

**Симпозиум со меѓународно учество
„НОВИНИ ВО КАРДИОЛОГИЈАТА“**

КНИГА НА АПСТРАКТИ



ABSTRACT BOOK

**Symposium with international participation
“HIGHLIGHTS IN CARDIOVASCULAR
DISEASES”**



01-03.10.2021

Online



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"HIGHLIGHTS IN CARDIOVASCULAR DISEASES"**

ABSTRACT BOOK

01-03 October 2021, Skopje, North Macedonia

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**Symposium with international
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“HIGHLIGHTS IN
CARDIOVASCULAR DISEASES”**

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WELCOME ADDRESS

Dear Colleagues,

On the behalf of the Organizing Committee of the Symposium “Highlights in Cardiovascular Diseases” organized by the North Macedonian Society of Cardiology with international participation, I have an honor and pleasure to welcome you at the Symposium, which will be held from the 1-3-th of October, 2021 on line.

The Symposium is dedicated for cardiologists, cardiology fellows and other professionalists working in the field of cardiology which may participate in different topics of the cardiovascular medicine. This Symposium is an opportunity to exchange the experience on the latest scientific and professional achievements in cardiology and to listen and meet new colleagues from the country and abroad. The regional, European and international level experience exchange will enable to follow and accomplish the mission of the European Society of Cardiology, which is also accepted by our society “to reduce the burden of cardiovascular disease”.

One of the main Symposium topics would be cardiovascular diagnostics, as a very important segment for on time diagnosis, prognosis, treatment decision and follow up of cardiovascular diseases. Coronary and structural myocardial diseases treated by percutaneous interventions, cardiac surgery, heart arrhythmias, heart failure, cardiomyopathies, preventive cardiology and peripheral artery disease would be the also in the focus of our national Symposium “Highlights in Cardiovascular Diseases”.

Sessions dedicated to the latest guidelines of the European society of cardiology will also find their place at the Symposium The Symposium is composed from sessions with participation of domestic and international experts, Satellite symposiums dedicated to a particular topic, oral and poster presentations in the area of the contemporary cardiovascular medicine.

We welcome you to take part in our on-line Symposium “Highlights in Cardiovascular Diseases”.

Sincerely,

***Prof. Elizabeta Srbinovska Kostovska, FESC, FEACVI, FACC
President of the N. Macedonian Society of Cardiology***

Elizabeta Srbinovska-Kostovska

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**JOINT SESSION OF MACEDONIAN WORKING
GROUP ON CARDIOVASCULAR PREVENTION AND
SERBIAN WORKING GROUP ON PREVENTION AND
CARDIOVASCULAR REHABILITATION**

**S1 ESC GUIDELINES ON CARDIOVASCULAR PREVENTION 2021:
WHAT IS NEW?**

I. Mitevaska

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Cardiovascular disease are still leading cause of mortality in Europe and worldwide. The latest European Society of Cardiology (ESC) guidelines on cardiovascular prevention (CVP) give many new important aspects and recommendations. Estimating an individual's risk of cardiovascular disease (CVD) remains the cornerstone of the 2021 European Society of Cardiology (ESC) guidelines on CVD prevention in clinical practice. The accent is given on more personalized CVD prevention guideline, instead of a one-size-fits-all. The guideline is divided into two sections. One section covers CVD prevention at the individual level in apparently healthy people, in patients with established CVD, and in those with diabetes, familial hypercholesterolemia, or chronic kidney disease. The other section covers CVD prevention at the population level, including public health policy, interventions, and the environment, including putting in place measures to reduce air pollution, use of fossil fuels, and limiting carbon dioxide emissions. Targets for blood lipids, blood pressure, and glycemic control in diabetes remain in-line with recent ESC guidelines on dyslipidemias, hypertension, or diabetes. Guidelines introduce a new stepwise treatment-intensification approach to achieve these targets, with consideration of CVD risk, treatment benefit of risk factors, risk modifiers, comorbidities, and patient preferences. They also embrace the recently published Systemic Coronary Risk Estimation 2 (SCORE2) and Systemic Coronary Risk Estimation 2-Older Persons (SCORE2-OP) algorithms. The age-specific risk thresholds for risk factor treatments in apparently healthy people are introduced, which provide estimation of lifetime CVD risk and treatment benefit.

The lecture is presenting the most important recommendations and news of the newest CVP ESC guidelines.

CARDIOVASCULAR PREVENTION AND REHABILITATION - PART II

SESSION 3

S2 **RISK FACTORS AND CLINICAL CONDITIONS. 2021 ESC GUIDELINES ON CARDIOVASCULAR DISEASE PREVENTION IN CLINICAL PRACTICE**

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Over the past few decades, major ASCVD risk factors have been identified. The most important way to prevent ASCVD is to promote a healthy lifestyle throughout life, especially not smoking. Nevertheless, the prevalence of unhealthy lifestyle is still high, and ASCVD risk factors are often poorly treated, even in patients considered to be at high (residual) CVD risk. Prevention of CV events by reducing CVD risk is the topic of these guidelines.

The purpose is to identify the main risk factors for CVD. Most of them are modifiable such as: apolipoprotein-B-containing lipoproteins (LDL is most abundant), high blood pressure, cigarette smoking, and diabetes mellitus. In addition to this, risk modifiers and risk classification program are implemented in these guidelines for prevention. In these guidelines several categories of patients have been analyzed. Risk estimation and risk factor treatment in apparently healthy people >70 years of age, risk estimation and risk factor treatment in apparently healthy people <50 years of age and risk estimation and risk factor treatment in patients with established atherosclerotic cardiovascular disease. All modifiable risk factors such as: Apolipoprotein B (containing LDL), high blood pressure, diabetes mellitus and cigarette smoking were implemented in a scoring system- SCORE2. SCORE2 system enables risk estimation of different categories of patients. Using scoring system by step 1 and step 2 allows us estimation, prevention and treatment of comorbidities in low and high risk cardiovascular patients.

Lifetime CVD risk can be approximated by clinical experience, risk factor levels, risk modifiers in apparently healthy people, patients with established ASCVD and persons with type 2 diabetes.

Key words: cardiovascular risk factors

COVID SPECIALITES

S3 POST COVID SYNDROME AND CARDIOVASCULAR IMAGING

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Cardiovascular system in COVID -19 can be affected because of: acute disease process in the setting of chronic preexisting cardiovascular disease, therapy that was using during COVID-19 and has adverse effects on heart rate and direct or indirect damage of SARS-CoV2 on cardiovascular system.

