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ABSTRACT BOOK

ABSTRACTS: DOCTORS

Abstract number: 001

CRUSH SYNDROME- IMPORTANT FOR PRE-HOSPITAL HEALTH CARE WORKERS

Esen Uysal

HEALTH DIRECTORATE OF IZMIR COORDINATOR INTERNATIONAL HEALTH TRAININGS

Crush syndrome (also traumatic rhabdomyolysis or Bywaters' syndrome) is a medical condition characterized by major shock and kidney failure after a crushing injury to skeletal muscle. Crush syndrome, traumatic rhabdomyolysis, muscle suppression, ischemic muscle necrosis or Bywater's syndrome, is a serious medical condition, accompanied by manifestations systemic and caused by severe pressure on the limbs or other parts of the body and bearing prevent blood flow to vital organs. This syndrome is associated with a state of shock, acute renal insufficiency, as a consequence of compression causing muscle degradation skeletal as well as metabolic disorders: Acidosis, hyperkalemia and hypocalcaemia. Offer of Emergency medical care, CPR, and rehabilitation are major obligations that must coordinate with a strategy and with a team of trained health professionals and well educated with the sole purpose of reducing morbidity, complications, disability and mortality.

Keywords: Crush syndrome, rhabdomyolysis, shock, IAR, dialysis, diuresis

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Abstract number: 002

CUTANEOUS SIGNS IN ACUTE PANCREATITIS

Saša Stefanovic, R. Furtula

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Introduction: Cutaneous manifestations of pancreatitis include Cullen sign, Grey Turner sign, and pancreatic fat necrosis. Ecchymosis of the abdominal wall is an important sign of retroperitoneal or intraperitoneal hemorrhage. The discoloration of the skin is actually due to the collection of blood in the subcutaneous fascial planes not the dispersion of red cells within lymphatics as has been sometimes surmised.

Data source and selection of materials: Retrospective analysis of literature with settings: Cutaneous manifestations of pancreatitis, Cullen sign, Grey Turner sign. Searching is done through: PubMed, Medline and electronic journals accessible via KoBSON as well literature available in the Library.

Results of synthesis: A search of the entire English literature using PubMed with the phrase 'Cullen's sign' resulted in 43 articles. Articles were dated between 1937 and 2008. There were 11 papers which were deemed relevant in relation to the presence of the clinical sign, differential diagnosis and management. Periumbilical ecchymosis is called "Cullen's sign," first identified by Dr. Thomas Stephen Cullen (1868—1953) in 1918, this condition often coexists with Grey Turner's sign, a bruising of the abdominal walls or flanks. Nonetheless, Cullen's and Turner's signs are rare, occurring in less than 3% of patients with pancreatitis and less than 1% of patients with ruptured ectopic pregnancy. Both signs have since been described in a wide variety of other disorders. The discoloration of the skin is actually due to the collection of blood in the subcutaneous fascia planes not the dispersion of red cells within lymphatic as has been sometimes surmised. In patients with pancreatitis, computed tomography often reveals collections of fluid within the fascia planes behind the kidney, which at some point may reach the lateral border of the quadratus lumborum muscle, from where they may pass to the subcutaneous tissues of the lateral abdominal wall. Presumably, the mechanism of Grey Turner's sign in other causes of retroperitoneal haemorrhage is the same. In most patients with Cullen's signs, blood travels to the periumbilical area through the falciform ligament, which connects to the retro peritoneum via the lesser omentum and transverse mesocolon. The sign can take 2–3 days before appearance, and may be used as a clinical sign to help the diagnosis of acute pancreatitis. Primarily, both signs presents as severe discoloration and bruising around the navel, accompanied by swelling in the region. The color of the

bruise varies based on the severity of the condition, ranging from yellow/green in more moderate cases, to purple in severe ones.

Conclusion: Doctors tend to focus on what the underlying causes are, rather than the issue itself. In this sense, when Cullen sign is seen, the concern is that a more serious condition, such as acute pancreatitis, ectopic pregnancy, or other issue needs to be investigated. Notably, studies have found that up to 37% of pancreatitis cases that display this marker end up being fatal.

Keywords: Acute pancreatitis, Cullen sign, Grey Turner sign

Abstract number: 003

ACUTE RESPIRATORY FAILURE

Radmila Furtula, S. Stefanović

INSTITUTE OF EMERGENCY MEDICAL SERVICE OF MONTENEGRO

Introduction: Acute respiratory failure (ARF) is one of the major causes visits of emergency medical service and emergency departments (EDs) specify of elderly patients and is the key symptom of most cardiac and respiratory diseases, such as cardiogenic pulmonary oedema (CPE), and of exacerbation of chronic respiratory disease (CRD) including chronic obstructive pulmonary disease (COPD), community-acquired pneumonia (CAP) and pulmonary embolism (PE), which are associated with a high morbidity and mortality. Respiratory failure is a common complication in advanced stages or following acute worsening of the underlying disease.

Data source and selection of materials: Retrospective analysis of literature with settings: Acute respiratory failure, dyspnea, pre-hospital treatment. Searching is done through: PubMed, Medline and electronic journals accessible via KoBSON as well literature available in the Library.

Results of synthesis: Respiratory failure is a common complication in advanced stages or following acute worsening of Interstitial Lung Diseases (ILD) and can be classified on the basis of different parameters, including time of onset (acute or chronic), severity (mild to severe), and causes (reversible or irreversible). ARF may occur as an acute/subacute presentation of ILD or may complicate the clinical course of a previously diagnosed ILD or unknown ILD as the result of the rapid decline of respiratory function caused by an accelerated worsening of the underlying interstitial process, the so-called AE, or because of superimposed complications, such as pulmonary thromboembolism, heart failure and infection. AE-ILD might be the consequence of an intrinsic acceleration of the fibro proliferative process or a response to occult or known external events. In a previously apparently healthy patient presenting with ARF, the assessment of past medical history and symptoms, perhaps underestimated by the patient himself, is mandatory. Physical examination and laboratories may reveal a long-standing respiratory failure or extrapulmonary manifestations of underlying diseases. In 10–15% of cases, COP may present with a rapidly progressive course, mimicking ARDS. The diagnosis is made by ruling out infectious causes of pneumonia and documenting typical pathological changes in tissue obtained by lung biopsies demonstrating fibroblastic polyps. Oxygen supplementation is the mainstay of treatment of ARF in ILDs. In the acute setting, different kinds of oxygen therapy are available, from simple nasal cannulae to face masks, including high concentration oxygen with reservoir mask and Venturi mask.

Conclusion: ARF is a feared complication in ILDs, both for its difficult management and diagnostic work-up and the poor prognosis. Oxygen supplementation and ventilator support have proven to be ineffective in modifying the prognosis of the disease in the absence of effective therapeutic options. Less invasive techniques, including HFNC oxygen and NIV, might be used in less severe cases to correct hypoxemia and control dyspnea, while, invasive techniques, such as IMV and ECMO, should be limited to patients listed for lung transplant or with reversible causes of ARF.

Keywords: Acute respiratory failure, dyspnea, pre-hospital treatment.

Abstract number: 004**ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)***Vesna Janačković*

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Introduction: Acute respiratory distress syndrome (ARDS) is a syndrome of acute respiratory failure caused by non-cardiogenic pulmonary edema. ARDS is caused by bacterial and viral pneumonia usually but can be caused by sepsis due to severe trauma, and aspiration of gastric contents, and less commonly by pancreatitis and drug reactions. The current definition includes acute onset of impaired oxygenation (arterial hypoxemia with PaO₂/FiO₂ ratio <300 mm Hg) and bilateral infiltrates on chest imaging in the absence of left atrial hypertension.

Data source and selection of materials: Retrospective analysis of literature with settings: Acute respiratory distress syndrome, dyspnea, ARDS. Searching is done through: PubMed, Medline and electronic journals accessible via KoBSON as well literature available in the Library.

Results of synthesis: The first description of ARDS was in 1967 as a complex clinical syndrome. In vitro and in vivo studies have demonstrated that lung inflammation causes increased alveolar endothelial and epithelial permeability, resulting in the accumulation of pulmonary edema fluid. By Berlin definition ARDS is divided into three categories of severity depending on the degree of hypoxemia: mild (PaO₂/FiO₂ 200–300 mm Hg), moderate (PaO₂/FiO₂ 100–200 mm Hg), and severe (PaO₂/FiO₂ <100 mm Hg). The Berlin Definition proposed in 2012 is still controversial owing to lack of sensitivity and specificity. ARDS is still under recognition and it is associated with high mortality. The mortality of ARDS is ~25 to 40% in most studies. The crucial management is mechanical ventilation, with a goal to minimize ventilator-induced lung injury (VILI). Interventions to further minimize VILI, such as prone positioning in patients with a PaO₂/FiO₂ ratio less than 150 mm Hg, were associated with a significant mortality benefit whereas others (eg, extracorporeal carbon dioxide removal) remain experimental. Recent guidelines on mechanical ventilation in ARDS provide evidence-based recommendations related to 6 interventions, including low tidal volume and inspiratory pressure ventilation, prone positioning, high-frequency oscillatory ventilation, higher vs lower positive end-expiratory pressure, lung recruitment maneuvers, and extracorporeal membrane oxygenation.

Conclusion: No specific pharmacologic treatments aimed at the underlying pathology have been shown to be effective, and management remains supportive with lung-protective mechanical ventilation.

Keywords: Acute respiratory distress syndrome

Abstract number: 005**ECHOSONOGRAPHY OF ACUTE APPENDICITIS - A CASE REPORT***Bojan Radojičić(1), M.Radojičić(2)*

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Introduction: Appendicitis is an inflammation of the appendix that begins on the inner layer of the wall, and can spread to all layers, as well as outside the appendix. The appendix is an extension of the caecum that ends blindly, implanted 2-3 cm from the ileocecal valve, about 9 cm long and up to 2.2 mm thick. Causes of appendicitis: obstruction with fecolitis, proliferation of lymphoid tissue in young people, neoplasms, infestation, ingestion. Ultrasound can distinguish all layers of the wall: internal hyper echoic corresponds to the mucosa, wider hypo echoic submucosa and lamina muscularis, and external hyper echogenic serosa. Ultrasound visualization of the appendix can be difficult due to large variations in position, flatulence and obesity.

