality of life (QoL) and may cause long-term posttraumatic stress (PTS) reactions. We aimed to explore factors associated with PTS at 5-year follow-up (T2) after cardiac surgery and associations with pre-surgery (T1) QoL in this pilot study.

Method. Single center prospective study was conducted after Regional Bioethics Committee approval. Adult consecutive patients, undergoing elective open heart surgery, were included. QoL was measured using the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) questionnaire before surgery. Participants were contacted and survey was conducted at 5-year follow-up (T2) via telephone. PTS was assessed using the International Trauma Questionnaire.

Results. 41 consecutive patients: 13 females (31.7%) and 28 males (68.3%) were included in data analysis. The age of participants ranged from 37 to 89 with a mean age of 67.38 ± 10.39 at T2. Median EuroSCORE II value was 1.72% ± 0.97. Majority of the patients (61%, n =25) underwent coronary artery bypass grafting, 29.3% (n =12) valve surgery and 9.8 % (n =4) combined surgery. Median ICU stay was 2 ± 1.4 days, postoperative hospital stay was 13 ± 4.9 days and ranged from 7 to 30 days. 12.2% (n =5) of patients had risk for posttraumatic stress disorder (PTSD) at T2. PTS symptoms were associated with longer hospitalization after surgery (r =0.45, p <0.01). Furthermore, we found that PTSD symptoms at T2 were associated with SF-36 pain domain at T1 (r =0.33, p <0.05). We did not find association with PTSD symptoms and other SF-36 domains.

Conclusions. We conclude that our pilot study indicates increased levels of PTSD in a sample of cardiac surgery patients following 5 years after the surgery. Further studies are needed to explore long-term predictors of PTSD after heart surgery.
Successful Use of Extracorporeal Membrane Oxygenation in Patient with Alveolar Bleeding and Acute Lung Injury due to ANCA-associated Vasculitis

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Background. Alveolar hemorrhage and acute lung injury secondary to ANCA-associated vasculitis is a rare life-threatening condition presenting with severe respiratory failure. Extracorporeal membrane oxygenation (ECMO) can support gas exchange providing the time necessary for immunosuppressive treatment to control the underlying disease in cases refractory to the conventional ventilatory support. Despite acute preexisting bleeding has been considered a relative contraindication for extracorporeal support, ECMO initiation in severe cases might be a life-saving technique. Case Report: We report a case of 61-year-old female patient, presented with progressing respiratory failure, hemoptysis and acute kidney injury. Lung and kidney tissue biopsy revealed alveolar haemorrhage, capilaritis and pauci-immune necrotising and crescentic glomerulonephritis. c-ANCA antibodies (>1:40) were found in blood serum and the diagnosis of ANCA-associated vasculitis was made. The patient suffered from rapidly progressing respiratory distress (OI - 44), refractory to the conventional ventilatory treatment, thus the decision to initiate VV ECMO support was made. Due to high risk of profuse bleeding, anticoagulation with heparin was withheld. After initiation of extracorporeal respiratory support, immunosuppression, plasmapheresis and RRT were started. On the 11th day on ECMO patient was extubated. On the 20th day the respiratory function improved and patient was weaned off ECMO. 2 weeks later her renal function improved with no need for any RRT. Conclusions: We conclude that in severe cases, refractory to conventional respiratory support, ECMO could be a reasonable option for patients with acute lung injury and alveolar hemorrhage due to ANCA-associated vasculitis, providing time necessary to control the disease with specific therapies. Due to high risk of profuse bleeding ECMO might be successfully applied without anticoagulation.

Long-term quality of life following elective cardiac surgery: preliminary findings of a 5-year follow-up study


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Background. We present preliminary findings of broader research aimed to estimate the longitudinal change and predictors of HRQOL dynamics after elective cardiac surgery. Methods: Single-center prospective study was conducted after Regional Bioethics Committee approval. Adult consecutive patients, undergoing elective cardiac surgery were included. HRQOL was measured using the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) questionnaire. Results. 41 consecutive patients: 13 females (31.7%) and 28 males (68.3%) were included in data analysis. The patients ranged from 37 to 89 years of age with a mean age of 67.38 ± 10.39 at 5-year follow-up. Median EuroSCORE II value was 1.72% ± 0.97. Majority of patients 61% (n = 25) underwent coronary artery bypass grafting, 29.3% (n = 12) valve surgery and 9.8% (n = 4) combined surgery. Median ICU stay was 2 ± 1.4 days, postoperative hospital stay - 13 ± 4.9 days. Pilot study revealed significant positive change at 5-year follow-up in several domains of SF-36: physical functioning (PF), energy/fatigue (E/F), and social functioning (SF). PF change significantly correlated with baseline SF (r = -.34, p < .05). 5-year change of emotional well-being (E/W) and E/F was associated with the same dimensions preoperatively (r = -.71, p < .001) and respectively (r = -.63, p < .001). Prolonged hospital stay was associated with change in SF (r = .35, p < .01), E/F (r = -.35, p < .05) and E/W (r = -.39, p < .05).

Conclusions. Preliminary findings showed that HRQOL improved from baseline to 5 years postoperatively. Patients with lower preoperative HRQOL scores tended to have a more significant improvement of HRQOL 5 years after surgery. Prolonged hospital stay had a negative impact on postoperative social functioning, energy/fatigue and emotional well-being. Further data analysis and inclusion of larger patient group is needed to confirm pilot findings.

Extracorporeal Membrane Support in Thoracic Surgery: Four Patients Case Series

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Background. Extracorporeal membrane oxygenation (ECMO) is increasingly used for critically ill patients with cardiac or respiratory failures. Recently, this technology was applied in thoracic surgery patients. The aim of the study was to review the use of ECMO during the thoracic surgery in Lithuania.

Methods. We reviewed the use of ECMO for respiratory or cardiac support in two Lithuanian hospitals, in which ECMO was used during the thoracic surgery, also evaluated the benefits, indications and complications.

Results. From January, 2015, to September, 2018, two of five Lithuanian thoracic surgical centres used ECMO for respiratory or cardiac support for four patients. In three cases veno-venous ECMO was used for respiratory assistance; in one case peripheral veno-arterious mode was used for cardiac maintenance during surgery. Two patients were with malignancies. In two cases ECMO was used electively during the surgery: respiratory ECMO for tracheobronchial procedure and cardiac ECMO for pulmonary procedure (two surgeries were attempted but discontinued due to hemodynamic instability). In one case ECMO was initiated because of idiopathic intra-alveolar bleeding and thoracic surgery was needed in the course of the treatment. In the other case a patient with respiratory distress syndrome developed necrotizing pneumonia – pulmonary lobe resection was scheduled. Patient could not tolerate single lung ventilation – emergency respiratory ECMO was started in the operating room. The duration of ECMO was 5.5 hours, 4.5 hours, 7 days and 11 days respectively. All four patients were successfully weaned from ECMO support. Three of four patients (75%) survived and were discharged from hospital.