Reports indicate some patients may develop "post-acute COVID-19 syndrome" in which they experience persistent symptoms after recovering from their initial illness. The syndrome appears to affect those with mild as well as moderate-to-severe disease. The incidence, natural history and etiology of these symptoms is currently unknown. The other name of Post acute COVID 19 Syndrome is Long COVID, Chronic COVID. The symptoms occur after 12 weeks that are not explained by other diagnosis.

Echocardiography is a important method to detect cardiac involvement in Post COVID 19 Syndrome patients, especially in patients presented with acute heart failure. Echocardiography can provide important, often life-saving information in critical and emergency settings. According to the latest Guidelines for diagnosis and treatment of pulmonary embolism, 2019, in suspected high risk patients for pulmonary embolism, as indicated by the presence of hemodynamic instability, bedside echocardiography or emergency CTPA (depending on availability and clinical circumstances) are recommended for diagnosis. The resent studies showed that mortality is significantly higher in patients with Post COVID and pulmonary embolism. Several factors increase the probability of occurrence of pulmonary embolism in Post COVID patients as predisposing factors for VTE, prolonged inflammatory response, endothelial dysfunction, and haemostatic abnormalities. Echocardiography has is first method for assessment patients with pulmonary embolism and follow up. In Post COVID by echocardiography, basic and advance modalities, we can discover

myocardial injury, signs of myocarditis, coronary artery diseases, different stage of heart failure, right ventricular dysfunction, pericardial effusion, tamponade and other information for risk stratification, hemodynamic monitoring and assessment of response for therapy. Advance echocardiography techniques in post COVID syndrome can provide additional information to the patient, thus avoiding, or at least minimizing the use of invasive and other imaging procedures in the assessment of post COVID patients.

Key words: Post COVID syndrome, cardiovascular imaging

S4 RATIONAL USE OF ANTICOAGULANT THERAPY IN COVID-19 PATIENTS

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Introduction: At the peak of the fourth COVID-19 pandemic wave, many of the initial dilemmas still remain regarding the use of anticoagulant therapy in COVID-19 patients. Which is the preferred strategy and whether every COVID-19 patient needs anticoagulant therapy? Numerous studies enabled detailed insight into pathophysiological characteristics of COVID-19-related thrombo inflammation or COVID-19-associated hemostatic abnormalities. Importantly, basic research studies suggest multiple-targeting effects of heparin with potential antiviral properties of LMWH along with anti-inflammatory and immunomodulatory effects. Current recommendations from the International Society on Thrombosis and Haemostasis propose assessment of D-dimer, prothrombin time, platelet count, and fibrinogen, as widely available biomarkers to aid in the decision for hospital admission, need of specific antithrombotic treatment and follow up. Given the variable VTE incidence and unknown risk of bleeding in critically ill patients with COVID-19, current guidelines recommend standard prophylactic dosing for all hospitalized adults with COVID-19. Though recent trials comparing prophylaxis with therapeutic regimens of LMWH found that the therapeutic regimen improves gas exchange and decreases the need for mechanical ventilation in severe COVID-19, mortality benefit has not been clearly shown and therapeutic dosing is recommended only in patients who have an appropriate indication. Frequent occurrence of thrombotic events despite standard

thromboprophylaxis in ICU patients justifies antiXa-guided therapy.

Conclusion:The optimal dosing regimen and extent of anticoagulant therapy for prophylaxis is the subject of ongoing investigation. With lack of high level of scientific evidence and need for urgent decisions, sound clinical judgement should prevail. Patient-centered approach taking into account previous conditions, current clinical condition and clinical care setting is a reasonable and safe strategy.

Key words: COVID-19, anticoagulant therapy, thromboprophylaxis

S5 COVID-19 AND NEUROLOGICAL MANIFESTATION AND COMPLICATION: ARE THEY OFTEN OR NOT?

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Introduction: Coronavirus disease (COVID-19) may increase the risk of neurological manifestation but also complication, seen within the first days after other respiratory tract infections. Although SARS-CoV-2 primarily affects the respiratory system causing pneumonia, multiorgan dysfunction and failure are likely to occur in severe cases. There is mounting evidence that coronaviruses can invade the nervous tissue, resulting in various neurological manifestations (NM) and neurological complications (NC). The literature about the NM of COVID-19 has been evolving with exponential increase in the number of publications. Multiple studies and case reports described the NM, which vary from being non-specific ones like headache, dizziness, and myalgias to more significant one like ataxia, seizures, anosmia, and ageusia. Other studies reported NC of COVID-19 like acute ischemic stroke, cerebral venous sinus thrombosis, cerebral hemorrhage, and rhabdomyolysis and Guillain Barre syndrome. **Material and methods:** We performed retrospective study to identify risk factors, comorbidities, treatment strategies, and outcomes in patients with NC and NM derived from a large cohort of hospitalized COVID-19 patients with confirmed laboratory diagnosis. **Results:** The resulting sample was consisted of all patients (391) hospitalized for COVID-19 at our clinic, from 07-11-2020 to 31-03-2021, of whom 231 (59.1%) were male, with average age of the sample of 63, 73 years. Of all patients, 105 (26.8%) had pre-existing comorbid neurological diagnosis, most commonly neurological weakness due to previous neurological event,

while 3.3% were with fresh neurological symptomatology due to ischemic brain stroke and 2.1% had senso-motor polyneuropathy. NM was highly detected in patients like headache in 42% of the patients, dizziness 14.6%, 18.6 % had anosmia and 17.8% had ageusia. **Conclusions:** NC was infrequent in patients with COVID-19 and usually in the presence of other cardiovascular risk factors, poor life style, pre-existing neurological diseases, malignancy, and CKD. Neurological involvement is common in COVID-19 patients. Early recognition and vigilance of such involvement might impact their overall outcomes and therapy strategies.

S6 VACCINE-INDUCED THROMBOTIC THROMBOCYTOPENIA AND COVID-19 VACCINES: WHAT CLINICIANS NEED TO KNOW-CASE SERIES

E. Lazarova Trajkovska, M. Bosevski

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Abstract: Vaccine-induced thrombotic thrombocytopenia (VITT) is a condition similar to heparin-induced thrombocytopenia (HIT), but it's associated with prior administration of COVID-19 vaccines without prior exposure to heparin. The incidence of VITT is not certain, but it appears to be extremely rare. Reports of unusual and severe thrombotic events, including cerebral and splanchnic venous thrombosis and other autoimmune adverse reactions, such as immune thrombocytopenia or thrombotic microangiopathies in connection with some of the SARS-CoV-2 vaccines, have caused a great deal of concern within the population and the medical community. We would like to present 4 clinical cases of VITT, hospitalized and treated in ICU of University clinic of cardiology in Skopje.