Case report: An 11-year-old girl was referred for an echosonographic examination by a pediatrician due to abdominal pain in the lower right quadrant, which radiates to the right leg. Leukocytosis is present in laboratory analyzes. She expressed pain at Burney's point. Echosonography of the abdomen shows that the appendix of a hyperechoic thickened wall, 4 mm in diameter, is filled with liquid contents, with a negative compressibility test. Bloomberg test was positive. The patient was referred to pediatric surgery, where an operation was performed - appendectomy. Pathohistologically obtained finding of appendicitis grade III (phlegmonous-gangrenous).

Discussion: Ultrasound diagnosis of appendicitis in children is routinely used as an important auxiliary diagnostic method. The appendix is displayed in up to 75% of cases, but when visualized with over 90% certainties, it can be said whether it is inflammation or not. Direct ultrasound signs of inflammation include wall thickening and a negative compressibility test. Indirect signs are hyper echoic surrounding adipose tissue and hyperemia of the surrounding tissue which is clearly seen on Color Doppler. In all young patients, it is recommended to perform an echosonographic examination first, and if it is not sufficient, to supplement the diagnosis with CT in consultation with a clinical doctor.

Keywords: Appendix, appendicitis, abdominal echosonography, Bloomberg sign.

Abstract number: 006

CHRONIC SUBDURAL HAEMATHOMA –A VITAL INDICATION AND AN UNCONVENTIONAL CASE REPORT

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Introduction: Chronic subdural hematoma (CSDH) is one of the most commonly treated neurosurgical disorders in the world. The 2006 American Association of Neurological Surgeons procedural survey reported over 43,000 bur holes performed for the evacuation of extra-axial (subdural/epidural) hematomas.¹ The most common patient characteristics are elderly males with or without a history of head trauma.^{2,3} Additional risk factors include a history of alcoholism, the presence of an internal cerebrospinal fluid (CSF) shunt, and acquired or congenital bleeding diathesis. ⁴ CSDHs are often unilateral, but present as bilateral in approximately 16 to 25% of cases.^{3,5} The most common presenting symptoms include headache, ataxic gait, confusion, aphasia, and various nonspecific complaints. If the CSDH is large and causes significant mass effect, paresis, seizure, and coma may ensue. Mortality statistics vary among institutions, but generally range from 5 to 16%.^{6,7}

Several theories exist to explain the pathogenesis of CSDH. The prevailing hypothesis is that most start as acute subdural bleeds that trigger a local inflammatory response in the surrounding meninges. Inflammation triggers the migration of fibroblasts, which then create membranes that organize the clot and secrete vascular endothelial growth factor (VEGF) that, in turn, promotes the formation of capillaries within these membranes. ⁸ Over time, these membrane capillaries bleed and prevent the blood from being reabsorbed. Hemoglobin eventually is broken down into hemosiderin, leading to the characteristic appearance of CSDH on computed tomography (CT)/magnetic resonance (MR) imaging

Methods and material: Management of CSDH typically involves surgical evacuation of the clot and placement of postsurgical drains to prevent re-accumulation of blood in the subdural space. In particular, the use of drains after bur hole evacuation of CSDH has been shown to reduce both recurrence and mortality at 6 months.⁹ Several operative approaches are available. Bur hole drainage is performed most commonly. A “mini”-craniotomy may augment visualization of the subdural space. When the radiographic appearance is favorable, bedside procedures—such as minimally invasive twist drill catheter placement or suction evacuation—can be used to good effect. In addition to these surgical techniques, several small studies have suggested that dexamethasone therapy might show some promise in treating CSDH.^{10,11} Newer pharmacological treatment, such as the use of tranexamic acid (an antithrombotic agent), is investigational.¹² CSDH recurrence rates vary among institutions, but generally range from 8 to 16%.^{13,14} Several studies have suggested that CSDH recurrence rates are higher with bilateral CSDH, with large volumes of pneumocephalus after evacuation, and with use of anticoagulation therapy.^{13,14}

Discussion: Indications for operative management: subacute or chronic subdural hematoma with maximum thickness of 10 mm and/or midline shift of 7 mm; subacute or chronic subdural of any thickness causing mass effect, midline shift, or neurologic signs and symptoms.

Vital indication for operative management is considered when there is a severe neurological deterioration compared to the state of admission or a somnolent state.

A patient admitted with to the Emergency room, male age 70, admission state as GCS 15 with a mild hemiparesis, presented a CSDH with a midline shift, followed by neurological significant deterioration on the department, operated as a vital indication. Following is a 24 years old male patient with a history of traumatic injury 3 months prior to admission. The patient initially did a MRI because of a headache which

showed bilateral subdural hygroma's and was treated with hydrocortisone. The headache progressed so patient did another MRI which showed a right CSDH neurological condition was intact. The patient was administered to the hospital and prepared for operation.

Keywords: chronic subdural hematoma, vital indication

Abstract number: 007

OVERVIEW OF ORGANIZATIONAL STRUCTURE OF EMERGENCY MEDICAL SERVICES IN SERBIA- PERSPECTIVE OF LOCAL SELF- GOVERNMENT

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Introduction: The legal and strategic framework for HMP in Serbia does not exist as a separate one, but within the umbrella laws and strategies in the area of health care. The criterion for the existence of an organizational unit of EMS in the city/municipality is 25,000 inhabitants, which is every second municipality in Serbia. Cities and municipalities have competencies for financing emergency medical care, but there are no norms and no bylaws have been adopted that specify these competencies of local self-government units. Serbia is facing the reform of the EMS, everything is still functioning according to the old rules, and is uneven. Small and underdeveloped municipalities (under 25,000 inhabitants) are in a particularly unfavorable position, as they do not meet the criteria for establishing a special organizational unit of the EMS.

Methods and material: Situation analysis, qualitative and applied research were conducted during 2018 by the SCTM with the aim of mapping the availability and condition of prehospital EMS with recommendations for improvement. An expert team was established, a questionnaire was developed, which was filled out by health institutions in the period from August 1-15, 2018, and a database was formed. A total of 145 LSG completed the questionnaire. Focus group meeting was held on September 14, 2018 in Belgrade (MoH, Republic Commission for Emergency Medicine, expert team, WG of the Committee on Health and Social Policy of the SCTM). The results of the research were presented and conclusions and recommendations were adopted by consensus, and they were supported and adopted by the Presidency of SCTM.

Results: Organizational structure of the EMS: I Group 4 LSGs (4 EMS Institutes: Belgrade, Nis, Novi Sad and Kragujevac) 3.25% of the territory and 29.08% of the population; II LSG group - HC with organizational unit of EMS - 70 LSG, 47.38% of the territory and 49.21% of the population; III Group: (less than 25,000 inhabitants): 75 LSG, 13.14% of the population in 33.57% of the territory of RS. Of which: III/a LSG group (EMS within Adult Health Care at HC - duty teams) 11.6% of the territory and 5.04% of the population; and III/b health centers in which EMS services are provided through the regular operation of the general medicine service cover 22.41% of the territory and 8.10% of the population.

Discussion: The availability and state of EMS provision in Serbia is not uniform. Institutes are the best organized, although they are the most burdened, and the more the organizational form is "drowned" in primary health care, the worse is the situation and the lower the availability of EMS. It is necessary to develop a strategic and legal framework for the EMS and start the reform. Small, underdeveloped and fragmented, and border municipalities are in a particularly difficult position.

Keywords: Therapeutic lumbar punctures, therapeutic method

Abstract number: 008

INFLUENCE OF THERAPEUTIC LUMBAR PUNCTURES

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Introduction: Lumbar puncture is a diagnostic and therapeutic method. In the first case, the cerebrospinal fluid is taken for examination and examination of its hemodynamics, and the therapeutic option is the possibility of giving drugs intrathecally. The most urgent indication for a lumbar puncture is when there is a reasonable suspicion that it is an infection of the central nervous system or its envelopes. Another urgent indication is the suspicion of subarachnoid hemorrhage.

Lumbar puncture with cerebrospinal fluid examination is part of myelographic diagnosis. Albumino cytological dissociation (Froin's syndrome) with high protein values from 60 to 200 mg per 100cc and a normal or slightly increased number of cells indicates the existence of an obstruction in the spinal canal.

Methods and material: The purpose of therapeutic lumbar puncture is the injection of anesthetics, cytostatics, other drugs, contrast agents (myelography) or radioactive substances as part of various examinations or treatments of various neurological diseases and conditions. Postpuncture meningitis is a serious, but very rare complication of lumbar puncture that occurs during non-sterile performance of this diagnostic-therapeutic procedure. In the Emergency Center of the Clinical Center of Serbia, in the period from August 31, 2020 to October 18, 2020, thirteen lumbar punctures were performed for therapeutic purposes in four patients

CASE 1: Woman, 28 years old. Dg: Bifrontal Abscessus. We had done operation on the patient to evacuate the abscessus. After the operation, she had nasoliquorrhoea. After operation, two lumbar punctures were performed for therapeutic purposes. After the second lumbar puncture, the nasoliquorrhoea was stopped.

CASE 2: Man, 55 years old. Dg: Depressed skull fracture l.sin et l.dex. frontalis. Surgery was performed by a maxillofacial surgeon and a neurosurgeon. The patient didn't have nasoliquorrhoea. Therapeutic lumbar puncture was done preventively. It was done four times.