Conclusion. ECMO should be considered and used in acute respiratory, cardiac failure or precarious respiratory conditions for support of the respiratory function during the perioperative period.
Pain management in intensive care unit patients after cardiac surgery with sternotomy approach

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Introduction.
Postoperative pain is a persistent and common problem among intensive care patients. Pain in intensive care patients after cardiac surgery continues to be undermanaged and patient satisfaction with pain management is not only impacted by the efficiency of pharmacological treatment, but also by the skills and knowledge of the healthcare team.

Aim.
To find out the pain management practices and describe patient satisfaction measurements for intensive care patients after cardiac surgery with sternotomy approach at a university hospital in Riga, Latvia.

Materials and Methods.
A prospective, cross-sectional design was used. 19 intensive care nurses and their knowledge regarding pain management was assessed with Toronto Pain Management Inventory (Watt-Watson, 2001). Data about pharmacological treatment was obtained from 72 intensive care patients, and pharmacological treatment and pain level data was obtained from 67 patients using a research protocol. 52 intensive care patients were also eligible for evaluation with 2010 Revised American Pain Society Patient Outcome Questionnaire (Gordon et al., 2010) for patient satisfaction measurements.

Results.
Most intensive care patients after cardiac surgery (68.66%, n = 46) experience mild pain. Pain intensity has a tendency to lower over time, from 4.66 mean VAS score 2 hours after extubation to 3.12 mean VAS score 12 hours after extubation. Mostly opioids (100%, n=72) and NSAIDs (77.8%, n=56) are used for pharmacological treatment, and treatment is adjusted according to pain levels and patient needs. Patients with higher pain levels receive more medication for pain. Patient satisfaction regarding pain management in the 24 hours after surgery is high with 9 mean VAS score (very satisfied), even though nurses’ knowledge is average (X=60.6 ± 7.3%).

Conclusions:
Individualized pain management plan based on patient pain levels and needs requires pain documentation and ensures a high patient satisfaction. Pain levels after cardiac surgery with sternotomy approach is mostly mild and patient satisfaction is high.

References:

Watt-Watson, J., Stevens, B., Garlinkel, P., Steiner, D., & Gallop, R. (2001). Relationship between nurses’ pain knowledge and pain management outcomes for their postoperative cardiac patients. Journal of Advanced Nursing, 36(4), 535-545. If complete list of references is needed, please tell, have only included the references cited in abstract.
Modern microbiological aspects of infection in intensive care unit

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The aim of the study was to evaluate effect of ability of bacterial isolates to form biofilms and the presence of resistance genes for sensitivity to antibiotics in them.

Materials and methods. The study included 99 patients from intensive care unit and also studied the properties of 224 clinical isolates from sputum of these patients.

Results. The most frequent pathogens of infections were K. pneumonia and Acinetobacter spp. 91.4% of isolates. K. pneumoniae possessed one or another resistance gene and in most cases OXA-48. All the isolates formed biofilms moderately or well while in P. mirabilis this ability was most pronounced. The minimum inhibitory concentration for 90% of the isolates increased in the composition of biofilms in comparison with their planktonic forms for moxifloxacin and did not change for tigecycline and ciprofloxacin. 94.7% of the isolates in both forms were resistant to carbapenems, while all the isolates were sensitive to tigecycline.

The conclusion. The most frequent pathogens of infections in the intensive care unit were K. pneumonia and Acinetobacter spp. All isolates moderately or well formed biofilms. The minimal overwhelming concentration of antibiotics increased for bacteria in the composition of biofilms in comparison with their planktonic forms which reduces the effectiveness of antibiotic therapy. 80% of the investigated clinical isolates of K. pneumoniae possessed OXA-48 which along with the resistance genes NDM and KPC caused the resistance of Enterobacteriaceae to carbapenems. Therefore tigecycline is medicine of first line for the treatment of infections caused by carbapenem-resistant K. pneumonia based on the microbiological approach. PCR diagnostics is a promising method of microbiological identification which allows to obtain result in 4 hours which is extremely important for the rapid appointment of targeted antibiotic therapy.

References:

Prospective Paediatric Intensive Care Registry in Latvia: One Year Outcomes

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Background In Latvia there is a single eight-bed PICU where all critically ill children are admitted. A recent retrospective audit of paediatric critical care outcomes in Latvia revealed high number of unplanned extubations and excess crude mortality. In 2017 our centre joined UK and Ireland based Paediatric Intensive Care Audit Network (PICANet) as a pilot project for paediatric critical care registry.

Methods Riga Stradins University Ethics Committee approved the study. Anonymized data of all patients admitted to our unit from 1st of June, 2017 to 31st of May, 2018 were prospectively entered in PICANet WEB site. Results A total of 774 PICU admissions were analyzed; 45% of admissions were elective. Median age was 59 months (IQR: 14 - 149). Highest admission rate was on Wednesdays representing flow of elective surgical patients. Median length of stay was 0.95 days (IQR: 0.79–1.98). Twenty-eight percent required respiratory support. There were 15.16 expected deaths as calculated by Paediatric Index of Mortality 3; 15 patients (1.94%) died. Emergency readmission rate within 48 hours after PICU discharge was 0.9%. There were 1.8 unplanned extubations per 100 invasive ventilation days. On 30-day follow-up 653 patients were alive and outside hospital, 98 were inpatients, 6 had died, 2 were lost to the follow-up. We observed a marked peak of infant emergency respiratory admissions in February.

Conclusions This project explored possibility of prospective paediatric critical care audit in Latvia by joining established international network. This allowed direct comparison of outcomes between the countries. Excess mortality was not observed during one yeart data collection period, however high rate of unplanned extubations was revealed. Results allowed better planning of elective patient flow.

Early Initiation of Continuous Veno-Venous Hemofiltration (CVVH) in sepsis patients may improve long-term survival

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Background. Continuous Veno-Venous hemofiltration (CVVH) in the case of sepsis is often used as extracorporeal detoxification method and it is initiated before patients develop absolute indications. So far it is not clear, whether the use of CVVH as the method of detoxification for sepsis patients does influence the indicators of recovery. Aim of study is to describe hazard ratio of CVVH initiation for short-term (7 days) and long-term (28 days) outcomes in sepsis patients.

Methods. A retrospective study of 127 patients who were treated at Riga East Clinical University Hospital’s with diagnosis “sepsis” during the time period from 2014 to 2017 and in whom (CVVH) was used. SPSS software was used to analyze data, and hazard ratio (HR) was calculated using Cox regression method.

Results. Among study patients 47.2% (60/127) were males, median of age 68 years (IQR 58-76). All patients were divided into two groups according to CVVH initiation criteria: 63/124 (49.6%) had absolute indications and 64/124 (50.4%) had relative indications. On the 7th day and on the 28th day of hospital admission survival rates for sepsis patients were 83/127 (65.4%) and 53/127 (41.7%), respectively. During all hospital length of stay survival rate of sepsis patients was 47/127 (37.0%). For the short-term and long-term outcomes initiation of CRRT based on the absolute indications was associated with higher mortality rates HR=2.19 (95%CI=1.17-4.08) and HR=2.08 (95%CI=1.30-3.34), respectively, in comparison to relative indications. After adjustment to other prognostic factors (sepsis origin, need of mechanical lung ventilation, SOFA score, lactate concentration etc.) only long-term higher mortality rates showed significant association with CRRT initiation based on absolute indications HR=1.96 (95%CI=1.08-3.56).