Key words: Vaccine-induced thrombotic thrombocytopenia, COVID-19 vaccines

CORONARY HEART DISEASES

S7 KEY MESSAGES FROM ISCHEMIA TRIAL

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Management goals in patients with stable coronary disease or chronic coronary syndrome include controlling symptoms and reducing the risk of future cardiovascular events. The ISCHEMIA trial is the largest trial to date comparing an invasive strategy versus OMT in patients with stable coronary artery disease and moderate-to-severe ischemia on functional testing. In this context, the International Study of Comparative Effectiveness with Medical and Invasive Approaches (ISCHEMIA) trial sought to determine whether an invasive strategy with coronary angiography and contemporary coronary revascularization, if indicated, would be superior to OMT alone in patients with moderate-to-severe ischemia on stress imaging, including echocardiogram, nuclear scan, cardiac magnetic resonance or exercise testing (an option added late in the trial to improve recruitment).

The ISCHEMIA trial confirmed that younger patients (mostly men) with stable symptoms, normal ejection fraction, normal or slightly impaired renal function and evidence of moderate-to-severe ischemia on stress testing could be risk stratified with CTCA to exclude significant unprotected left main disease, and then managed with OMT alone. Invasive coronary angiography could be reserved for those who have refractory angina despite medical therapy. The ISCHEMIA trial also suggested that, in this patient population, an upfront invasive strategy reduces angina frequency and improves QOL, especially in highly symptomatic patients. Interestingly, the Kaplan–Meier curves for cardiovascular mortality or MI were initially in favor of the OMT strategy because of higher rates of peri-procedural MI, but later the curves trended in favor of an invasive strategy driven by lower spontaneous MI. Shared decision-making between treating physicians and patients in light of these findings could help to better provide more personalized care to our patients. However, patients with advanced kidney disease or those receiving dialysis who have stable coronary disease could be best managed with a strategy of OMT alone. The ISCHEMIA trial findings stress the importance of adherence to medical therapy and risk factor control, irrespective of the management strategy.

CORONARY HEART DISEASES

S8 TECHNICAL AND TECHNOLOGICAL ASPECTS OF DRUG-ELUTING STENTS

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Several revolutionary moments exist in development of percutaneous coronary interventions (PCI) from which introduction of the drug-eluting stents (DES) in clinical practice can especially be emphasized according to their importance. Balloon angioplasty, bare-metal stents (BMS) as well as first generation of DES have some disadvantages and most of them are overcome by new generation of DES. When we talk about technical and technological properties of DES, it should be stressed that they arise from three basic components of every DES: metallic platform, polymer, and anti-proliferative drug. Stent performances depend not only on the structure, but on the design as well. So, different stent structures and designs have certain limitations in one, but also certain advantages in another angiographic scenario. Eventually, properties of different generations of DES shall be discussed.

Key words: DES, design, structure, platform, polymer.

S9 ACUTE CORONARY SYNDROME WITHOUT OBSTRUCTION OF THE CORONARY ARTERIES (MINOKA). DIAGNOSTIC OPTIONS

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In the last 50 years, with the usage of new diagnosis procedures, methods of diagnosing of the acute coronary (ACKS) syndrome has changed drastically, enabling an optimal treatment. Out of the total number of patients with ACS, in 15% no significant obstructions are detected on the level of coronary arteries, in literature known as

MINOCA. From these facts, it is clear that the MINOCA cases diagnosis might be complicated, which calls for usage of other methods, in order to identify the diagnosis of the disease and appropriate treatment. The purpose of the study is to show the used algorithms in patients with ACS clinical picture with no CA stenosis (MINOCA).

First Case. A male, 50 years old, was admitted in the Clinical Hospital in Tetovo with AKC symptoms, chest pain, together with ST elevation in DII, III and aVF and inversion of T wave and V5 and V6, in ECG leads. In ECG the dimension of the heart cavities and the global function of the LV (EF of LV was 62%) were normal. However, a light hypokinesia of the inferior myocardial wall was shown, with Postsystolic Thickening (PST) phenomena, however without significant changes in the endocardium. On the lab analysis, higher values of the heart enzymes (High sensitive troponin) of 8500 ng/ml is registered. Because of these facts, urgent coronagraph was done, with no signs of significant CA stenosis, but slower hemodynamic in the level of the distal part of the right coronary artery (TIMI2 FLOW). In order to clarify the condition of the changes in hemodynamic at the level of the right coronary artery, the MPS has been done. In MPS scan, ischemia of the inferior wall of Left ventricle (LV), which takes 12% of myocardial mass of LV was noticed. From these data, the presence of myocardial ischemia of microvascular nature was confirmed.

Second Case. 33 old male was hospitalized in the Clinic Hospital in Tetovo with chest pain, accompanied by nonspecific changes in the ECG, in the form of slight elevation in the inferior wall. In echocardiography, normal dimensions of the heart cavities were registered, with normal function of the LV (EF 68%). No signs of disturbance of the regional kinetics of the myocardium were registered. In the laboratory analysis, a high level of Troponin of 4300 ng / ml is registered. D dimer where in normal values of 250 ng / dl. Coronarography was normal. For defining the condition, the patient underwent MPS with contrast (Gaudolinium). In CMR, regional changes are recorded at the level of the posterior wall, which are subepicardial, characteristic of myocarditis of that region, of non-ischemic origin.

Conclusion. These two cases, show clearly that the initially diagnoses in suspected MINOCA, which have no changes in the kinetic in echocardiography, normal hemodynamic of CA, it is necessary to use other diagnostic methods like MPS or CMR, in order to diagnose the underlying condition in the patient, like in our cases where etiology of the changes were from different diseases. This would allow proper treatment of these patients.

Key words: MINOCA, coronary artery diseases

CARDIOMYOPATIES AND HEART FAILURE

S10 CARDIAC MAGNETIC RESONANCE IN EVALUATION OF NON-ISCHAEMIC CARDIOMYOPATHIES

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Non-ischaemic cardiomyopathies (CMP) are disease of the myocardium that is not due to ischaemic coronary disease and involves dilated cardiomyopathy, hypertrophic cardiomyopathy, Takotsubo CMP, Arrhythmogenic CMP, Non- compaction, infiltrative and inflammatory CMP.