CASE 3: Man, 28 years old. Dg: Meningitis bacterialis The patient was admitted in a comatose state with dilated one pupil and with signs of meningitis. He had a head injury three years ago. We did three therapeutic lumbar punctures. Shortly afterwards, the patient dilated another pupil and it was followed by a lethal outcome.

CASE 4 Man, 58 years old. Dg: Intracerebral Hematoma The patient has intracerebral hematoma with propagation into all four chambers. We did underwent external drainage, but despite that there was no improvement. Because of that we performed four lumbar punctures for therapeutic purposes. This is followed by a lethal outcome

Keywords: Therapeutic lumbar punctures, therapeutic method

Abstract number: 009

INTRACEREBRAL HEMORRHAGE DURING PREGNANCY - CASE REPORT

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Introduction: Non traumatic Intracerebral hemorrhage (ICH) can be primary (due to arterial hypertension or cerebral amyloid angiopathy), and secondary ICH (cerebral vascular malformations, coagulopathies, infectious complications, brain tumors, eclampsia).

Pregnancy is condition where increase in blood volume leads to 30-50% increase. Pregnancy also leads to a hypercoagulable state, with changes in both coagulation and fibrinolysis.

There is an increased risk during pregnancy and post-partum, among all the cases ICH in woman. ICH has profound consequences and is responsible for up to 7-10% of all maternal mortality. Management with these patients should be stabilization of airway, breathing, hemodynamic status, head CT. It is important to decrease blood pressure to prevent hematoma expansion, also is very important to avoid hypotension and fetal hypoxia.

ICH is rare during pregnancy.

Case: In this case we are showing a 17-years old Serbian woman, first pregnancy, at 36 weeks gestation. The woman had no significant medical history and no history of head trauma. There was no history of eclampsia and other pregnancy conditions. On the day of admit patient was found in house unconscious. In the moment of admission, she was intubated and sedated. She was immediately transferred to obstetrics and given birth by cesarean – healthy child was born. Her head CT showed intracerebral hemorrhage in cerebellum with blood in both lateral and third ventricle. She was operated, when external cerebral drainage was done. CT scan after operation showed no blood in ventricles and no hydrocephalus, with ICH cerebellary. Daily was evacuated about 200-300ml for 15 days. Angio CV scan showed no vascular malformation. Patient was operated when the ICH was evacuated (photo 2). In further history, patient was awake, extubated, with symmetrical flexion.

Discussion: This case represents a rare disease. It is very important to make diagnose at time, also to control pregnancy state. Usually surgery is necessary. Follow up is needed.

Keywords: intracerebral hemorrhage, pregnancy, hypertension, external ventricular drainage

Abstract 010 (INVITED LECTURE)

ECG IN NON-CARDIAC CONDITIONS

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INTRODUCTION: The electrocardiogram (ECG) is the basic cardiologic test. ECG abnormalities can be present in a wide variety of non-cardiac conditions like electrolyte abnormalities, pulmonary embolism, CNS diseases, hypothermia, drug-related and other conditions. These conditions may provide the characteristic ECG changes which can simulate primary cardiac conditions. Knowledge of these changes may provide an early clue to the diagnosis of these disorders, which can be lifesaving.

DATA SOURCE AND SELECTION OF MATERIALS: Retrospective analysis of literature with settings: ECG in Non-Cardiac Conditions. Searching through: PubMed, Medline and accessible electronic journals as well literature available in the Library.

RESULTS OF SYNTHESIS: ECG can be altered by various conditions that are external to the heart. CHRONIC OBSTRUCTIVE PULMONARY DISEASE - Low voltage P, QRS, T in D1 because of vertical axis of all the vectors, right ventricular hypertrophy and right axis deviation. The symmetrical T-inversion in chest leads. PTE - Symmetrical inversion of T wave in anterior chest leads due to right ventricular ischemia and dilatation where right ventricle occupies region of V1-V3. CNS DISORDERS - Subarachnoid haemorrhage (SAH): deep, broad T inversion with prolonged QT interval. GIT DISORDERS - Acute pancreatitis: ECG changes due to proteolytic enzymes released by pancreas injuring the myocardium. Oesophageal disorders: ECG changes due to associated coronary spasm. ELECTROLYTE DISTURBANCES: The QRS corresponds to sodium entry, calcium to ST segment and potassium to T wave. Hyperkalaemia: Tall T waves with increasing levels producing P and QRS changes. Hypokalaemia: Low voltage T waves with prominent U waves. Hypercalcemia: Short QT-interval due to a short ST-segment. Hypocalcaemia: Prolonged QT-interval due to a prolonged ST segment. DRUGS – Digoxin: short QT interval due to shortening of ST-segment because of intracellular hypercalcemia. Tricyclic antidepressant toxicity: wide QRS, sinus tachycardia and terminal R in AVR. HYPERTHYROIDISM - Supraventricular arrhythmias. Atrial fibrillation is the most common sustained arrhythmia in thyrotoxicosis. HYPOTHYROIDISM - Sinus bradycardia, low QRS voltages, a prolonged QT interval and non-specific T waves. HYPOTHERMIA - A core body temperature less than 35°C - ECG abnormalities: tremor artifact, slowing of the sinus rate to bradycardia, conduction disturbances to prolongation of the PR and QT intervals, the classic Osborn or J wave. LEAD MISPLACEMENT - Upper arm lead reversal: Limb leads show the evidence of dextrocardia (P, QRS negative in D1 and positive in avR) but chest leads show normal R wave progression. TREMORS – Parkinsonism: somatic tremor artefacts (STA). POSTURE – Standing: T wave changes and axis shift.

CONCLUSION: Most often, whenever there are ECG changes it is presumed, it is due to cardiac disease. It should be realised that many non-cardiac conditions can produce significant ECG changes which are mistaken for cardiac disease and wrongly treated especially in critical care settings. The clinical

correlation, careful study of ECG and awareness of ECG changes in non-cardiac conditions will prevent many such therapeutic disorders.

Keywords: ECG, Non-Cardiac Conditions

Abstract 011 (INVITED LECTURE)

APPLICATION OF TRANSABDOMINAL ULTRASONOGRAPHY IN EMERGENCY STATE

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Abstract: Abdominal ultrasound is established as an important and low-risk diagnostic procedure in emergency and intensive care medicine that allows rapid and precise diagnosis in symptomatic patients and helps to evaluate which further diagnostic steps are needed. Abdominal ultrasound should be performed as the initial imaging modality in all symptomatic patients in an emergency or intensive care unit and can be used with high accuracy to detect the presence of various abdominal pathologies, such as abdominal aortic aneurysm, abscess, ureterolithiasis or free fluid. Abdominal US in trauma patients is typically performed with the methodology of a focused assessment with sonography for trauma (FAST) examination. FAST provides a quick overview of the peritoneal cavity to detect free fluid, which is a direct sign of hemoperitoneum and an indirect sign of organ injuries. The sensitivity and specificity of FAST for the detection of free intraperitoneal fluid were 64–98 and 86–100 %, respectively. It is well known that abdominal US is very useful for the detection of gallstones and the diagnosis of acute chole-cystitis. When performing US, secondary findings such as gallbladder wall thickening, pericholecystic fluid, and sonographic Murphy sign provide more precious information. Some studies, which used computerized tomography as the reference standard, showed that the diagnostic performance using US finding of hydronephrosis was generally modest. Although US was less sensitive than CT for the diagnosis of ureterolithiasis, bedside US in emergency departments is justified as the initial imaging modality. Transabdominal ultrasound was able to detect significant abnormalities such as hydronephrosis, polycystic kidney disease, renal abscess, and emphysematous pyelonephritis. The early utilization of US in emergency departments may impact on the management of these patients or initial assessment of septic patients. Abdominal ultrasound can be used with high accuracy to detect aortic abdominal aneurysm in symptomatic patients. A systematic review and meta-analysis published in 2013 showed that the search criteria resulted in seven studies with 655 patients, and the pooled operating characteristics of EP-performed US for the detection of AAA had a sensitivity of 99 % and specificity of 98 %. Computerized tomography was found to have a superior test performance to US in the diagnosis of acute appendicitis but US is recommended as the first-line imaging modality in young and female patients. Abdominal ultrasound is aimed to integrate rapidly detectable sonographic findings into the clinical context. To ensure required standards, regular training is necessary and it is important to understand methodological limitations.

Abstract 012 (INVITED LECTURE)

BURNOUT SYNDROME

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Introduction: Burnout syndrome at work is a prolonged response to chronic emotional and interpersonal stressors associated with the workplace. It is characterized by emotional exhaustion, depersonalization and personal accomplishment. It arises as a consequence of uncoordinated relations between employees and the work environment.

Data source and the choice of material: A retrospective analysis of literature with determinants: Burnout syndrom. The search was carried out through: PubMed, Medline and electronic journals available through KoBSON

Results of the synthesis: The term "burnout" syndrome was used in the official literature in 1974 by psychologist Herbert Freudenberger. The greatest contribution to the understanding of the theoretical

and practical meaning of the concept of its creation was made by the American psychologist Christina Maslach. The onset of burnout syndrome is associated with psychosocial stress in the workplace over a long period of time. Professional conflicts create emotional fatigue, an ambivalent attitude towards work and reduce the feeling of self-esteem. Burnout syndrome occurs in people who perform tasks related to work and communication with people. People who strive for perfectionism, have unrealistically high expectations and assessments related to themselves and their personal work are susceptible to it. Women and men are equally at risk, but it is more common among the unmarried and people with a lower level of education. Burnout at work is a cumulative process that goes through four phases. It is manifested by drastic changes in mood and behavior that are not characteristic of us, but also changes in physical parameters, which can be an alarming sign. Burnout syndrome is present in 48 to 69% of workers in Japan and Taiwan, in about 20% in the United States and in 28 % of workers in European Union countries. The International Classification of Diseases 10th Revision describes burnout in Chapter Z73.0, as a state of vital exhaustion. In psychiatry, according to the same revision, this disorder is included in the diagnosis of Adaptation Disorders (F43.2), which is characterized by disorders in social or work or academic functioning. The World Health Organization, with the eleventh revision of the International Classification of Diseases, classified burnout under the code QD85. Burnout refers specifically to phenomena in a professional context and should not be used to describe experiences in other areas of life. The assumptions and plans are that the workplace burnout syndrome will be accepted on a global level and viewed as a disease from January 1, 2022.