Conclusions. Early initiation of CVVH in septic patients based on relative indications may improve long-term patient survival.

Anticoagulation Practice in Burns Patients Hospitalised in Critical Care; Megan Blake, Tomasz Torlinski

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Background and Aims. Burns patients are at a greater risk of thromboembolic events due to pro-coagulant and anti-fibrinolytic changes, hence current guidelines at our institution recommend doubling the standard dose in the severe burnt patients. The appropriate prescribing and monitoring of the anticoagulation is therefore vital. This audit assessed the situation at the Burns Centre at the Queen Elizabeth Hospital, Birmingham in relation to trust guidelines, with the aim of improving and standardising clinical care. Objectives: 1. What anticoagulation is prescribed for burns patients in critical care? 2. Is anticoagulation monitored in line with the guidelines? 3. What are the results of Anti-Factor Xa assays and are these acted upon?

Methods. Retrospective data on burns patients in critical care was collected over a two year period from 2015. Data collected includes: patient demographics, method & monitoring of anticoagulation, missed doses, and haemorrhagic & thrombotic complications.

Results and Discussion. All burns patients were prescribed the thrombo-prophylaxis, recommended in Trust guidelines for standard ITU admissions, but often initially without doubling the dose suggested in the burns guidelines. Only 65% of the more severely burnt patients were prescribed adjusted higher doses of anticoagulation and 60% of these patients were monitored with Anti Factor Xa assays. The majority of results of the Anti FXa monitoring were acted upon in terms of adjusting the dose of anticoagulant. However, often dose changes were made over 24 hours later. In conclusion, the guidelines could be better adhered to in terms of the levels anticoagulation prescribed, monitoring occurring and action following monitoring. Room for improvement is quite significant considering that the majority of the patients monitored had sub-prophylactic anticoagulant levels, in spite of standard anticoagulation prescribed. Better training to raise awareness of the specific anticoagulation guidelines for burns amongst staff in critical care is necessary, and it would be worthwhile for annual audits on this subject matter to enhance guideline adherence.

Relative Communication with Medical Personnel in Intensive Care Unit

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Background. Relatives of patients stationed in ICU usually feel alien, afraid to ask and to disturb medical personnel [1,2]. However, healthcare-related society education is gradually improving, thus relatives are becoming more aware and critical towards quality of hospital service patients receive [3]. In 2007 Center of Critical Medicine released guidelines oriented towards adequate relative support [4].

Methods. A prospective anonymous survey of 50 participants was carried out. Participants were relatives of patients stationed in Cardiology Intensive Care Unit (ICU) of Lithuanian University of Health Sciences. Questionnaire comprised 26 questions – first five evaluated social and demographic data, remaining – attitude towards patient care and treatment in ICU. IBM SPSS 23.0 was used to calculate statistically significant (p= <0.05) data. Pearson's χ2, Fisher's linear criteria were used.

Results. There were 20 male, 30 female participants. 62 pct. were 30-60 years old (y.o.), 14 pct. bellow, 24 pct. above this interval. Although environment in the ICU was perceived more positively by relatives above 60 y.o. (p=0.03), 30-60 y.o. ones felt more comfortable asking questions related to patient treatment (p=0.01). Interestingly, unemployed in healthcare relatives (78 pct.) had a more positive attitude towards interaction with physicians in comparison to ones that were (p=0.015). Participants stating frequency of communication with physicians as adequate (78 pct.) felt more comfortable asking patient treatment-related questions (p=0.007). Finally, males felt more uncomfortable asking to clarify complicated information about patient status and treatment (p=0.05).

Conclusions. 1. 30-60 y.o. relatives and ones that perceive interaction frequency with physicians as adequate felt more comfortable asking patient treatment-related questions.
2. Unemployment in healthcare was related to a more positive attitude towards relative-physician communication. 3. Male relatives tend to feel uncomfortable asking to clarify complicated information considering patient status and treatment.4. Majority state that relative-physician communication frequency is adequate.

Value of circulating molecular biomarkers (microRNAs) for the evaluation of systemic inflammatory response during urgent anesthesia

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Background. The goal of our study was to determine the diagnostic value of circulating microRNAs (miRNAs): miR-30d-5p; miR-23a-3p; miR-146a-5p as biomarkers of inflammatory response in abdominal sepsis and the possibility for differentiation of this illness severity during urgent anesthesia.

Methods. We enrolled random patients underwent emergency surgery for abdominal sepsis (peritonitis) and control patients without infection, who were going for minor elective surgery at Lithuanian University of Health Sciences from July 2018 to September 2018. Data describing demographics, comorbidities, severity of illness (SOFA scores), routine clinical blood test results were collected. Levels of microRNAs expression were assessed with RT-qPCR. Depending on severity of illness, patients were divided to groups: SOFA≥6; SOFA ≤3 and Control.

Results. All 3 miRNAs were differentially expressed in patients with peritonitis (n=40) and without infection (n=26). Expression levels of miR-30d-5p; miR-23a-3p; miR-146a-5p in all septic patients were 2.110 (p<0.001); 2.112 (p=0.002) and 2.125 (p=0.012) fold lower than in healthy controls, respectively. Significantly lower expression levels of miR-30d-5p, miR-23a-3p were detected in both SOFA≤3: 2.2(p<0.001); 2.02 (p=0.008) and SOFA≥6:2.07 (p<0.001); 2.04 (p=0.006) groups comparing with patients without infection. Difference of expressions between SOFA≥6 and SOFA≤3 wasn't established. Values of miR-30d-5p ΔCt in patients without infection were significantly higher (-2.42) than in abdominal sepsis (-3.06); p<0.001.The ROC curve analysis showed that mirRNA with the most significant fold change (miR-30d-5p; AUC = 0.837) is a fair predictive biomarker of inflammatory response in abdominal sepsis.

Conclusion. Expressions of miRNAs were lower in patients with abdominal sepsis during urgent anesthesia, but the same in different severity of abdominal sepsis. MiR-30d-5p is potential biological marker for the characterization the presence of infection and sepsis. Changes in miRNAs may be exploited for novel diagnostic and

Perioperative Focused Transthoracic Echocardiography - Guided Fluid Resuscitation May Improve Intra-abdominal Sepsis Outcomes

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The aim of this study was to find out if extended continuous hemodynamic monitoring by focused transthoracic echocardiography can improve treatment outcomes in intra-abdominal sepsis patients. Material and methods. Patients with peritonitis were screened for the signs of sepsis. These patients were randomised into two groups: 1 - usual monitoring and fluid resuscitation group (UM), 2 - focused assessed transthoracic echocardiography (FATE) group. In FATE group - focused transthoracic echocardiography was performed continuously during perioperative period to assess the fluid responsiveness. Patient's demographic data, clinical measurements, outcomes were collected.