Cardiac magnetic resonance (CMR) is a valuable tool for the evaluation of these diseases and has a growing impact on clinical management of the patients with CMP. CMR is a safe imaging modality considered the gold standard for evaluating ventricular mass, volumes and ejection fraction. The possibility to directly visualize fibrosis in the myocardium and access scar patern CMR has the unique ability to differentiate ischaemic from non-ischaemic myocardial damage and has high accuracy in diagnosing the different forms of CMP. Further with the possibility of parametric mapping using T1 and T2 maps evaluation of diffuse fibrosis and edema in the myocardium can be accessed without contrast administration.

We present 7 cases of different cardiomyopathies highlighting the signs and findings of the different pathologies when evaluated with CMR. Timely diagnosis of the different forms of cardiomyopathies is of greatest importance for clinical management, decision making and treatment of the patients as well as influencing their prognosis.

Key words: cardiac magnetic resonance, cardiomyopathies, imaging modalities, dilated cardiomyopathy

S11 ROLE OF CARDIAC IMAGING IN CARDIOTOXICITY

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Early detection and improved therapeutic approach have raised the survival rate in patients with various types of malignancies in the last three decades. On the other hand, cardiologists are identifying an increased number of patients with cancer treatment-related cardiotoxicity. Timely detection and treatment of cardiotoxicity is of paramount importance in order to prevent adverse cardiovascular outcomes in cancer patients. Assessment of baseline cardiovascular risk is crucial for identification of patients with high and very high risk of potential cardiotoxicity, who will require close follow up during and after their cancer treatment.

Cardiac imaging and blood biomarkers have a central role in monitoring and management of cancer patients. 2D left ventricular ejection fraction remains the most used technique for detection and follow up of cancer therapy related cardiac dysfunction (CTRCD). However the high variability (10-13 percentage units) cannot be neglected. The use of 3D echocardiography EF has better accuracy and it has better concordance with CMR measurements, but the necessity of high quality of the images is a limiting factor. Global longitudinal strain is a promising alternative in detecting cardiotoxicity because is impaired earlier than LV EF and can identify cardiotoxicity in subclinical phase. GLS is more sensitive and has decreased variability and higher accuracy, at the same time being less dependent on loading conditions compared to EF. MRI can detect cardiotoxicity earlier than echo and help in understanding the mechanism behind the cardiac damage. Nevertheless, the higher cost and lower availability limits its use in daily practice.

Using the right diagnostic tool at the right moment can help in detecting myocardial damage at early phase and start cardioprotective therapy in patients who suffer malignant diseases. Cardiac imaging is necessary not just for monitoring during therapy, but also later in the life of cancer survivors, for detecting late complications as a result of anticancer treatment.

Key words: cardio-oncology, cardiotoxicity, cardiovascular imaging

S12 THE NOVELTIES IN CARDIO-ONCOLOGY IN PREVENTION, MONITORING AND MANAGEMENT OF CV COMPLICATION

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As these patients with cancer are living longer and are exposed to many different cardiotoxic agents during cancer therapy, they are at increased risk of developing cardiovascular diseases (CVD). Cardiotoxicity definition refers to a direct effect of the chemotherapy on the entire cardiovascular system, but also to an indirect effect due to a thrombogenic status or to a hemodynamic flow alteration. In addition of that chemotherapy-induced cardiotoxicity as one or more of the following: 1) reduction of LVEF, either global or specific in the interventricular septum; 2) symptoms or signs associated with heart failure (HF); 3) reduction in LVEF from baseline \leq to 5% to $<55\%$ in the presence of signs or symptoms of HF, or a reduction in LVEF $\geq 10\%$ to $<55\%$ without signs or symptoms of HF. The different types of cardiotoxicity are related to the mechanism of action of the drugs, the doses, the manner of administration, and the underlying predisposing factors and include reversible, irreversible, acute, chronic, and late-onset. Irreversible damage is categorized as type 1 and reversible damage as type 2. Cardiotoxicity is divided into four categories: 1) direct cytotoxic effects of chemotherapy and associated cardiac dysfunction 2) cardiac ischemia 3) cardiac arrhythmias and 4) pericarditis.

Recommendations for CT monitoring. All patients undergoing chemotherapy depending of chemotherapy should have prior careful clinic evaluation and assessment of CV risk. Patients undergoing anticancer therapy should be encouraged to follow standard guidelines for reducing CV risk, such as blood pressure control, lipid level reduction, smoking cessation and lifestyle modifications. Baseline clinical and ECG evaluation are recommended in all patients undergoing anthracycline therapy. Assessment of baseline systolic and diastolic cardiac function with DEcho should be conducted before treatment with monoclonal antibodies or anthracyclines and their derivatives in patients aged >60 years, or with CVD risk factors and after administration of half the planned dose of anthracycline in monoclonal antibodies, in patients aging <15 years or >60 years; before every next administration of anthracycline; after 3, 6, 12 months from the end of therapy with anthracycline and 4 and 10 years after anthracycline therapy including GLS

Aggressive medical treatment of those patients, even asymptomatic, who show LV dysfunction at echocardiography after anthracycline

therapy is mandatory, especially if the neoplasia could have a long-term survival; it consists of ACE inhibitors and b-blockers and the earlier HF therapy is begun, the better the therapeutic response according guide lines ESC. When we talk about HF most of the patients with cancer disease are in faze A of HF

Biomarkers. Nevertheless, as persistent increases in cardiac troponin I or BNP concentrations seem to identify patients at risk of cardiotoxicity, a useful approach, is performing baseline assessment of biomarker concentrations and periodic measurements during therapy. Because pre-existing CAD is a known risk factor for the development of chemotherapy-induced ACS, ischemic workup should be initiated in all high-risk patients before administration of drugs known to cause cardiac ischemia. Patients with suspected ACS should be treated according to ESC guidelines, include percutaneous coronary intervention

Conclusion. For propriety treatment od CV complication of cancer patient It is critical that cardiologists should be aware of: 1) the toxicity of a CT agent or of RT, 2) the risk factors and pre-existing CVD predisposing to cardiotoxicity, 3) The incidence of acute cardiovascular (CV) disease in patients with active cancer has increased due to epidemiologic factors and shared risk factors and 4) the use of preventive and curative measures during possible cardiotoxic therapy.