Conclusion: In the world, Burnout syndrome is recognized as a great challenge due to the serious consequences it has on the health of workers and the functioning of their organizations. Due to its specificity in relation to some other mental states, the best and most effective remedy would be prevention. Prevention involves planning and implementing various activities in order to create an organizational structure that cares about the mental health of its employees, which nurtures trust, support, open communication and maintaining a healthy work environment.

Key words: burnout syndrome, emotional exhaustion, depersonalization, personal accomplishment, prevention.

Abstract 013 (INVITED LECTURE)

RADIOLOGY TESTS IN THE CHEST PAIN

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Acute chest pain is a huge differential diagnostic problem in the pre-hospital care of patients whose causes can range from "banal" muscle pain to life-threatening conditions. The correct algorithm of diagnostics and examination largely determines the course of treatment and prognosis. Sometimes we are saving lives and sometimes we are saving money by reducing the unnecessary costs of hospitalization and observation.

What is the evolution of possibilities and where is the place of the modern radiologist in the diagnostic algorithm of a patient with chest pain? We will first consider the basic modalities available.

Chest radiography, CXR, standardly performed erect in PA projection, is the oldest radiological method. Should it be forgotten and neglected? Certainly not, X-rays have an important role in the diagnosis of patients with chest pain. Can we always find the cause of pain with the help of CXR? Also, not. On the contrary, its purpose is often to exclude certain pathological conditions so that we can focus on further examinations.

As for the ultrasound, in addition to the ultrasound examination of the heart, in recent years "point of care"/"bedside" ultrasound, has gained huge popularity. In ICU and emergency centers it can be a powerful weapon for rapid orientation and diagnosis.

The MDCT is slowly taking leading place and is already being imposed as the gold standard in many conditions. It shows high sensitivity and specificity for vascular pathology CT examination in acute suspected coronary syndrome either non-enhanced with Ca score, or angiography with stenosis examination can provide important information and direct the patient to further examination and treatment or rule out coronary heart disease and thus reduce treatment costs due to unnecessary hospitalization and observation.

Magnetic resonance imaging (MRI) is non-ionizing imaging method with exceptional spatial resolution but what limits it is the long acquisition time. This classifies MRI as a method reserved for stable patients and has not yet found a significant place in emergency pathology. On the other hand, magnetic resonance imaging with the use of paramagnetic gadolinium contrast agent is the gold standard in the evaluation of cardiac muscle function, all as part of the study of late gadolinium enhancement. In this review, we present four conditions that, among other causes of pain, must not go unrecognized. So these are the conditions that bring the patient to the ER that we must not overlook and release such patients home. These are acute coronary syndrome (ACS), acute aortic syndrome (AAS), pulmonary thromboembolism (PTE) and pneumothorax (PTX)

Abstract 014 (INVITED LECTURE)

LABORATORY CHAOS IN SEPSIS

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Introduction: All health care providers in the first line of care of the patients are more at risk for violence than other. There is growing concern that this trend is likely to continue in the years to come. Working in pre-hospital setting one must be aware that scene safety requires constant reassessment. Emergency departments have an atmosphere of „controlled chaos“, they are open day and night, with generally unrestricted access. Factors that may contribute to violence occurring in emergency departments are long waiting times, staff shortages, overcrowding and sometimes high expectations of the patients. Violence on many occasions could and can be avoided if we are trained to act adequately in situation that are perceived as potentially unsafe.

Methods: Retrospective analysis of literature with determinants: safety, health care violence, de-escalation technique. The search was carried out through: PubMed, Medline and electronic journals available through KoBSON

Discussion: he only agreed upon predictors of violence are male gender and alcohol abuse. The most obvious predictor of potential violence is the patient's history of being violent in the past. We must be able to differentiate between an organic and a functional cause of such behaviour. Diseases most likely involved in a violent episode are those related to drugs and withdrawal syndromes, especially delirium tremor and treatment is causal. Regardless of underlying etiology, agitation is an acute emergency and requires immediate intervention to control symptoms and decrease the risk of injury to the patient or others. Before we can perform physical and mental-status examination in any patient exhibiting threatening behavior, we must establish some form of control. Traditional methods of treating agitated patient such as medical sedation or restraints have been replaced with non-coercive approach when possible. Technique of verbal de-escalation of agitated patient can be performed in almost any setting but we must always bare in mind basic guidelines. Physical space should be designed or modified for safety. Staff should be appropriate for the job and adequately trained. Objective scales should be used to assess agitation such as Behavioural Activity Rating Scale (BARS). General de-escalation technique consists of ten domains and all are part of a 3-step approach. First, patient is verbally engaged, then collaborative relationship is established and finally patient is verbally de-escalated out of agitated state. This kind of approach may result in many benefits both for patient and for health care providers.

Key words: safety, violence, deescalation

Abstract 015 (INVITED LECTURE)

THE PIACENZA STRATEGY. HOW AN EMERGENCY DEPARTMENT CAN SURVIVE TO COVID19 PANDEMIC

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On February 21st, 2020 the first case of COVID19 has been reported in Northern Italy (Codogno, Lombardy), becoming the beginning of the COVID19 pandemic and health system crisis in Italy. For its

proximity to Codogno, Piacenza has quickly become one of the epicentres of the Italian epidemic with a massive influx of critically ill patients to our Emergency Department (ED). To avoid the complete collapse of our hospital, we designed a long-term disaster plan in order to warrant a “COVID-19 free way” in the ED and prevent COVID19 spread in “COVID19 free wards” in our hospital. We promptly increased the number of emergency clinicians, and moved away the Traumatology and Orthopedics Department in another local building. We created a “key area” in the triage room and a clear triage-process based on the strictly collaboration between the triage nurse and the emergency clinician, who performed the point-of-care lung US, in order to quickly identify ultrasound signs of COVID19 pneumonia, and to avoid misunderstanding COVID19 diagnoses. We divided the ED into seven areas: two for patients with acute respiratory failure who required NIV, one for patients with mild symptoms who required oxygen therapy, and one for patients without respiratory failure. We turned our Observation Unit into a Subintensive Care Unit for patients with ARDS who needed NIV, and we created a “temporary COVID19 ward” for patients waiting for admission to two COVID19 hospitals in Castel San Giovanni and Fiorenzuola d’Arda, and the Military Hospital. A “free COVID19 first aid station” (Advanced Medical Facility) has been arranged outside the ED to ensure a “free COVID19 way”. Three bed managers handled all the patients’ hospitalization and transfer. All these changes have required a great effort for all the medical staff. We struggled to maintain our normal standard of care for each patient. We shared every decision with intensivists, avoiding a single person decision, and we created a palliative care unit for end-stage patients. We tried to give better chances to those patients who have the highest probability to benefit from intensive care. In presence of poor prognosis, we treated symptoms such as pain, secretions and dyspnea using continuous palliative sedation. We always informed the patients’ families and we shared with the patient’s family the decision to start continuous palliative sedation. The weight of this decision has hurted us terribly, particularly because of the lack of the patient’s family, that is paramount in this context. We believe that in such complex situations, there is not a unique best way to manage the disaster. We strongly suggest to maintain flexibility and proactivity in the process of problem solving, to coordinate all the efforts avoiding energy loss and waste, to strictly and strongly collaborate with intensivists and palliative care specialists to ensure the best strategy for each patient avoiding over- and undertreatment. We hope our strategy could be useful for other EDs trapped in this global pandemic.

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Abstract 016 (INVITED LECTURE)

THE CONCEPT OF SEPSIS AND SEPTIC SHOCK – PRESENTED IN A NEW LIGHT

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Sepsis is a leading cause of death and the target of intense efforts to improve recognition, management and outcomes. The USA Centers for Disease Control and Prevention had released the Adult Sepsis Event surveillance definition that includes simplified organ dysfunction criteria optimized for electronic health records (eSOFA). eSOFA criterias are as follows: vasopressor initiation, mechanical ventilation initiation, doubling in serum creatinine or decrease by $\geq 50\%$ of eGFR relative to baseline (excluding patients with end-stage kidney disease), total bilirubin ≥ 2.0 mg/dL and doubling from baseline, platelet count $< 100/\mu\text{L}$ and $\geq 50\%$ decline from baseline (baseline must be $\geq 100/\mu\text{L}$), serum lactate level ≥ 2.0 mmol/L.

For more than 20 years, researchers have described several biomarkers in different platforms to characterize the immune dysfunctions of sepsis. A new multiplex immune profiling panel (IPP) prototype was assessed for its ability to semiquantify messenger RNA immune-related markers directly from blood, using the FilmArray System, in less than an hour. The panel includes 16 target genes and describes the different pathways targeted. The panel also features 8 reference genes for signal normalization. The panel

of markers was selected to target different arms of the immune responses (innate and adaptive), several immune functions (pro- and anti-inflammatory cytokines) and immune pathways.

Use of molecular rapid diagnostic testing in patients with bloodstream infections reduced the time to effective therapy and length of hospital stays.