Results. 67 patients out of 131 patients involved in the study were randomised to UM group and 64 patients to FATE group. The overall 30 days mortality rate was 32.1% (n = 42). Significantly higher 30 days mortality was found in UM group compared to FATE group, 40.3% (n = 27) vs 23.4% (n = 15) respectively (p = 0.039). Severe hypotension after anaesthesia induction was more common in UM group (p=0.001) and was associated with more frequent unstable hemodynamic incidence during the surgery (p=0.024). Overall manifestation of septic shock was also more common in UM group 52.2% (n=35) than in FATE group 34.4% (n=22) (p=0.029). All patients of FATE group received significantly bigger average amount of crystaloids compared to UM group before surgery 1386 ml (SD 1082) and 491 ml (SD 741) respectively (p=0.001). The average amount of crystaloids a patient received during the first day was bigger in FATE group when compared to UM group – 5792 ml (SD 1743), vs 4074 ml (SD 1512) respectively (p=0.001).

Conclusion. Extended continuous hemodynamic monitoring by focused transthoracic echocardiography improves sepsis treatment outcomes by individualizing fluid resuscitation in peritonitis patients in perioperative period.

High Dose Insulin Therapy for Metformin Poisoning: a Case Series

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Background. Metformin is an antihyperglycemic agent which improves insulin resistance and decreases hepatic glucose output. Overdose of metformin promotes the conversion of glucose to lactate in the splanchnic bed of the small intestine, inhibits mitochondrial respiratory chain complex 1 and reduces hepatic gluconeogenesis from lactate, pyruvate, and alanine, resulting in lactic acidosis. Insulin can theoretically reverse the blockage of lactate into the gluconeogenic pathway in the liver and induce metabolism of lactate as an energy source in diverse tissues including the heart and brain.

Methods. To describe five cases of initiation of high dose insulin/dextrose therapy for life threatening lactic acidosis following metformin overdose. High insulin/dextrose infusion (0.5 units/kg/hr Actrapid in 50% dextrose) was started when lactate was > 10mmol/l and standard supportive measures had proved to be insufficient. Infusion rate was titrated to lactate until within normal range. All patients also received continuous veno-venous haemofiltration.

Results. Seven patients were consented; five patients received high dose insulin therapy plus standard care; six patients recovered and one died. All patients who received high dose insulin dextrose therapy showed rapid improvements in markers of metabolic acidosis. However only in one case was there a sufficient time difference between initiation of haemofiltration and high dose insulin dextrose for their relative contributions to be differentiated. No complications arose as a consequence of high dose insulin dextrose therapy during this study.

Conclusions. High dose insulin/dextrose infusion may be a safe and compassionate therapy in metformin poisoning when there is no response to aggressive medical treatment. Further study is needed to establish whether there is a causal relationship between high dose insulin therapy and a reduction in lactate levels and resolution of metabolic acidosis and whether this therapy has any therapeutic benefit in terms of patient centred outcomes such as mortality.

Use of Antibiotics at the Emergency Centre of Pauls Stradins Clinical University Hospital

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Use of Antibiotics at the Emergency Centre of Pauls Stradins Clinical University Hospital

Background
The issue of the use of antibiotics is always topical. A doctor at the Admission Ward is often the first person to choose the antibiotics for the initiation of therapy. This affects the choice of therapy at the hospital; and therefore, the correct choice of an antibacterial medication is crucial in the improvement of the quality of further treatment and prognosis. The objective of the study was to analyse the use of antibiotics at the Admission Ward of Pauls Stradins Clinical University Hospital. It was studied, which antibiotics are prescribed, how often they are prescribed and what were the most common indications. The results were compared with the antibiotic use guidelines approved by the hospital.

Methods.
In a prospective analysis, the medical cards of stationary patients were analysed for 14 consecutive days – from 2 to 15 July 2018. During this period a total of 788 acute patients, of which 100 patients were prescribed antibacterial therapy, were hospitalised by the Emergency Centre. Results.
During this period, 788 patients were hospitalized, out of which 353 men and 435 women. The average age of the total hospitalized female group was 64 years, while the average age of the total hospitalized male group was 63 years. 100 patients or 12.7 %, of which 52% (n= 52) were males and 48% (n= 48) women – received antibiotic therapy. On-site, antibiotics were administered only in 21% of the cases (n= 21) and in 79% of the cases (n=79) antibiotics were prescribed to be administered at the wards. The most frequent diagnoses between antibiotic-treated patients were as follows: urinary tract infection 26.3 % (n= 27), pneumonia 21.2 % (n= 21). In case of urinary tract infection, the most common antibiotic used was ciprofloxacin 60.7 % (n= 17), ceftriaxone 17.9 % (n= 5), which did not comply with the guidelines, which recommended nitrofurantoin and amoxicillin – clavulanate. There were a total of 21 patients diagnosed with pneumonia – 13 men and 8 women. 71.4 % (n= 15) were hospitalized in the Pulmonology Ward. Most common of the prescribed antibiotics were amoxicillin/clavulanate 54.5 % (n=12), ceftriaxone 36.4 % (n=8). These results did not comply with the guidelines, which recommended ampicillin leaving amoxicillin/clavulanate as the second choice.

Conclusions.
Most common infections in the Admission Ward are the urinary tract infections and airways infections. Prescribed antibiotics did not match the recommended medication according to internal guidelines of the hospital. On-site, antibiotics have been administered to a relatively small number of patients.

References:
Effectiveness of high-flow nasal oxygen therapy in management of acute hypoxemic and hypercapnic respiratory failure

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Background. High-flow nasal oxygen therapy (HFNOT) therapy has been increasingly used in patients with acute hypoxemic (Type I) respiratory failure (RF). Meanwhile indications and clinical effectiveness of HFNOT in patients with hypercapnic (Type II) RF remain controversial (1, 2). The aim of our study was to evaluate the outcomes of primary HFNOT in patients with hypoxemic and hypercapnic RF.

Material and Methods. We conducted a retrospective observational study of 51 consecutive patients diagnosed with severe community acquired pneumonia (CAP), admitted to intensive care unit (ICU) at tertiary university hospital. Indications for HFNOT were as follows: (a) respiratory acidosis (PaCO2 > 45 mm Hg and arterial pH < 7.35), (b) severe dyspnea with clinical signs suggestive of respiratory muscle fatigue, (c) persistent hypoxemia (PaO2/FiO2 < 200 mm Hg) despite optimal medical treatment. Primary end-point was escalation rate to intubation or non-invasive ventilation (NIV) after HFNOT. The secondary endpoint was the 30-day mortality after an admission regardless of the cause.

Results. Thirty two (63%) patients were diagnosed with Type I RF and 19 (37%) with Type II RF. Both patient groups improved clinically. Significant increase of PaO2/FiO2 ratio was achieved 6 hours after initiation of HFNOT in Type II RF patients (25.816 kPa (193 mmHg) vs 29.865 kPa (223 mmHg), p < 0.005). Escalation was required in 7 (21.8 %) patients with Type I RF: 3 patients were intubated and 4 were started on conventional NIV. In Type II RF group 8 (42 %) patients failed HFNOT, which resulted in 1 intubation and 7 NIV. All patients survived to hospital discharge.