Key words: cardio-oncology, cardiotoxicity, cardiovascular imaging

**JOINT SESSION OF WORKING GROUP OF
PERIFERY ARTERY DISEASES AND THROMBOSIS
WIT ASSOCIATION OF INTERNAL MEDICINE**

S13 VASCULAR LABORATORY – A CONTEMPORARY CONCEPT

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The fellowship for vascular medicine in Europe is called Angiology, and in the US Vascular medicine which is not ACGME accredited.

Vascular laboratories in Europe are often part of cardiovascular institutions, and in the US part of vascular surgery.

The aim of this paper is to present the standards, basic and advanced techniques that are used in vascular laboratories and are essential for accreditation of these institutions and to compare with what we have in our institutions.

According to the latest IAC Standards and Guidelines for Vascular Testing Accreditation¹ from the 1st of May 2021 the vascular laboratory must have ultrasound lab for: extracranial and intracranial cerebrovascular testing, evaluation of peripheral arteries and veins, testing of visceral blood vessels (abdominal aorta, hepatorenal system, mesenteric system, renal system).

In this lab additional tests² are performed for assessment of microcirculation such as: photoplethysmography (PPG), capillaroscopy, video microscopy, transcutaneous oxygen measurement, laser doppler flowmetry, cutaneous thermometry, and assessment of blood vessels in extremities with photoplethysmography techniques. Accredited physician for performing these techniques must have performed independently at least 100 procedures³.

Conclusion. Currently in N. Macedonia there is no residency or fellowship for angiology or vascular medicine nor an institution in which all these procedures are performed. There is also no standardized education for the doctors who work in them.

It is necessary to apply this contemporary concept for the vascular laboratory.

Key words: angiology, vascular medicine, vascular laboratory.

S14 HYPERLIPIDEMIA AND PERIPHERAL ARTERIAL DISEASES

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Introduction: Peripheral artery disease (PAD) is still associated with significant morbidity, mortality, and quality of life impairment. Lower extremity peripheral artery disease (PAD) affects 12% to 20% of patients 60 years and older. Drugs for treatment hyperlipidemia are frequently prescribed to patients with lower extremity peripheral artery disease (PAD).

Purpose: High coincidence of atherosclerosis in different arterial territories, screening for other atherosclerotic lesions is necessary in patients with clinical symptoms. Consistent treatment of cardiovascular risk factors is important in all patients with peripheral atherosclerosis. This includes smoking cessation, statin therapy and control of blood pressure and blood glucose. Hyperlipidemia drugs agents are prescribed to patients with PAD to reduce both cardiovascular and limb-based events. All current guidelines on the prevention of ASCVD in clinical practice

recommend the assessment of total CVD risk. Prevention of ASCVD in a given person should relate to his or her total CV risk. The SCORE system estimates the 10 years risk of first fatal atherosclerotic event, with either heart attack, stroke, or other occlusive arterial disease, including cardiac death. Best medical therapy includes CV risk factor management, including optimal pharmacological therapy as well as non-pharmacological measures such as smoking cessation, healthy diet, weight loss and regular physical exercise.

Conclusion: Several studies have demonstrated that statin administration in patients with PAD results in a decreased progression and even regression in the growth of the atherosclerotic plaque. Several studies have demonstrated that statin administration in patients with PAD results in a decreased progression and even regressio

ACUTE HEART FAILURE

S15 MANAGEMENT OF SEPSIS IN CARDIAC PATIENTS – IS IT DIFFERENT?

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Sepsis is defined as a life-threatening organ dysfunction caused by the dysregulated host response to infection and is associated with a very high mortality, which may reach 25%. Mortality rate of patients with combined cardiac dysfunction and sepsis is extremely high (may reach 90%). Since patients with cardiovascular diseases have unique risk factors for sepsis, prompt and accurate diagnosis is necessary, for performing an adequate management strategy.

The most important circulating myocardial depressant factor in septic shock include cytokines, prostanoids, and nitric oxide, among others. Endothelial activation and induction of the coagulatory system also contribute to pathophysiology in sepsis. Sepsis management includes aggressive volume resuscitation followed by vasopressors (and potentially inotropes) if fluid is inadequate to restore perfusion. Large fluid boluses and vasoactive agents are concerning amid cardiac dysfunction of heart failure (HF).

Prompt and adequate antibiotic therapy accompanied by surgical removal of infectious focus are basic strategy for treatment of septic patients. Norepinephrine remains the most well-supported vasopressor for patients with sepsis with preexisting HF, while dopamine may induce more cardiac adverse events. Dobutamine should be used cautiously when combined with norepinephrine in patients with low cardiac output. Management of chronic HF medications warrants careful consideration for continuation or discontinuation upon development of sepsis, and β -blockers may be appropriate to continue in the absence of acute hemodynamic decompensation. Positive pressure ventilatory support and renal replacement must be carefully monitored for effects on cardiac function when HF is present. Transthoracic and transesophageal ultrasound evaluation is an important tool for clinical decision for further patient treatment.

Conclusion. This review summarizes evidence regarding influence of HF on sepsis clinical outcomes, pathophysiologic concerns, resuscitation targets, hemodynamic interventions, and adjunct management (ie, antiarrhythmic, positive pressure ventilatory support, and renal replacement therapy) in patients with sepsis and preexisting HF.

Key words: sepsis, septic shock, management, heart failure, resuscitation, ultrasound

MODERN APPROACH TO CARDIOVASCULAR DISEASES - ABSTRACT AWARD SESSION

A1 A RARE CASE OF LEFT VENTRICULAR HYPERTROPHY AND NON-COMPACTION CARDIOMYOPATHY IN AN ADULT: DIAGNOSTIC APPROACH

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Left ventricular non-compaction cardiomyopathy (LVNC) is a rare form of primary genetic cardiomyopathy which is characterized by prominent trabeculations and intertrabecular recesses that communicate with the cavity of the left ventricle. The prevalence is between 0.014%-1.3% in the general population. LVNC is associated with different genetic mutations and may have a genetic overlap with the phenotype of other cardiomyopathies, including hypertrophic cardiomyopathy (HCM).

In this case report we present a 26-year-old female patient presenting to emergency room with bradycardia and syncope. The transthoracic echocardiography revealed hypertrophy and trabeculations with prominent recesses of the left ventricle. Cardiovascular magnetic resonance imaging (MRI) was performed to confirm the diagnosis of LVNC. The genetic analysis showed mutation of PRKAG2 gene indicating hypertrophic cardiomyopathy with conduction disturbance.

In the last years, LVNC and HCM are diagnosed more frequently due to improvements in imaging methods. Although there are many diagnostic tools including contrast ventriculography, CT and MRI, echocardiography is the main imaging method used for diagnostic evaluation of LVNC and HCM.