Antibiotics remain the cornerstone of therapy for bacterial sepsis. The Surviving Sepsis Campaign recommends immediate antibiotics for all patients with suspected sepsis and septic shock, ideally within 1 hour of recognition. Prompt administration is unquestionably important, but what constitutes prompt in the context of diagnostic uncertainty and the potential risks of unnecessary antibiotics remains unclear. Based on the best available data, it appears that there is a strong relationship between each hour until antibiotics and mortality for septic shock but a less pronounced relationship for sepsis without shock. Intervals of up to 90 minutes until antibiotics for patients with sepsis without shock make little difference. The precise empiric antibiotic regimen is determined by: assessing patient and epidemiological risk factors, likely source of infection based on presenting signs and symptoms and severity of illness. Empiric regimens should have adequate tissue penetration for the likely site of infection. Multidrug therapy, defined as more than one antibiotic, is commonly prescribed in patients with suspected or documented sepsis. This strategy often includes two agents with different mechanisms of action but with a similar spectrum of activity. An important consideration in determining the involvement of a vascular access device in bloodstream infections is the differential time to positivity between central and peripherally obtained blood cultures. Attention should be given to appropriate collection of blood cultures, which includes adequate and equal volumes. Ideally, samples should be taken from both the catheter and periphery before the administration of antibiotics, with a centrally obtained culture that is positive ≥ 120 minutes before a peripherally drawn culture suggesting a catheter-related infection.

The CMS SEP-1 mandate requires an initial lactate measurement and serial measurements if the initial value is >2.0 mmol/L. However, while the serum lactate level seems to be correlated with sepsis severity and disease mortality rate, and its "clearance" can be an important prognostic indicator, it is not clear that lactate levels in the absence of other supportive clinical data can provide meaningful therapeutic guidance.

Key words: sepsis, criteria, biomarkers, antibiotics, lactate measurements

Abstract 017 (INVITED LECTURE)

DECISION MAKING - THE SPECIALTY OF THE EMERGENCY PHYSICIAN

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Emergency Medicine is more than knowing the pathophysiology and treatment of many different diseases. To manage not only an individual patient, but also the safety and flow of the whole emergency department, requires a set of skills that are often not taught in medical school. This involves constantly making decisions, based on available, often limited, information.

We can facilitate this process by organizing our work so that equipment is organized in a way that facilitates our work under stress, by using checklists and by using the team around us.

Nasser Hammad Al-Azri et al wrote an interesting article called How to think like an emergency care provider: a conceptual mental model for decision making in emergency care (Int J Emerg Med 2020 Apr 16;13(1):17). Just like an EM model it has an A, B, C, D, E, F, G, H approach. The message from the authors is that this is a model to use for structuring EM training.

In my talk I use this model to analyze a case that wasn't ideally managed from when I was working in another country. It was a young man who presented to the ED in a very agitated state. The junior doctor had given him haloperidol and then the patient went into cardiac arrest. That is when I was asked to come and help and going through the A-E steps I identify areas where I could have done better and that we all could have learned from when going through the case afterwards.

A is for situational Awareness - Do we understand what is going on when we enter the resus room? Do we get the information we need to join the team?

B is for Basic supportive measures - Do we have the necessary skills to assess and manage Airway, Breathing and Circulation?

C is for Control potential threats - Emergency medicine is about thinking and planning ahead. What can happen next and what can I do to prevent things from deteriorating?

D is for Diagnostics - This is the hypothetico-deductive model that is often taught in medical school. Thinking about different medical differential diagnoses is important, but needs to be done at the right time in an emergency.

E is for Emergency Treatment - In emergency medicine is not only about knowing about treatments, but being able to decide when and if the patients needs to get this treatment in the ED.

F is for Future care - What needs to happen next and what are the treatment goals?

G is for Groups of particular interest - Emergency management will need to be adapted to the patients' needs, which may be different if the patient is old and frail or if it's a pregnant patient.

H is for Highlights - Going through the highlights of a case and learning from them should be an integrated part of ED management

In conclusion I find this model very useful for identifying gaps in knowledge and skills, but even more for reflecting on decision making. In retrospect every case is easy, but as emergency physicians we need to understand how we make decisions under stress and compensate for all the difficulties that we face in the process.

Abstract 018 (INVITED LECTURE)

ORGANIZATION OF HEALTHCARE WORK AFTER THE OUTBREAK OF SARS COVID 19 IN PRIMARY HEALTH CENTER KRANJ

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We became alert to the virus on 31st December 2019 when it started spreading from China. The Community Health Centre in Kranj also covers the Brnik Airport, with the help of which we immediately launched a search for personal protective equipment (PPE).

On 12th March 2020, a state of epidemic was declared in the Republic of Slovenia.

There were several problems which marked that period; mostly, the lack of equipment, rooms, staff and issues connected with the organization of work at the COVID station, not to mention the organization of other work in healthcare.

We assigned staff to COVID stations from other healthcare activities that were temporarily stopped (prevention and reference dispensary, physiotherapy, gynaecology, orthopaedics, ophthalmology etc.). It was also required to establish a triage in front of all entrances. A particular challenge was the operation of dental clinics, for which special protective equipment was prescribed.

As expected, the second wave would be stronger and more demanding. Testing indications were set low. Therefore, swab sampling was performed by a graduate medical nurse in one shift, whereas in the second shift, a physician would simultaneously check the patient as well. Our outpatient clinics for paediatrics and school children got a special dispensary for the examination of infectious children and taking swab samples from them. Other healthcare services were not completely stopped, but the attack rate for contracting the disease among employees has increasingly risen.

Medicine in this conditions is a dynamic science, highly unpredictable and therefore challenging at all times

Abstract 019 (INVITED LECTURE)

ORGANISATION OF WORK DURING THE CORONA VIRUS PANDEMY

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Introduction: The pandemic of the disease caused by the corona virus has taken unprecedented proportions. The spread of the virus takes lives, and we, health workers, risk our own lives as well as the lives of our loved ones. While we were under pressure from our health care system, in that March, we were ready to start this fight at the invitation of our superiors. We were divided into teams and we knew exactly the order of calls which team enters when. On March 21.2020. at the Clinic for Anesthesia and Intensive Care, the first patient was taken care of around 2 pm. That day will probably remain in our

memories for a long time. Triage of patients was performed at the Clinic for Infectious diseases, depending on the severity of the patient's condition, who were accommodated at the Rehabilitation Clinic, the Clinic for Lung Diseases, as well as in the respiratory centers of the Clinic for Anesthesia and Intensive Care. Hundreds of patients were accommodated in the intensive care unit in the COVID hospital, not all of them required mechanical ventilation, they were also on non-invasive ventilation, but it was necessary to give continuous oxygen, therapy and continuous monitoring of their vital parameters. Patients were enrolled in invasive and noninvasive monitoring. After admission, the patient is continuously monitored. Drug therapy and oxygen therapy are started, blood is taken for laboratory analyzes. Depending on the gas-analysis, the patient is placed on high-flow oxygen, followed by checking the gas analysis in a certain time interval, if the gas analysis is not satisfactory, the patient is placed on non-invasive ventilation, and finally mechanical ventilation.

Organization of work in the respiratory center: In order to organize and coordinate the work of nurses-technicians in respiratory centers, coordinators have been appointed. Nurses-technicians were divided into teams. The coordinators worked in shifts and were in charge of all diagnostic procedures as well as the organization of the work of nurses-technicians in the red and green zone. The obligation of the nurses-technicians in the red zone, in addition to their regular work, was the obligation to inform the coordinators about any changes regarding the patients, as well as any changes regarding the number of patients. Upon admission, the patients were informed by the name and surname of the patient, year of birth, where the patient comes from, which oxygen therapy is included, comorbidities of the patient and COVID-status (whether the serological test was performed or determined by PCR method). The nurses-technicians worked in the red zone according to the established order and schedule, and after leaving the isolation units, the medical documentation was updated. After completing the administrative work tasks, there was time required for rest until the next entry into the isolation units. When entering the isolation unit, everyone must wear full protective equipment, and pay attention to taking off the protective equipment.

In addition to the nurses-technicians, there were engaged sanitary technicians, physiotherapists, X-ray technicians and laboratory technicians in the work of the respiratory centers.

Keywords: Covid-19 virus; respiratory center; nurses; intensive care

Abstract 020 (INVITED LECTURE)

“HOT AND ALTERED” PATIENT

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There are critical diagnoses that require early identification and prompt treatment in a patient presenting with an elevated core temperature and an altered level of consciousness. These can be considered high acuity and low occurrence diagnoses beyond just an infectious etiology. Causes of such a presentation include (but are not limited to) thyrotoxicosis, aspirin overdose, and serotonin syndrome.

Thyrotoxicosis is a life-threatening presentation of hyperthyroidism. Beyond just a decreased TSH and elevated T4, the patient will present with clinical manifestations that can be characterized using a clinical score such as the Burch criteria. Once identified, the patient should be treated with medications that inhibit thyroid hormone synthesis, release, and conversion of T4 into the active form T3. This is achieved, for example, with propylthiouracil, Lugol's solution, and hydrocortisone respectively. The sympathetic overdrive is managed with beta blockers, but one needs to be cognisant of the potential for cardiovascular collapse in patients presenting in cardiogenic shock.

Aspirin overdose can be confirmed with an elevated serum salicylic acid level. However, it should be considered whenever a febrile and altered patient presents with a mixed metabolic acidosis and respiratory alkalosis picture on a blood gas panel. Urine alkalinization is the mainstay of treatment targeting a urine pH greater than 7.5. Salicylic acid is also dialyzable, and dialysis is needed in cases presenting with severe toxicity, severe acidosis, renal failure, non-cardiogenic pulmonary edema, or altered level of consciousness.

Serotonin syndrome (SS) is a rare complication of serotonin agonism. There are no serum markers and the diagnosis is clinical. It is a life-threatening combination of autonomic, central nervous system, and neuromuscular dysfunction. The Hunter Serotonin Toxicity Criteria is a simple tool with up to 97% specificity that can help identify SS. Treatment involves removing the offending trigger and acute supportive resuscitation. In addition, benzodiazepines are used to treat the sympathetic surge. Cyproheptadine is an anti-serotonergic medication that is used in severe cases.