Conclusions. Our data suggests that HFNOT can be effectively used in Type I and Type II RF. Clinicians should be cautious identifying patients at risk of escalation. Larger population group study is needed to identify predictors of HFNOT failure.

Influence of Parenteral Nutrition on Central Venous Catheter-Related Bloodstream Infections

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Background. Parenteral nutrition (PN) is necessary the critically ill with digestive tract dysfunction [1]. In 2016 A.S.P.E.N. guidelines claimed that PN improves outcomes of the critically ill, thus was called nutrition therapy [3]. Some reports state, that PN may induce the risk of catheter-related bloodstream infections (CRBSI) [4], others deny [5]. In this study we investigated if PN affects the incidence of CRBSI in the critically ill.

Methods. A retrospective analysis of 85 case histories of critically ill patients with central venous catheters (CVC) was performed. Study group received total (TPN) or partial PN (PPN), control group – enteral nutrition. Differences in demographics, positive CVC tip cultures, incidences of CRBSI were analyzed between groups. CRBSI criteria were: simultaneous positive CVC tip and blood culture of the same pathogen, symptoms of bloodstream infection, exclusion of other bacteriaemia sources. Impact of CVC location on CRS was analyzed between TPN and PPN groups. Statistical significance (p<0.05) was calculated with IBM SPSS statistics 23.

Results. From 31 critically ill patients (18 males, 13 females) with mean age of 63.5 years (y.) 25 received PPN, 6 – TPN. 54 patients (26 males, 28 females) with mean age of 64.4 y. received EN.

The location of CVC in TPN group was right (85.71 percent (pct.)) and left subclavian (14.29 pct.) veins. CVC location in PPN group was right (75 pct.), left (4 pct.) subclavian and right internal jugular (21 pct.) veins. In both groups 6 CVCs were removed after manifestation of inflammatory symptoms in the site of insertion following 4 positive CVC tip cultures (12.9 pct.) in study group and 2 positive CVC tip cultures (3.7 pct.) in control group. In all cases simultaneously drawn blood cultures were negative and only four had bloodstream infection symptoms, therefore no CRBSI were diagnosed.

Presented data did not differ significantly between groups.

Conclusions. 1. No connection between incidence of CRBSI and type of nutrition for the critically ill was found. 2. The site of CVC insertion had no impact on CRBSI in critically ill patients receiving either TPN or PPN.

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Assessment of nutritional therapy in intensive care unit and reasons for its interruption

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Background. Enteral (EN) and parenteral nutrition (PN) is vital for the critically ill. Achieving sufficient caloric intake requires evaluation of each patient and prescription of the nutritional therapy. However, the delivery of the latter is frequently interrupted due to various procedures, which results in calorie deficits and an increase in complications. We aimed to evaluate the quality of nutritional therapy according to the latest American Society of Parenteral and Enteral Nutrition (ASPEN) guidelines and describe feeding interruptions in our intensive care units (ICU).

Methods. A prospective study of 73 patients who required mechanical ventilation longer than 48 h and were receiving EN or PN was conducted in the main ICU’s of our clinics. All data were collected from December 2017 to March of 2018. The caloric needs were calculated according to the latest ASPEN guidelines. Each feeding interruption, duration, and reasons for it were documented.

Results. Of 73 participants, 73% were male, mean age was 64±12.8 years, median ICU length of stay 10 (5-17) days. On average, the patients received 65.2% and 57.3% of their caloric and protein needs. Mean protein intake was 0.92±0.5 g/kg/d. Early nutritional therapy (<48 h) was initiated for 80.8% patients. From 848 observed days there were 226 episodes of feeding interruption, of which 53.1% were for gastrointestinal (GI) events, various procedures - 26.5%, hemodynamic instability - 14.6%, unknown – 5.8%. Median duration of feeding interruption was (6 [2.75-11] h). Time of interruption varied: GI events (10 [2-18] h), tracheostomy (4 [2-6] h), perioperative period (7 [6-13] h), CT or MRI scans (10 [2.625-12.25] h).

Conclusions. Nutritional therapy is usually initiated early, however, the incidence of undernutrition (both caloric and protein) is high throughout the ICU stay. Interruption of nutrition in ICU is common. It should be noted, that often feeding was stopped for a longer duration, than the procedure lasts itself.

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Comparison of Preoxygenation Efficiency with Intersurgical Economy and Intersurgical QadraLite Anaesthetic Face Masks

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Background. Properly performed preoxygenation prevents arterial oxygen desaturation prior to intubation. An optimally sealed facemask is necessary for fast preoxygenation.

Aim. to compare the efficiency of preoxygenation (up to EtO2 >90%) using two different face masks.

Methods. In 2018 July-August a prospective research was conducted. Patients were randomly classified into two groups according to the mask used: Group A– Intersurgical Economy face masks, Group B– Intersurgical QadraLite masks. The circuit was flushed with 100% O2 for 30s, preoxygenation started with flow of 8l/min, FiO2100. Patients were asked to breathe spontaneously with maximum effort. Fentanyl (1-2 mcg/kg) was used to increase mask toleration. End-tidal oxygen concentration (EtO2) ≥90% was set as a goal. EtO2 was monitored after 30, 60, 90, 120, 180, 210, 240, 270 and 300 seconds. Data analyzed using Independent-Samples T-test and Mann-Whitney-U test.

Results. 31 patients were enrolled in the study: 12 in group A and 19 in group B. 67.74%(n=21) were female, 32.25%(n=10) male. Differences in gender, age, BMI and Mallampati class in the groups were statistically insignificant (p values 0.13, 0.39, 0.65 and 0.43 respectively). Patients assigned to ASA I – 25.8% (n=8/32), ASA II – 71.0 % (n=22/30), ASA III- 3.2% (n=1/10), p=0.64. The success rate of preoxygenation to EtO290 within 5 min was statistically significantly different in the groups with 33.3% in group A and 94.7% in group B (p <0.01). Mean time to EtO290 was 228.3±104.0 / 164.4±84.3. Mean EtO2 after: 30s- 56.0±13.5 / 69.3±11.2 (p<0.01); 60s- 63.8±15.3 / 76.1±11.7 (p=0.02); 90s- 67.8±17.7 / 80.7±10.1 (p=0.03); 120s – 69.6±18.2 / 83.4±10.0 (p=0.03), 150s– 71.1±19.0 / 87.1±6.5 (p=0.01); 180s – 72.9±16.8 / 88.5±5.3 (p=0.01), 210s– 72.6±18.0 / 89.2±5.1 (p<0.01), 240s - 74.1±15.4 / 90.0±4.3 (p<0.01), 270 s- 76.3±16.3 / 90.2±3.6; 300s- 77.8±14.6 / 90.2±1.5 (p<0.01).

Conclusion. Preoxygenation was significantly more efficient and faster with Intersurgical QadraLite face masks.