Key words: left ventricular non-compaction cardiomyopathy, hypertrophic cardiomyopathy, echocardiography, cardiovascular magnetic resonance imaging

A2 SEVERE DYNAMIC OBSTRUCTION IN AN ASYMPTOMATIC PATIENT WITH HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Hypertrophic cardiomyopathy (HCM) is defined by the presence of increased left ventricular (LV) wall thickness that is not solely explained by abnormal loading conditions. HCM is inherited as an autosomal dominant genetic trait with a 50% risk of transmission to offspring. Many patients complain of palpitations caused by symptomatic cardiac contractions and ventricular ectopy. **Case report:** A 44-years-old male patient presented for an initial consultation with a cardiologist because a fast heart rate and exercise intolerance with vertigo and near syncope. **Initial examination:** Electrocardiography (ECG) performed at rest showed normal sinus rhythm without signs of pressure overload. 2D echocardiography (TTE) showed changes in favor of HCM with septal thickness of 16mm and presence of mild LV outflow tract pressure gradient (LVOT PG) at rest. 24-hour ambulatory ECG monitoring (AEM) was uneventful for arrhythmias, but ST-segment depression on exercise was detected. The patient underwent treadmill exercise stress testing according to the Bruce protocol lasting 11 minutes without any symptoms or rhythm disturbances, but ST-segment depression of horizontal morphology was detected first at the fifth minute with maximal depression of 3.6 mm at the 8th minute of exercise at 179 beats/minutes and BP of 200/90 mmHg. The cardiologist suggested implantation of ICD. In November 2020 the patient was referred to the University Clinic of Cardiology to seek a second opinion given that HCM was diagnosed and implantation of ICD was recommended. **Investigations:** At the Cardiology Clinic TTE was performed and HCM was confirmed with normal LV ejection fraction of 70%, presence of systolic anterior motion (SAM) of mitral valve, LVOT PG at rest of 18 mmHg and ≥ 71 mmHg after Valsalva maneuver. Also, there were enlarged left atrial volume index (41,32 ml/m²), elevated LV filling pressure (E/e' average=14.3) and mild mitral regurgitation. LV global longitudinal strain assessed by speckle tracking echocardiography (GE-Vivid7) was -18.4%. Because a close family member was diagnosed with TTR-FAP, a genetic test and ^{99m}Tc-99 PYP-SPECT were also performed. The results were negative for a

TTR-gene mutation as well as for heart deposition (visual score was 1 and H/CL=1,42). The value of Troponin I =3,28 ng/L (ref.=34,2) was normal, but Nt-proBNP =151,9 pg/ml (ref. 0-125) was slightly higher than normal. Clinical exome sequencing (>4800 genes), including >220 genes associated with inherited cardiomyopathies was performed and a variant of unknown clinical significance in *MYBPC3* gene was identified. In order to assess prognostic aspects of the disease, cardiovascular magnetic resonance (CMR) was performed and HCM was confirmed without focal fibrosis, but with increased value of T1 and increased extracellular volume in favor of diffuse fibrosis. 24-hour AEM was performed again and the results were without rhythm disturbances. Given that 5-year risk for sudden cardiac death (SCD) was low (<4%), implantation of ICD was canceled. **Treatment and follow up:** The patient received a high dose beta blocker (metoprolol 200mg/day) and avoidance of high-intensity physical activity, dehydration and excessive alcohol intake were advised. TEE was repeated after 6 months and the results were almost identical. However, in order to assess the prospects of future therapy, a coronary angiography was suggested which is now pending. **Conclusion:** The diagnosis of HCM rests on the detection of increased LV wall thickness by any imaging modality along with assesment of LVOT PG and myocardial fibrosis presence. Identification of the genetic risk factors has important implications for the patients and their families. Yearly symptoms assesment, TTE, 24-hour AEM and 5-year risk stratification for SCD as well as CMR when symptoms appear, represents an important path in risk stratification of these patients. In order to detect possible deterioration which would need prompt intervention, lifelong carefull follow-up is required.

Key words: hypertrophic cardiomyopathy, multimodality imaging, left ventricular outflow obstruction

A3 AORTIC VALVE ENDOCARDITIS, A CHALLENGE FOR DIAGNOSIS AND TREATMENT

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Introduction: Infective endocarditis is the infection of the surface of a native valve, prosthetic heart valve or an implanted cardiac device such as a pacemaker or ICD. As the most common etiologic pathogen,

Staphylococcus aureus has surpassed the *Streptococcus* species especially in the developed world associated with healthcare contact and invasive procedures.

Aim: Our aim was to present a patient with aortic valve endocarditis, a condition which can be a diagnostic and therapeutic challenge, and also a life-threatening disease associated with high morbidity and mortality.

Case report: We present a 69 year old patient, male, who takes regular therapy for hypertension, diabetes mellitus II, hypothyroidism and a previous ischemic stroke. The patient was treated as an outpatient several weeks with antibiotic therapy because of a fever that recurred after discontinuation of the antibiotic. He was admitted to the University Clinic of Cardiology due to severe fatigue, dyspnea, chest discomfort in a poor clinical condition. Laboratory findings show elevated inflammation markers while the blood culture results negative after 5 day incubation. TTE was performed, which showed vegetation localized on the left aortic cusp, with moderate aortic regurgitation. Other valves were without vegetations, with normal or mild valve regurgitation. Dimensions of the heart chambers were in the normal range, and the global left ventricular function was slightly reduced (EF 50%). Empiric dual antibiotic treatment was started adjunctive to anticoagulant, diuretic and anti-arrhythmic therapy. Despite intensive drug therapy, the patient continues to deteriorate clinically with noted fluid retention because of acute renal insufficiency and continuous drop in red blood cells with no apparent bleeding. Due to anuria and a rise in degradation products, nephrologists were consulted and hemodialysis treatment was performed with the aim to ultra filtrate the blood and also decongest. Vegetation was confirmed and monitored on transesophageal echo during patient follow-up. Cardiac surgeons were also consulted and surgical treatment was indicated after improvement of the general condition of the patient. Unfortunately, despite intensive treatment, the patient died.

Conclusion. Aortic endocarditis is a very serious, life-threatening disease that requires prevention, early detection, and early aggressive treatment of the underlying cause and comorbidities, often requiring a multidisciplinary approach. The value of echocardiography remains crucial in primary diagnosis and follow-up. Despite intensive treatment, aortic endocarditis still has a high mortality rate.