In these specific clinical presentations, the elevated core temperature is exogenous to the hypothalamic thermoregulatory mechanism and is therefore not a typical fever. As a result, these patients require external cooling as part of their resuscitation. The altered level of consciousness can present as a depressed or agitated state. In incidences of excessive agitation, it is important to appropriately sedate the patient.

While these presentations are not common, they are life-threatening and important to keep in mind when faced with a hyperthermic and altered patient.

Abstract 021 (INVITED LECTURE)

TRIAGE AT NON COVID HOSPITAL DURING A COVID 19 PANDEMIC

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EMERGENCY CENTRE CLINICAL CENTRE OF SERBIA, BELGRADE

With pandemic of SARS-CoV2 in Serbia, Emergency Department (ED) in Clinical Centre of Serbia had to adapt to the care of a large number of critically ill and highly contagious suspected patients. Given that studies to date report that about 25% of patients with Covid 19 infection require some form of intensive treatment, it is clear that some of them will report ED, not in covid hospital. Influx of such patients increases intrahospital morbidity and mortality.

Because of that, an admission triage room (ATR) was formed with the aim of preventing the breakthrough of infection into the ED while taking care of critically ill patients. This means that two groups of patients are separated on admission, based on epidemiological risk (ER). ER assessment involves measuring body temperature, completing a questionnaire, taking a brief medical history, and a rapid assessment of respiratory status. One group of patients without risk is disposed of in the usual manner, and another group with ER admits into ATR. The complete process of triage, initial care, diagnosis and treatment of patients with ER is performed by emergency medicine specialists. The decision on further definitive treatment is made by the emergency medicine specialist himself or in agreement with the consulting specialist. The team of doctors consists of 7 specialists, 2 trainees and 20 medical technicians. For the needs of the ATR, 50m² with 6 beds are provided and this room has priority status. Part of the equipment is provided from own reserves, and part from state reserve. In ATR, we have monitor for every bed, central mechanism of oxygenation, one mechanical ventilation apparatus, portable X-ray, portable ultrasonography apparatus, defibrillation apparatus, portable oxygen bottles, portable ECG apparatus and one CT machine is intended exclusively for the needs of the ATR. For admission of patients from ATR for hospital treatment, one internal isolation and one surgical isolation were separated. This isolation rooms serves to care for patients until a nasopharyngeal swab arrives on SARS CoV2 with protective equipment.

Advantages of such triage:

- The influx of COVID 19 infection into the ED was prevented
- There is no mixing of patients with and without ER
- All critically ill patients with or without ER were cared for

Disadvantages of this triage:

- Patients with a proven infection and patients with a suspected infection are cared for in the same area - space deficit
- Staff deficit - because there was no recruitment of new staff
- Triage refers only to COVID 19 infection triage without triage according to the emergency system, which is a feature of every modern ED

KEY WORDS: Covid 19, triage, non covid hospital

Abstract 022 (INVITED LECTURE)

LABORATORY CHAOS IN SEPSIS

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Introduction: Sepsis is an acute dysfunction of the organs that results in a systemic proinflammatory and procoagulant reaction to the infection. The most significant cause of mortality is not the pathogen, but the degree and type of host response to it. The hematological system plays a crucial role in oxygen delivery and carbon dioxide release, hemostasis and defense against pathogens. Systemic inflammatory response resulting from the release of proinflammatory (IL-1, IL-6, IL-12, TNF α , IF γ) and violent attack of the immune system on the body leading to ARDS, MODS and death. Laboratory cooperation in sepsis is characterized by changes in all blood lines, coagulation, and hepatic dysfunction.

Methods: Retrospective analysis of literature with settings: Sepsis, cytokine storm and laboratory abnormalities. Searching is done through: PubMed, Medline and electronic journals accessible via KoBSON as well literature available in the Library.

Synthesis: Sepsis is an acute dysfunction of the organs that results in a systemic proinflammatory and procoagulant reaction to the infection. The most important cause of mortality is not the pathogen, but the degree and type of host response to it. The hematological system plays a crucial role in oxygen delivery and carbon dioxide release, hemostasis and defense against pathogens. Hematological changes are present in almost every sepsis patient. A patient with hematological dysfunction has higher morbidity and mortality. Systemic inflammatory response resulting from the release of proinflammatory cytokines (IL-1, IL-6, IL-12, TNF α , IF γ) i.e. a violent attack by the immune system on the body leading to ARDS, MODS and death. There is NO cytokine storm without virus activity (high virus replication), ie without temperature and elevated inflammatory parameters (Le, CRP, PCT). NO cytokine storm without virus activity (high virus replication) ie without temperature and elevated inflammatory parameters (Le, CRP, PCT), Systemic inflammatory response resulting from the release of proinflammatory cytokines (IL-1, IL-6, IL-12, TNF α , IF γ) i.e. a violent attack by the immune system on the body leading to ARDS, MODS and death. NO cytokine storm without virus activity (high virus replication) ie without temperature and elevated inflammatory parameters (Le, CRP, PCT). Cytokines with acute response TNF and IL-1 and hemotoxic cytokines IL-8 and MCP-1 appear in the early minutes or hours after infection, followed by a continuous increase in IL-6. The anti-inflammatory cytokine IL-10 appears somewhat later as the body tries to control the acute systemic inflammatory response. , producing systemic sepsis, accompanied by hypotension, hyper- or hypothermia, leukocytosis or leukopenia, and often thrombocytopenia. Leukocyte changes are common in severe sepsis. Usually increased (leukocytosis) $> 12 \times 10^{12} / l$ or $< 4 \times 10^{12} / l$ or left shift (left shift). ANEMIA due to inflammation, characterized by Fe sequestration in Mo / Ma, decreased erythropoietin production, decreased erythropoietin and reduced ER survival. in the acute phase, the number of platelets increases, but generally in patients with sepsis, thrombocytopenia is more common (35-59% -inverse ratio of sepsis weight and number of TR). speed SE. Therefore, SE is not a measure of a single marker but a physical process. Normal plasma CRP levels are usually $< 10 \text{ mg} / \text{L}$. Its plasma level increases within 4-6 hours after initial tissue injury and continues to increase several hundredfold. within 24-48 hours. PCT levels are significantly high in patients with bacteremia and moderately elevated in patients with fungemia. Circulating PCT levels show superior diagnostic accuracy compared to other established biomarkers. In critically ill patients, such as patients suffering from shock or hypoperfusion, lactate is often elevated. Elevated lactate levels indicate an imbalance and are associated with increased mortality in sepsis. Liver dysfunction associated with sepsis can be roughly divided into hypoxic hepatitis and jaundice. Liver failure is traditionally considered a late manifestation of multiple insufficiency caused by sepsis. The inflammatory response of the host to the pathogen quickly triggers a procoagulant state in a septic patient. Thrombin formation can be detected within a few hours. In addition, endothelial injury that disrupts key anticoagulant mechanisms is observed within 15 minutes. Almost all patients admitted with sepsis have elevated levels of D-dimer that are closely associated with organ dysfunction and poor outcome. In sepsis, levels of activated protein C and AT III in the circulation are reduced.

Conclusion: Sepsis is a systemic disease that leads to the activation of the first hematological and immune system. The response of the hematological system, including effects on: monocytes / macrophages (activation of coagulation and inflammation (IL 1, IL6, TNF α), iron sequestration), liver phase) bone marrow (release and production of platelets and white blood cells (WBC) kidney (reduced erythropoietin

production), endothelium (pro adhesive and procoagulant phenotype), neuroendocrine (release of epinephrine, glucocorticoid-cortisol). . A patient with hematological dysfunction has higher morbidity and mortality. Rapid identification of hematological changes may increase the patient's survival in infection and sepsis.

Key words: Sepsis, laboratory analyzes, cytokine storm

Abstract 023 (INVITED LECTURE)

ON THE OTHER SIDE OF THE SICKBED- B34.2

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Introduction: Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. COVID-19, the disease caused by the new coronavirus, can cause lung complications such as pneumonia and, in the most severe cases, acute respiratory distress syndrome, or ARDS. Sepsis, another possible complication of COVID-19, can also cause lasting harm to the lungs and other organs. The pneumonia that COVID-19 causes tends to take hold in both lungs. Air sacs in the lungs fill with fluid, limiting their ability to take in oxygen and causing shortness of breath, cough and other symptoms. Coagulation dysfunction appears to be common in COVID-19, and is detected by elevated D-dimer levels. In fatal cases there is diffuse microvascular thrombosis, suggesting a thrombotic microangiopathy, and most deaths from COVID - 19

Purpose: to show the development of clinical picture and therapeutic effect in severe Covid 19.

Case: Case report: A 40-year-old anesthesiologist comes into contact with a covid 19 positive person on duty during intubation of the same respiratory arrest due to accidental etiol poisoning. During intubation he wore an N95 mask, goggles and gloves. Beginning of the first symptoms five days after Exposure. During the duty there is fatigue and fever. The next day he reports to the infectologist, is sampled and as a result we have a positive PCR test. From that day Favipirivir therapy, symptomatic and multivitamin therapy is introduced. Ferritin 663.8, crp 10.4, LY 32.3, D -dimer 30, ldh 325, spo2 97%, Ro pulmo: bo, tt 37.5-38.5. As even after the fourth day of the started therapy there is no drop in temperature, he decides to include immunoglobulins 20g / 24h, CRP, and fall ly and le. Rtg pulmo: initial bilateral pneumonia. spo2 91% without oxygen. On the tenth day from the onset of symptoms due to cytokine storm (temperature jump to 39.5, rise crp 165, Il-6 185 and fall Ly 12.5 %) uk corticosteroid therapy and tocilizumab are secreted. on the eleventh day, gas exchange deteriorates and saturation drops to 68%, as a result of which he is admitted to the intensive care unit, where he receives convalescent plasma during the night. High flow 70 / l, Fio2 100%, pO2 52.4, SPO2 89%, Ly 5.0%, Ferritin 2075, crp 52.0, LDH 814. After 48 hours of plasma therapy there is an increase in partial pressure of oxygen and an increase in lymphocytes as well as an improvement in the subjective and clinical condition of the patient.