Intra Operative Difficulty in Ventilation: Expect the Unexpected

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**Introduction.** Obstruction of the airway at its most extreme is an anaesthetic emergency requiring immediate intervention. The 4th National Audit Project (NAP4) in the UK, included 50 obstructed airway cases. American Society of Anesthesiologists defines a difficult airway as the inability of a trained anaesthesiologist to mask ventilate the patient, perform tracheal intubation, or both. Does a difficult airway management end with successful placement of an endotracheal tube?

**Case Report.** Our patient, 33 year old, BMI – 25, 62 Kg male posted for Hemithyroidectomy. ASA 2 and airway examination unremarkable. Patient induced with Remifentanil, Propofol and Rocuronium. Intubated with size 7.0 EMG Tube. Anaesthesia maintained with Remifentanil TCI and Sevoflurane, air and oxygen. 20 min into the surgery, signs of obstructed airway obstruction noted: decreasing tidal volume, high airway pressures. Immediately shifted to manual ventilation, which was difficult. Lung auscultation, air entry was present bilaterally, ? wheeze, ET Tube suctioned – dry, no secretions or clot noted Our presumed diagnosis: Tube abutting against the tracheal wall, tube manoeuvring was attempted but wasn’t successful, changed to EMG Tube 7.0. After the tube change all parameters returned to normal limits, surgery went on ok for the next 15 minutes and we faced the same problem again!! Surgeon was asked to stop, called for help and patient reassessed. Differentials considered: ?Bronchospasm, Anaphylaxis: Adrenaline 0.5 mg IM, Hydrocortisone 100 mg, Magnesium 1 gm IV ? Faulty machine/anaesthetic breathing circuit obstruction: Anaesthetic machine changed. No difference to ventilation on the new machine (patient was ventilated with Ambu bag until machine was changed and adequate level of anaesthesia was maintained.) ? Pneumothorax: Intraoperative X –ray showed no obvious cause for the problem seen. Decided to stop the operation and wound closed. Fibreoptic examination showed ET Tube narrowed lumen, changed to normal Flexi Tube, tidal volume and airway pressures returned to normal immediately. The operation was continued and completed uneventfully. Patient was followed up post operatively. No complications noted. Patient was informed about the sequence of events. In our case we suspected: Integral design fault, manufacturing defect causing collapse of tracheal tube wall secondary to external surgical pressure or over inflation of inner insufflation cuff line Manufacturers informed us about a similar Case in Spain: Herniation of inner insufflation cuff line, when the line was over inflated and the lumen collapsed.

**Conclusion.** Our case demonstrates an uncommon but a potentially fatal scenario. We would like to stress on the fact that vigilance for a patent airway does not end with Endotracheal tube placement.

**References:**
Near infrared spectroscopy based clinical algorithm applicability during spinal neurosurgery in prone position to avoid postoperative cognitive dysfunction

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Background. Significant number of patients suffer from postoperative cognitive disfunction (POCD). Lots of factors causing POCD can be modified, minimizing the risk. Near infrared spectroscopy devices (NIRS) give continuous information of cerebral oxygenation. NIRS based clinical algorithm can be used intraoperatively to avoid hypoxic brain injury. The aim of the study was to determine NIRS based clinical algorithm applicability during spinal neurosurgery in prone position in order to avoid POCD.

Materials and methods. 67 patients were included in prospective observational study. Patients underwent spinal neurosurgery in prone position, received standard general anaesthesia. 45 study group patients received intraoperative regional cerebral oxygen saturation (rScO2) monitoring using INVOS 4100 NIRS device. If rScO2 values dropped for 20% from individual baseline values, NIRS clinical algorithm was used (Deschamps et al.,2016). Control group patients (n=22) received standard intraoperative care. All patients cognitive function was determined using Montreal cognitive assessment scale (MoCA) before and after the surgery.

Results. We observed postoperative cognitive function decline for 1-4 points in 3 (6%) study group patients with slightly longer medium operation time (122.0±10 min compared to 114.4±47 min) and bigger blood loss (266.0±115 ml compared to 166.0±108 ml) than in study group patients with no POCD. We observed POCD in 10 (45%) control group patients with older medium age (53.6±15 years compared to 44.3±15 years) and slightly lower hematocrit (40.3±3 % compared to 42.6±5%) than control group patients with no POCD. In 3 study group patients NIRS clinical algorithm was used to prevent rScO2 decrease for more than 20%; none of those patients showed POCD.

Conclusions. Postoperative cognitive decline was observed less frequently in patients where near infrared spectroscopy based clinical algorithm was used than in patients who didn't receive cerebral oxygenation monitoring during spinal neurosurgery.

Postoperative cognitive dysfunction after spinal neurosurgery in prone position

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**Background.** Postoperative cognitive dysfunction (POCD) is associated with increased postoperative mortality and disability. During surgery in prone position, complications such as cardiovascular system depression may develop, which causes hypotension, hypoxia that might reflect on POCD. The aim of this study was to determine whether patients after spinal neurosurgery in prone position suffer from POCD and factors that could contribute to POCD development. **Materials and methods.** Twenty-two patients, who had neurosurgery in prone position, were included in prospective study. Patients received standard general anesthesia and intraoperative care. Patient's cognitive function was controlled twice - pre- and postoperatively, using the Montreal cognitive assessment scale (MOCA). Additional data - age, sex, hemoglobin, hematocrit, intraoperative blood loss, length of the surgery, intraoperative mean arterial pressure (MAP) in all positions were also collected. **Results.** In the study were included 22 patients (male 13, female - 9); 17 underwent microdiscectomy, 3 - transpedicular fixation; 2 - spinal tumor resection. Medium age was 50 years /-16,23; medium length of surgery - 114.9min /-42.39; medium blood loss - 186.36 ml /-107,11; medium hemoglobin - 14,29g/dL /-1,59; medium hematocrit - 41,89% /-4,62; medium MAPsupine1 - 93,42mmHg /-14,60; MAPprone - 81,55mmHg /-9,09; MAPsupine2 - 88.00mmHg /-10,35. Medium MOCA1 - 25,64 /-3,71, MOCA2 - 25,4 /-3,32. 10 patients (45%) showed POCD for 1-4 points. The decrease of cognitive function was discovered to be independent to sex (p=0,65), blood loss (0,331), hemoglobin (0,483), hematocrit (0,129), length of the surgery (0,745), MAPsupine1 (0.898), MAPprone (0.696), and MAPsupine2 (0.310). **Conclusions.** A significant number of patients was affected by decreased postoperative cognitive function after neurosurgical spine surgery in prone position. However, we did not find any correlation between the development of postoperative cognitive decline and other factors. Due to small amount of patients, it is not possible to evaluate the influence of age upon the development of POCD.

FS-ICU 24 among Neurosurgery Intensive Care Unit patients’ family members at Lithuanian University of Health Sciences

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Background. Thorough medical care of Intensive Care Unit’s (ICU) patients comprises clarification and assurance not only of these patients but also of their family members’ needs. Identification of their satisfaction can also improve the quality of service provided by ICU personnel. The goal of our study was to evaluate family members’ overall satisfaction with medical care and decision-making in the Neurosurgery Intensive Care Unit (NICU) of our university hospital.