Key words: aortic endocarditis, vegetation, aortic regurgitation

A4 LVAD FOR IMPROVED SYMPTOMATIC HEART FAILURE – A CASE REPORT

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Aim. The aim of the study was to present a patient who was indicated for left ventricular assist device (LVAD), as a method to prolong and improve quality of life, as a bridge to transplantation or as destination therapy, in when medical therapy is insufficient.

Case report. We present patient B.G, man, 63 year old, previous smoker and with Diabetes type II. The patient came to our clinic due to severe fatigue, inability to perform daily duties, orthopnea, paroxysmal night dyspnea. He feels discomfort several years, and he doesn't feel better, despite modern medication treatment. On echocardiography we discover dilated left ventricle (LVED dimension 73ml., LVED vol. 321ml, LVSvol. 247ml), with estimated EF 24%, global hypokinesis, functional moderate mitral regurgitation (vena contracta 4, EROA 0,1cm², regurgitant volume 21 ml), right ventricular dimension and function was normal (TAPSE 25mm, S wave by TDI 0,11m/sec), and SPAP was in normal range. Angiography of the coronary artery was normal. We made several additional examinations (spirometria, CT of the lung, CT abdomen, CT head, which were in the normal range. We indicate patients for LVAD. The procedure was done in the end of August. The patient recovered very well and quickly after the intervention. Echocardiographic assessment showed regression of LV dimensions (LVEDd 64 mm), and there was slight improvement in global LV systolic function (EF 30%), with normal parameters of the pump. The patient was released for home treatment, with certain directions of behavior and treatment.

Conclusion. We can indicate LVAD for patients with reduced left ventricular function (HFREF) who don't have clinical improvement when medical therapy is insufficient, as a method to prolong and improve quality of life, as a bridge to transplantation or as destination therapy.

Key wards: LVAD, HREF

A5 IS THE ICD APPROPRIATE TREATMENT?

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Introduction. From the time of its clinical introduction, the main goal of the implantable cardioverter-defibrillator is to recognize ventricular fibrillation and terminate the arrhythmia by delivering shocks. In the early, uncontrolled studies, the delivery of a shock was assumed to represent a life saved.

Case report. A 41 year's old male, smoker admitted in hospital with severe chest pain lasting for 3 hours and sweating. He had no past medical history. An urgent ECG revealed sinus rhythm with HR 120/min and extensive anterior wall myocardial infarction. Following successful percutaneous intervention and one drug eluting stent implantation in the LAD normal flow was restored. In-hospital echocardiogram showed akinesia of entire left anterior descending artery (LAD) territory with a severe left ventricular (LV) dysfunction, EF 35-40%, and large apical thrombus 15x25mm. He was discharged with dual ant platelet therapy, ACE inhibitor, aldosterone receptor antagonist, Vitamin K antagonist, and a B blocker. One month later, a controlled examinations was performed and echocardiography had shown reduction of LVT formation, but impaired left ventricular systolic function and symptoms of breathlessness, palpitations, ankle swelling, and lost conscious once. We didn't have any evidence of any ventricular tachycardia, but we had thought about it.

Conclusion. The first question is what is the appropriate medical treatment for this patient? If LVT recurs after resolution, a longer-term anticoagulation may be indicated, because some LVT become organized and may never resolve. What about ICD implantation? The latest guidelines of 2021 for HF showed that ICDs are effective at correcting potentially lethal ventricular arrhythmias. An ICD is recommended to reduce the risk of sudden cardiac death and all-cause mortality in patients with symptomatic HF (NYHA class II-III) of an ischemic aetiology (unless they have had MI in the prior 40 days) and the EF \leq 35%, despite > 3 months of optimal medical therapy, provided they are expected to survive substantially longer than 1 year with a good functional status.

Keywords: ICD, LVT, HF_rEF, myocardial infarction,

A6 GIANT LEFT VENTRICULAR PSEUDOANEURYSM IN PATIENT WITH ACUTE INFERIOR MYOCARDIAL INFARCTION AND CARDIOGENIC SHOCK

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Left ventricular (LV) pseudoaneurysm is a rare and potential lethal complication of acute myocardial infarction. Diagnosis is challenging as the clinical presentation is often non-specific. Timely recognition and management is critical and can be lifesaving.

We are presenting a 64 years old male patient admitted to our clinic with chest pain and dyspnea within 16 hours. He was smoker with dyslipidemia and no previously known cardiovascular disease. ECG showed signs of ST segment elevation myocardial infarction (STEMI) in the inferior leads with ST segment depression in V1-V2, heart rate 87 bpm and incomplete RBBB. Blood pressure was 115/70mmHg. Physical examination showed mild systolic murmur in the mid precordium and no signs of heart failure. Hs-Troponin I was high (2310 ng/L- ref up to 34.2 ng/L in males). Patient was loaded with Heparin therapy, Aspirin 300mg, Prasugrel 60mg and Rosuvastatin 40mg. Coronary angiography was performed which showed mid right coronary artery (RCA) stenosis of 70%, distal RCA occlusion and mid left anterior descending (LAD) stenosis of 80%. Drug eluting stent was put on distal RCA as culprit lesion and TIMI 3 flow was obtained. However, at the end of coronary angiography patient clinically deteriorated with development of signs of cardiogenic shock. (PB 80/50mmHg, cold and wet periphery, bilateral pulmonary rales with S3 sound consistent with heart failure-Killip-Kimball class IV). There were not any invasive procedure complications or new ECG changes. He was put on vasopressor and inotropic stimulation with Noradrenalin and Dobutamine infusions. Focus bed-site echocardiography was performed in order to evaluate the cause of patient hemodynamic instability. Examination showed giant extra chamber next to the inferior LV wall surrounded by the pericardium, consistent to LV pseudoaneurysm with narrow neck. Inferior wall akinesia and depressed systolic LV function (EF 35%) was additionally found. Patient was referred for urgent surgery. Surgery was successful and patients survived without complications and stable intrahospital course. Outpatient control was performed 6 weeks after the surgery. Patient was clinically stable without signs of heart failure (NYHA functional class I).

Conclusion: The case underlines the importance to differentiate pseudoaneurysm from true LV aneurysm in STEMI patients.

Transthoracic echocardiography is very useful tool usually sufficient to make a diagnosis of LV pseudoaneurysm. Urgent surgery is lifesaving procedure in these patients.