Conclusion: The patient survived a severe form of covid 19 infection, without the need for invasive mechanical ventilation, probably due to timely therapy and the high involvement of the medical team.

Key words: covid-19 infection, cytokine storm, therapeutic approach

Abstract 024 (INVITED LECTURE)

BIOCHEMICAL AND COAGULATION“PICTURE”OF COVID-19 PATIENTS

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Corona virus disease 2019 (COVID-19) spread across the world as a new disease. Different laboratory abnormalities were studied as typical for COVID-19. Among them there are: lymphopenia, increased lactate dehydrogenase (LDH), elevated troponin, increased d-dimer etc.

Lymphopenia

Lymphopenia is among most frequent laboratory findings in COVID-19 patients. The proposed reasons for lymphopenia according to review of Huang et al are:

- ◆ Sequestration of lymphocytes in damaged organs.
- ◆ Direct virus effect on lymphocytes.
- ◆ Lymphocytes exhaustion after chronic high inflammatory response.

Thrombocytopenia

Platelet count is full blood biomarker associated with disease severity in intensive care units. According to meta analysis of Danwang et al, thrombocytopenia was more frequently demonstrated in severe COVID-19 patients. Direct infection of bone marrow, low grade disseminated intravascular coagulopathy, platelet de-fragmentation in lungs, are the possible pathways of decreased platelet count.

Platelet to lymphocyte ratio

Platelet to lymphocyte ratio (PLR) is readily available marker and is used in cardiovascular and autoimmune diseases as a predictor of inflammation. It is suggested as the marker of COVID-19 prognosis also. Meta-analysis of Simadibrata et al demonstrated that patients with severe form of COVID-19, had increased levels of PLR.

Hypercoagulability

Procoagulant profile of COVID-19 patients is one of the most prominent characteristics of the disease. Rotational thrombo-elastometry (ROTEM), as one of the viscoelastic tests, has role in more precise diagnosis of hypercoagulability. Typical changes in COVID disease are short clotting time and high clot firmness.

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Abstract 025 (INVITED LECTURE)

PREHOSPITAL RATIONAL ADMINISTRATION OF ANTIMICROBIAL DRUGS

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Introduction. A great concern was driven, especially in the last decade on the problem of increasing resistance of microorganisms. Bearing in mind that almost 60% of antibiotics are used in the prehospital milieu, importance of rational antimicrobial outpatient use is of utmost importance. The special part of the prehospital health service is one in emergency services. Prehospital antimicrobial treatment in emergency departments are mainly addressed to the infections of the upper and lower respiratory tract, infections of urinary tract and skin infections. Clinical scenarios of patients presenting to emergency services, vary from self limiting to moderate and severe including sepsis.

Interventions. With the aim of preventing antimicrobial resistance, several interventions should be implemented.

- Make accurate diagnosis.
- Define optimal time for antibiotic initiation.
- Initiate antibiotic selection according to local antimicrobial guidance.
- Define the plan of dosing, route of administration, duration of therapy.
- Define reserve antimicrobials.
- Implement interventions to improve and measure appropriate use.

Guidelines. Different protocols and guides were introduced in different countries and from different societies with the aim of antimicrobial stewardship. Basis of these programs is promotion of responsible antibiotic treatment with monitoring of antimicrobial use and resistance, education and feedback for prescribers. Serbian Ministry of Health put into practice guide for "Rational use of antibiotics". This guide contains the dose, route and time of antibiotic treatment of varying infection origin. It is important to point out that this guide present model that is changing according to local microbial situation and resistance. It should be noted that the last version suggests increased doses and duration of therapy for several antibiotics. Previous indirectly emphasize increasing resistance in our environment.

Conclusion. Rational administration of antimicrobial drugs should be responsible process which promotes balance between individual patients needs and social need for future effective therapy.

Abstract 026 (INVITED LECTURE)**HEMS MODEL IN CASTILLA LA MANCHA***Roberto C. Estévez-Montes*

BABCOCK MCS SPAIN/SESCAM - GIGANTE 2 - CIUDAD REAL

Every HEMS model (Helicopter Emergency Medical Service) is adapted to its assistential context, reality and its area of influence. HEMS systems are highly technified and complex resources based on global safety, that it is the sum of aeronautical safety and medical assistance safety.

Castilla La Mancha is one of the biggest region in the center of Spain with a surface of 79 463 km² and a density of population of 25,72 hab/km². It has a center radio of nearly 500 kms from North to South and from East to West.

Because of this dispersion, a low density of population, rural areas of low density of medical resources, a lot of interfacility transports -from 1st and 2nd level hospitals- to 3rd level hospitals (even to other regions) and trying to improve the accesibility and the quality on medical assistance, Castilla La Mancha Health Service (SESCAM) developed its own HEMS model starting twenty years ago. This process was progressively, with a collaboration between local and regional governments.

The main improvements are based on two lines: aeronautic improvements and medical assistance improvements.

Aeronautic improvements as:

- nightflight according to weather conditions (24/7) in two of its four helicopters
- availability of certified helipads in 207 points strategically designated, with meteo towers (158 of them for night flight)
- helipads files that provide info to our pilots about best landing approach, hazards, emergency frustrated course, GPS points,... all in relations with that 207 helipads
- night vision goggles, an extra safety for nightflight
- a subunit inside of the Emergency Coordination Center specialized in metheorology and flight dispatching.

Medical Assistance improvements like:

- new portable ecography and blood analyzer devices that give our staff more information for decision making
- time dependent pathologies as STEMI, Stroke, Bleeding and Trauma have been developing in hang over procedures and Level 3 hospital activation. We call these "Time Dependent Codes" and have been developped with a collaboration between HEMS, Ground ambulance, Dispatch/Coordination Center and Hospital staff (surgeons, trauma surgeons, cath-lab cardiologists, neurologysts...)
- capacity for prehospital blood transfusion of 0 negative red blood cells packets (in Ciudad Real Helicopter-G2/H24)
- internal and external hemostatic drugs and devices approved by TCCC committe and with clinical evidence have been put in action as treatment for trauma bleeding patients, for example: approved tourniquets, pelvic immobilizer, Tranexamic Acid (ATX), K-vitamin, Fibrinogen, Haemostatic Products in gauze, powder and powder inyection. All previously in addiction to common bleeding control measures.

All these improvements were put into action by several efforts between professionals, services, hospitals, systems... of different levels and with the resources and means available in every moment, looking for the safety/security, humanization, equidity of patients and the quality on the medical assistance.

Abstract 027 (INVITED LECTURE)**LABORATORY DIAGNOSTIC TESTING OF SARS CoV-2***Tatjana Rađenović Petković*

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Coronavirus disease 19 (COVID 19) is an infectious disease caused by the newly discovered SARS CoV-2 virus. Diagnostics, treatment, clinical evaluation and epidemiological surveillance are based on clinical

laboratory testings. Currently, two types of tests are available for diagnosis and monitoring of COVID 19 patients: antigen tests, which detect viral antigen (RT PCR and rapid antigen tests), and serological assays, for detection of immune response: rapid antibody test and quantitative serological tests.

The correct laboratory diagnosis of SARS- CoV- 2 infection depends on the time that has elapsed since the appearance of the first symptoms of the disease and the clinical presentation.

Virus detection is currently the gold standard in the diagnosis of SARS CoV-2infection, according to the recommendations of the World Health Organization. Detection of the virus by the nucleic acid amplification test (RT PCR) is currently the most sensitive test, and the virus can be detected in the upper respiratory tract 1-3 days before the onset of symptoms. Samples for the RT PCR test are nasopharyngeal and oropharyngeal swab, and the best results are achieved by taking both samples. Lower airway samples (endotracheal and bronchoalveolar lavage) can be used for diagnosis in hospitalized patients with more severe disease and negative upper airway findings. The concentration of SARS CoV-2is the highest around the time of the most intense symptoms. A higher concentration of the virus was detected in patients with a severe disease.

A rapid antigen test detects a current infection in people with a large number of viral particles, in the most infectious phase of the disease. The FDA and EUA have approved the test for diagnostic purposes in symptomatic patients in the first 5-7 days after the onset of symptoms. It is less sensitive than the RT PCR test, simpler, cheaper and faster to perform. The test is performed from a nasal swab sample, can be performed as point of care test, does not require additional equipment. A positive test confirms, but a negative one does not rule out SARS CoV-2infection. In case of negative test and discrepancies with the clinical findings, the test should be supplemented with RT PCR test.

Serological tests have no diagnostic value in the early phase of infection. Antibodies can be detected after 7-10 days of the onset of symptoms. Different serological tests still vary in sensitivity and specificity. The average time of seroconversion, according to the literature, is 7-14 days. Maximum values of antibodies are detected 3-4 weeks after the onset of symptoms; according to the latest studies, IgM and IgG antibodies appear at the same time, with IgG antibodies remaining in the circulation longer. The significance of IgA antibody detection is still unclear, so they are not recommended for diagnostic purposes. The average maintenance time of antibodies is variable, from 2 months to a couple of years. The length of antibody maintenance is thought to depend on the severity of the disease. According to one study, in 81% of asymptomatic and 62% of symptomatic patients, antibodies decreased after 8 weeks. Antibody detection may have diagnostic significance in the case of occurrence of late complications of SARS CoV-2 infection, such as meningoencephalitis, Guillain Barre syndrome, Kawasaki disease, vasculitis, gastroenteritis. Serological tests can also be used for:

- Retrospective diagnosis of SARS CoV-2 infection
- Seroepidemiological studies
- Prognostic evaluation - higher antibody titer in patients with more severe clinical presentation
- Detection of potential convalescent plasma donors

Serological tests should not be used to detect acute illness or contact. Each test should be interpreted by a professional, in accordance with the epidemiological survey, the stage of the disease and the severity of the clinical picture.