Methods. A prospective study was carried out in NICU of our university hospital from June to September, 2017. We included family members of patients who were treated at NICU for \( \geq 72 \) hours and who had been visited by family member at least once during their hospitalization. Family members completed anonymous FS-ICU 24 questionnaires. Nonparametric tests were used for statistical analysis at \( p \leq 0.05 \) based on subject’s gender, relation to the patient, and how often they had visited the patient before hospital stay (for those who live separately from the patient). Overall satisfaction with medical care was \( 82.1 \pm 13.8\% \) (good) and satisfaction with decision-making was \( 81.0 \pm 16.3\% \) (good).

Conclusion. Overall evaluation of satisfaction with medical care and decision-making by family members who completed FS-ICU 24 was good.

Pregnancy makes women fit

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In the UK 7% of maternal deaths were caused by neurological pathologies; according to the recent National Audit, there were 9 preventable peripartum deaths in women with epilepsy [1]. In such cases data is pointing towards the need of standardised hospital policies. A local guideline for diagnosis and management of peripartum seizures has been developed following recent case analysis. Case report. A previously healthy 32-year-old Asian woman was admitted for labour induction at 38 2 weeks, having had two previous normal deliveries. After a failed epidural (intrathecal placement) and failure to progress the patient was moved to theatre. Epidural catheter was removed and spinal anaesthesia performed. She developed a high block causing respiratory failure requiring intubation. Adequate blood pressure was maintained with phenylephrine infusion immediately after spinal bupivacaine injection as per hospital policy. Hypoxia was not evident. After successful instrumental vaginal delivery the patient was extubated. Both mother and baby followed routine postpartum pathway and subsequently were discharged to the ward. Next day post-delivery the patient complained of fronto–occipital headache with neck stiffness; post dural puncture headache was diagnosed. Despite conservative treatment pain worsened, and on day 3 the patient suffered two episodes of seizures treated with diazepam, phenytoin and magnesium infusion suspecting eclampsia. No fever, hypertension or abnormal blood tests were recorded. Following day, while still on magnesium infusion and phenytoin, she suffered 3 more consecutive seizures, was intubated and admitted to intensive care unit. Plain CT head, CT venogram, MRI brain and blood tests were unremarkable. Eventually the patient was diagnosed with temporal epileptic seizures - de novo epilepsy. Discussion. This case prompted a thorough analysis of literature and Hospital guidelines were created for diagnosis and management of seizures in pregnancy based on the most likely causes and the most appropriate treatment to be administered.

References: 1. MBRRACE - UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK) Saving Lives, Improving Mothers’ Care Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2013–15. https://www.npeu.ox.ac.uk/mbrrace-uk/reports
General anaesthesia (GA) for parturients with severe pulmonary arterial hypertension (pregnancy risk IV WHO) during Caesarean section (CS)

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Background and Goal of Study. Pregnancy with pulmonary arterial hypertension (PH) has a very high risk of acute right-sided heart failure after delivery and may have a sudden death. Eisenmenger syndrome (ES) is associated with an exceptionally high maternal (due to heart failure) and fetal/neonatal mortality rate. \(^1,2\) Increasing heart strain and vascular resistance itself may further complicate delivery and increase the right heart strain resulting in emergency Caesarean section (CS) and possible maternal demise. In the review of obstetric outcomes conducted by Weiss et al. for 18 years demonstrated similar outcomes using either general(GA) or regional anesthesia(RA). For moderate - severe PH, spinal anesthesia is contraindicated due to chance for abrupt alterations in SVR and preload. There are no randomized controlled trials addressing the safety of RA vs. GA in parturients with high cardiac risk.\(^2\)

Materials and Methods. A retrospective study was conducted in VUH Santaros Clinics in the period 2014-2017. We included women with PH, pregnancy risk IV according WHO\(^4\) admitted for SC. 3 women 25-35 years of age with severe PAH due to congenital heart disease, all of them with ES were included. WE analysed anaesthesia method and medical treatment due to medical records.

Results and Discussion. Decision was made by multidisciplinary team- all 3 women underwent CS under GA. Even if epidural anesthesia provides excellent analgesia with minimal hemodynamic changes, epidural catheter placement was refused due to coagulation status in 2 parturients, and due to systemic lower pressure than the pressure in pulmonary artery in one parturient. Before delivery all women were managed with oxygen, sildenafil and LMWH, 2 with diuretics. Two parturients got iloprost inhalations starting from OR. All women treated in ICU for 3-7 days. In one case hemodynamic supported with noradrenaline (40h) and milrinone for 51 hours. Both regional and general anesthesia have typical adverse effects that can severely jeopardize the cardiovascular system in patients with pulmonary hypertension, and should therefore be anticipated/prevented/rapidly treated by the anesthesiologist.\(^2\)

Conclusion(s). The clinical situation determined the application of GA. GA with subsequent specific pharmacological therapy on PH was the right solution in these cases. Successful outcomes were due to an individualized approach of multidisciplinary team (cardiologist, obstetrician, anaesthesiologists), collaboration and efforts in operating field and ICU.

Prolonged neuromuscular blockade

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Postoperative residual curarisation is clinical adverse event and all efforts must be made to reduce it. With this case report we want to accentuate usage of neuromuscular monitoring and importance of sugammadex. We have used rocuronium since 2006 and observed same cases of prolonged neuromuscular blockade. Since 2015 till september 2018 ~ 28 747 patients have got rocuronium for relaxation and this year we registered first verified case of prolonged neuromuscular blockade. For a 54 year old women ( weight 88kg, American Society of Anaesthesiologist physical status II) was performed laparoscopic cholecystectomy. All preoperative laboratory studies were normal. Anaesthesia was induced with fentanyl 0.1mg, propofol 200mg, rocuronium 50mg( 0.065mg/kg) and maintained with sevofluran. We used train of four (TOF) stimulation to monitor neuromuscular transmission. During anaesthesia patient got total doses of fentanyl 0.3mg, morphine hydrochloride 10mg, paracetamol 1000mg, diclofenac 75mg, dexamethasone 4mg, ondansetron 8mg and single dose of rocuronium 50mg. At the end of surgery, after 105 min of a single dose of rocurinium, there were no responses to TOF. Patient was transported in recovery room and propofol infusion was started for sedation. After decurarization with atropine 0.5mg and neostigmine 1.5mg response to TOF was 0%. After administration sugammadex 200mg (2.25mg/kg) patient was successfully extubated 6 min later. Neuromuscular block was prolonged and unpredicted. Neuromuscular monitoring should be used whenever neuromuscular blocking drugs are administered.
Improving Patient Handout in Advanced Nursing through Medical Simulation

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**Background and Goal of the Study:** Proper postoperative handover is the key element in patient safety. The quality of handover depends on non-technical skills (NTS), such as teamwork and communication [1]. Medical simulation is an effective approach in teaching communication skills [2]. The aim of this study was to develop and assess the effect of simulation – based learning on proper patient handout communication and evaluation of the change of transition – care communication quality.