Abstract 028 (INVITED LECTURE)

THERAPEUTIC PROTOCOLS FOR COVID 19

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Introduction: Protocols are intended for clinicians caring for COVID-19 patients during all phases of their disease (i.e. screening to discharge). All updates have been expanded to meet the needs of front-line clinicians and promotes a multi-disciplinary approach to care for patients with COVID-19, including those with mild, moderate, severe, and critical disease.

Data source and the choice of material: A retrospective analysis of literature with determinants: Protocols, Covid19, therapeutic management. The search was carried out through: PubMed, Medline and electronic journals available through KoBSON

Results of the synthesis: The Coronavirus Disease 2019 (COVID-19) Treatment Guidelines is published in an electronic format that can be updated in step with the rapid pace and growing volume of information regarding the treatment of COVID-19. Two main processes are thought to drive the pathogenesis of

COVID-19. Early in the course of the infection, the disease is primarily driven by replication of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Later in the course of infection, the disease is driven by an exaggerated immune/inflammatory response to the virus that leads to tissue damage. Based on this understanding, it is anticipated that antiviral therapies would have the greatest effect early in the course of disease, while immunosuppressive/anti-inflammatory therapies are likely to be more beneficial in the later stages of COVID-19. Favipiravir and Remdesivir, an antiviral agent, are currently the only drugs that is approved in Republic of Serbia. It is recommended for use in hospitalized patients who require supplemental oxygen. Dexamethasone, a corticosteroid, has been found to improve survival in hospitalized patients who require supplemental oxygen, with the greatest effect observed in patients who require mechanical ventilation. Therefore, the use of dexamethasone is strongly recommended. The COVID-19 Treatment Guidelines Panel continues to review the most recent clinical data to provide up-to-date treatment recommendations for clinicians who are caring for patients with COVID-19. A comprehensive summary of the clinical data for the drugs that are being investigated for the treatment of COVID-19 can be found in the Antiviral Therapy, Immune-Based Therapy, and Adjunctive Therapy. The use of antiplatelet therapy in patients who use it due to existing comorbidities is not contraindicated, but it should be borne in mind that the joint use of anticoagulant and antiplatelet therapy increases the risk of bleeding and therefore the decision is based on the assessment of individual patient characteristics and risk assessments for the development of thrombotic complications or bleeding.

Conclusion: The COVID-19 Treatment Guidelines continues to review the most recent clinical data to provide up-to-date treatment recommendations for clinicians who are caring for patients with COVID-19

Key words: protocols, Covid 19, therapeutic management.

Abstract 029 (INVITED LECTURE)

HEMODYNAMIC STABILIZATION AND ADJUVANT THERAPY IN A SEPTIC PATIENT

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Introduction: Sepsis represents life threatening condition, resulted from systemic inflammatory response to infection. Hemodynamic instability develops due to vasodilatation, increased capillary leak, and lowering of right ventricle preload. This leads to lowering of the tissue perfusion and organ damage. Prompt recognition of sepsis within the first hour and hemodynamic stabilization of septic patients, if possible, are of primary importance.

Synthesis: Hemodynamic stability could be improved with fluid administration that could be done in several phases such as: initial phase (within first minutes until few hours), optimization phase (within first 24-48 hours since the initiation of sepsis) and de-escalation phase. In the initial phase, fluid replacement dose should be at least 30 ml/kg crystalloids. Patient is considered hemodynamically stable if the central venous pressure reaches 8 - 12 mmHg, median arterial pressure stays above 65 mm Hg, amount of 24-hour urine production remains over 0.5 ml/kg/h, oxygen saturation of hemoglobin in the central venous blood sample (v. cava superior) holds between 70- 65%, and the serum lactate level becomes normal. Apart from static parameters mentioned above, dynamic parameters may be analyzed, too, in order to determine patient's response to fluid administration. Estimation of the latter parameters enable the avoidance of insufficient or excessive fluid replacement. Adverse events of inadequate fluid replacement may be manifested with pulmonary edema, peripheral tissue edema, intra-abdominal hypertension, extended hospital stay in intensive care unit and finally with increased mortality. Together with the estimation of the amount of fluids, designation of the right type of fluid is also important. Balanced crystalloids use is advantageous comparing to isotonic solutions. There are no clear recommendations concerning the use of colloids in sepsis. If the mean arterial pressure response to fluid administration is unsatisfactory and could not reach levels above 65 mm Hg, addition of vasopressors is mandatory. Norepinephrine is considered the most desirable drug, either alone or in combination with vasopressin, epinephrine, phenylephrine or angiotensin II. Additional options such as corticosteroids and immunoglobulins might be of some use but their administration showed no benefit in outcome of septic patients. For that reason, there are no clear recommendations for their use in septic patients.

Conclusion: Understanding of pathophysiological processes, early sepsis and septic shock detection together with adequate fluid replacement and vasoactive medications represent the corner stones for achievement of hemodynamic stability and outcome improvement of these critically ill patients.

Key words: sepsis, fluid replacement, vasoactive drugs, corticosteroids, immunoglobulins

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Abstract 030 (INVITED LECTURE)

MEDICAL MALPRACTICE

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In performing medical practise, doctors are exposed to various influences daily, from which a number of questions of their responsibility may arise. Responsible behaviour of a doctor implies professional work and humane attitude towards the patient, which is based on the application of medical knowledge and professional responsibility during the diagnosis as well as during the application of therapy for the purpose of treating the patient. The doctor-patient relationship includes: ethical, deontological, material and criminal responsibility. Ethical responsibility is a moral responsibility, based on the upbringing, education and attitudes of doctors, and through the code of medical ethics it protects the rights of patients. Deontological responsibility implies the rights and duty of the doctor: prevention of the disease (preventive action), determining the nature of the disease and providing help to the sick (diagnosis and treatment), the struggle for a long and active life (social tasks). Material responsibility means that the doctor is in obligated to compensate the material damage to the patient, if it caused by his inadequate work. The criminal responsibility of a doctor derives from the legal regulations on the legal obligations of doctors. Criminal offenses related to the performance of medical practice are within various chapters in the Criminal Low.

According to the Criminal Low of the Republic of Serbia, is provided criminal prosecution and prison punishment of health workers due to errors in the provision of medical care. In practice, the terms medical malpractice and medical negligence in the legal sense are considered synonymous. The perpetrator (subject) of the criminal act is a doctor and other health workers. Forms of medical negligence are: the use of an obviously unsuitable means or an obviously unsuitable method of treatment; non-application of appropriate hygienic measures and negligent medical treatment in general. In the medical literature, medical error is a professional misconception without elements of negligence. This means that the doctor undertook everything that in the specific case was within his subjective and existing objective possibilities, but in spite of that an error occurred.

In order for there to be criminal act of medical negligence, a harmful consequence must occur in the form of deterioration of a person's health. The causal connection between medical negligence and the resulting harmful consequences must be proven. It is important to exclude the possibility that the deterioration of health was caused by the primary disease or injury or other factors (special circumstances of the case, special personal characteristics and special conditions of the patient's organism). The decision on the existence of the criminal offense of medical negligence is made by the court, which is mostly based on forensic medical expertise.

Doctors are responsible for medical malpractice: professionally (Medical Chamber of Serbia), in civil and in criminal law.

Abstract 031 (INVITED LECTURE)

OVERLOOKED INJURIES IN SEVERE TRAUMA

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Overlooked injuries are injuries that are not diagnosed within 24 to 48 hours following the injury, in the phase of initial diagnosis, stabilization of the injured patient or during the surgery. Injuries are not

considered overlooked if the treatment has been intentionally postponed for the period after stabilization of vital functions and in case of urgent surgeries. Also, when undertaking the life-saving surgical procedures in a patients who are not able to endure longer and more complicated interventions (Control Damage Surgery), one part of the injury is treated following stabilization of the injured.

All this implies careful clinical monitoring and additional diagnostics that are sometimes not undertaken. Three to four times higher mortality accompanies overlooked injuries compared to timely treated injuries. The frequency of overlooked injuries in the literature ranges from 8-29%; they are certainly more common than can be proven, due to denial, as well as the absence of a more detailed analysis of autopsy findings. In the initial surgery, injuries are overlooked in about 5-11% of cases, with an average time interval between the first and second surgery of 9 days. The most often overlooked injuries are abdominal, which are the most dangerous and accompanied with high mortality.

The reasons are numerous, primarily related to the organization and inadequate education, unavailability of diagnostics, lack or inexperience of staff, as well as poor communication between team members. In practice, the common reason is fatigue, work load, inadequate working conditions, constant interruption of the doctor during the examination and re-evaluation, inadequate handover, inadequate choice of the unit to which the patient is admitted before complete diagnosis has been made, premature discharge. In case of severe trauma, the degree of suspicion, diagnosis, and initial treatment must be based on the presumed worst case scenario. Teamwork is implied, but one person, usually a general surgeon, must be in charge of coordinating treatment and making decisions in an often chaotic situation.

Human errors have been the area of interest in cognitive psychology for many years and have become the focus of interest of the health profession experts. Rasmussen and Jensen differentiate between errors in skills, knowledge or treatment rules. The most common mistakes made which are based on human psychology, even in case of experienced clinicians, include incorrect attribution (e.g. attributing the sensitivity of the abdominal wall to its contusion rather than peritonitis), false negative prediction (e.g. the CT or EHO of the abdomen is normal so the patient cannot have injuries, the heart rate is normal so the patient does not bleed), and incorrect labeling when the working diagnosis begins to be seen as final through the treatment process, regardless of the conflicting or missing findings. There is a growing perception that overlooked injuries are the result of the weakness of the wider health care system, which does not provide for education, optimal practice, experience and support, avoidance of stress and fatigue, as well as adequate communication.

Key words: severe trauma, overlooked injuries, human error.

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