**Materials and Methods.** The prospective observational study was carried out in the Center of Medical Simulation. The study involved 10 nurse practitioners, who met inclusion criteria. The participants were randomly divided into pairs. Knowledge on NTS was assessed before and after medical simulation using a questionnaire. The NTS were rated from 0 (lowest value) to 30 (highest value). Participation in simulation was rated on the same day and one month after provided training using assessment scale. Data were analyzed using SPSS software, p<0.05 rated as statistically significant.

**Results.** Baseline NTS were rated as very good in all categories: communication (25.70±2.36), information collection (27.50±3.06), diagnosing (27.60±1.17) and the evaluation of information exchange (27.60±1.17). Positive effect after the simulation was found on communication (28.70±1.42) and the evaluation of information exchange (28.90±1.97) (p<0.05). Positive influence of simulation was found on patients’ weight and body temperature information during the handout (p<0.05). One month after the intervention the transfer of the information decreased in: condition of the patient, type of anesthesia, surgical course, surgical site information, postoperative patient investigation (p<0.05).

**Conclusions.** Baseline knowledge on NTS is rated as very good in all the categories, however clinical simulation has positive impact on the communication and the evaluation of information exchange categories. The mistakes in simulated environment during patient handout are made at both time points, however more frequently one month after the training.

Patients’ feedback regarding medical students in tertiary healthcare: are medical students accepted in clinical practice?

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**Introduction.** The most important function and aim of a university hospital is to educate medical students [1]. Nowadays studying medicine without practice is hard to imagine. However, for most patients, this type of learning is still difficult to understand and not always acceptable [2,3]. The recent study in Jeddah University Hospital has shown that only fifty-one percent of patients indicated a positive attitude towards involving medical students in clinical examination and care [4]. Two years ago we evaluated the attitude of patients’ toward medical students in Lithuanian University of Health Sciences, but we decided to increase the sample size and make sure that results were not determined by small sample [5].

**Methodology.** A prospective anonymous survey of 150 participants was carried out. Participants were patients stationed in Surgery department of Lithuanian University of Health Sciences. Questionnaire comprised 12 questions – first two about personal information of patients’ and last ten – patients’ opinion about medical students. IBM SPSS 23.0 was used to calculate statistically significant (p=<0.05) data. Pearson’s χ², Fisher’s linear criteria were used. Study permission was given by the LUHS Centre of Bioethics (number BEC-MF-397).

**Results.** 68 males, 82 females were surveyed. Mean value of age was 59 ± 16,7 years (y.). 22 percent (pct.) asserted, that medical students have participated in their surgical operations, 38 pct. denied and 40 pct. were unsure. 79 pct. responded that students were not presented by doctors prior to surgery, 21 pct. – that they were. 78 pct. would agree for medical students to be involved into their surgery, 22 pct. would not. Main thrills considering student involvement were: that students aren’t professional enough (25 pct.), an overload of operating theatre (6pct), however, 69 pct. were not worried about student involvement. Young patients statistically significantly worried more (p<0,05). 9 pct. agreed, that students have negative influence on surgical quality, 91 pct. disagreed.

**Conclusions.** 1. General part of patients would agree that medical students would be involved into their surgical operations. 2. Patients pointed out that general reason of thrilling over surgical operations is not enough professional students who don't have enough skills. 3. The most patients think that involving students into their surgical operations doesn't have negative influence for operation's quality.

Childbirth analgesia and newborn pH

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Intravenous opioids undergo placental transfer and cause adverse neonatal effects, including respiratory depression. On the other hand, there is little evidence regarding the effects of epidural analgesia on newborn well-being. Aim: to analyse the effects of analgesia methods used for labor pain management and to compare two different methods on the newborn pH.

Methods: A prospective study on different analgesia methods in postpartum women and newborns was conducted at Vilnius University Hospital Santaros Klinikos. Newborns were divided into two groups: group A included newborns, whose mothers received epidural ropivacaine with fentanyl, group B - whose mothers received intravenous fentanyl during labor. Analgesia methods were compared by Apgar score, umbilical cord blood gas analysis. The data was analysed using SPSS v23.0 Chi-square and Student’s t test. P values <0.05 was considered statistically significant.

Results: 54 newborns and postpartum women (mean age 29.64 ± 6.00 years) were included in the study. 35 patients received analgesia during labor, while 19 – did not. Group A consisted of 16 (45.7%), while group B consisted of 19 (54.3%) patients. No statistically significant differences were observed in Apgar score between mothers who received analgesia during labor and who did not (respectively, 9.11 ± 0.53 vs 9.11 ± 0.57, p=0.54), and between A and B groups (respectively, 9.19 ± 0.54 vs 9.05 ± 0.524, p=0.461). Newborns whose mothers received epidural analgesia had lower pH value compared with mothers who received intravenous fentanyl (7.28 ± 0.08 pH vs 7.32 ± 0.09 pH, p=0.189). However, neither the Apgar scores nor the pH values were not statistically significant between all groups.

Conclusions: Maternal analgesia, according to Apgar score and umbilical cord blood gas analysis, had no statistically significant side effects on the newborn. Both analgesia methods appear to be safe and applicable for labor pain management.

Incidence and Features of Preoperative Anxiety in Patients Undergoing Elective Non-cardiac Surgery

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Background. According to recent ESA guidelines, anxiety evaluation should be incorporated in preoperative assessment of the patients. Yet using anxiety questionnaires is not widely accepted practice.

Methods. A series of consecutive patients undergoing elective surgery were included in the study. Preoperative anxiety evaluated using Hospital Anxiety and Depression Scale (HADS), Amsterdam Preoperative Anxiety and Information Scale (APAIS) and Visual Analogue (Face) Scale (VAFS). Qualitative and quantitative analyses were used to describe features of anxiety.

Results. 149 patients were included in the study. 40.9% were scheduled for low, 47.7% - intermediate and 11.4% - high risk procedures. Based on HADS, 30 patients (20.1%) had borderline, 19 (12.6%) – abnormal anxiety results. VAFS revealed 10.3% of patients experienced medium/high intensity of anxiety. Mostly patients were concerned about success of the surgery (25.2%) and complications (11.4%). 26.0% claimed no anxiety, which in most cases did not correspond with questionnaire results. Other causes ranged from uncertainty about postoperative period, surgery results to fear of awakening during the surgery and foreign bodies left inside. APAIS score analysis revealed significantly higher anxiety (p < 0.001) and information need (p < 0.001) for surgery compared to anesthesia.

In contrast to age, education or previous surgery, anxiety was associated with female gender (p = 0.002), surgical risk (p = 0.018), subjective evaluation of health (p <0.001).

Patients tended to choose conversation with a doctor (45.6%) or relative (44.8%) as a measure to relieve anxiety. However, only 34.9% have actually discussed their concerns with the physician. 18.4% would choose medication, 8.0% - relaxation exercises, 5.6% - psychologist consultation. Among other measures patients suggested praying, music therapy, massage or even sexual intercourse.

Conclusions. A significant part of patients feel anxious before surgery, predominantly for success of the surgery. According to the patients, conversation is the best option to reduce anxiety.