A7 ROLE OF OPTICAL COHERENCE TOMOGRAPHY IN COMPLEX PERCUTANEOUS CORONARY INTERVENTIONS (CASE REPORT)

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Introduction: Coronary angiography (CA) has well-known limitations for assessment of the coronary diameter, percent of coronary stenosis and plaque distribution. CA often can "miss-judge" the outcome of percutaneous coronary intervention (PCI) with stenting, which is important for post-procedure stent thrombosis and in-stent restenosis.

Optical Coherence Tomography (OCT) as intracoronary imaging method can guide the PCI, like choice of stent length and diameter (50% of cases when using OCT), and post-stenting balloon dilatation (27% of cases) to reduce under-expansion and malposition.

Case presentation: We present a case of a 65 year old male, with angina pectoris. Coronarography revealed significant stenosis on Left Anterior Descending (LAD) artery at the bifurcation with the diagonal branch (Medina 1-1-0) (picture 1). The LAD and Diagonal branch were wired, and provisional stenting of the LAD was performed (DES 3.0/26 mm). Angiographic result after stenting was assessed as optimal, with stent under-expansion in the middle segment (picture 2). Post-dilatation was intended, but the balloon catheter couldn't pass the proximal part of the stent. OCT revealed significant stent under-expansion in the proximal part (picture 3), stent malposition (picture 4) in the middle segment and distal stent edge dissection (picture 5). Therefore, a second stent (DES 3.0/16 mm) was implanted distally, and several balloon post-dilatations (non-compliant balloon 3.5/10 mm) were performed. Finally, an optimal angiographic result was achieved (picture 6). We performed another OCT, which showed optimal stent expansion, no stent strut malposition and covered coronary dissection.

Conclusion: In our case, in just a single lesion procedure, OCT showed disorder of several stent expansion parameters, that were not seen with CA, including: stent expansion, stent malposition and unnoticed distal stent dissection.

OCT guided complex PCI can improve the final result and reduce procedure related major adverse events.

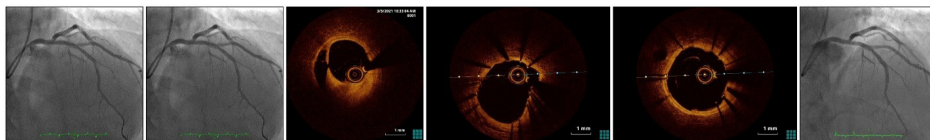


Image No. 1 Image No. 2 Image No. 3 Image No. 4 Image No. 5 Image No. 6

Keywords: optical coherence tomography, coronary angiography, percutaneous coronary intervention

A8 ASSOCIATION OF MTHFR 677 C>T POLYMORPHISM WITH THE PULMONARY EMBOLISM

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Background. Pulmonary embolism is a clinical entity accompanied with a high mortality and diagnostic challenges. Genetic factors, including polymorphisms in some genes seems to play an important role in the susceptibility to this condition and clinical outcome.

Methods. In this case-control study we have investigated the association of polymorphism rs1801133 (677 C>T) in the gene coding for methylenetetrahydrofolate reductase (MTHFR). Data derived from 120 patients with pulmonary embolism and 56 control subjects without history of previous thrombotic entities were analyzed. MTHFR polymorphism genotyping was performed in all subjects.

Results. We found that the genotype and allele distribution of MTHFR polymorphism is significantly different among the pulmonary embolism and control groups according the dominant ($p=0.034$) and allelic ($p=0.027$) genetic models. The carriers of heterozygous genotype CT and homozygous TT variant genotype has approximately 2 folds higher probability for pulmonary embolism than the carriers of homozygous CC dominant genotype. Significant association was also found regarding the plasma D-dimer values ($p=0.006$), the partial pressure of carbon

dioxide ($p=0.002$), pH of arterial blood ($p=0.026$) and the ECG signs of right ventricular strain ($p=0.039$) in patients with pulmonary embolism.

Conclusion. We conclude that MTHFR 677 C>T polymorphism has a potential clinical usefulness in susceptibility evaluation, risk prediction and therapy selection in patients with pulmonary embolism.

Key words: pulmonary thromboembolism, MTHFR677T, gene polymorphism

A9 USE OF THE NEW SCORE 2 IN CLINICAL PRACTICE: A NONINVASIVE SCREENING TOOL USED FOR PREDICTION OF THE CARDIOVASCULAR RISK VS THE OLD SCORE AND ASCVD

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Introduction. Estimation of the predictive value of the new SCORE 2 risk calculator. What is the numeric value that correlates with a treadmill test result that is highly suggestive for ischemic events.

Objectives. What is the path not taken figuratively speaking in primary prevention in our country.

Methods: This was a comparative case series with retrospective medical chart review. Including general examination, BP measurement, fasting lipid status analysis and treadmill test. Use of the calculators SCORE 2 vs old SCORE. Encountered on a stamping point with foreign citizens that live in our country <10 years, instead we used the ASCVD and its LT risk analysis.

Results: 115 patients were included. They averaged 61 years in age, 59 were women and 56 were male, 11 had a treadmill test highly suggestive for ischemic events. Number needed to test was 10.4. The female/male ratio was 1.2/1. Mean systolic BP was 132 mmHg in female and 135 mmHg in male patients. Independent risk factor burden was hypertension (>130mmHg), smoking was time dependent (> 20 years) and non HDL cholesterol value (>5 mmol/L). About 80% of the patient had impaired fasting glucose (average 7.97 mmol/L)

Conclusion. The new SCORE 2 was a bit more time consuming and the percentage linked to a positive treadmill test highly suggestive for ischemic event was above 20. There was no value of zero. For female patients the numbers were plus 3 vs the old SCORE and for male were multiplied by average of 4. ASCVD lifetime risk was 39.

Key words: new SCORE 2, ASCVD, treadmill test, prediction

A10 DIAGNOSTIC AND THERAPEUTIC APPROACH IN PATIENT WITH CRITICAL LIMB ISCHEMIA AND AFib

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Introduction. Acute arterial thrombosis is a life-threatening disease that can lead to limb loss or even death. Early proper diagnosis and prompt treatment within critical time is important in saving the affected leg and the life, thus, avoiding limb amputation and death.

Objectives. Endovascular treatment with manual thromb aspiration, is effective way of treating Critical Limb Ischemia. Prompt post interventional diagnostic approach and treatment results in reducing the occurrence of similar event in the future.

Materials and methods. Percutaneous treatment is treatment of choice in patients presented with thrombosis. Antegrade tibial approach was used with 7 French sheath. Hydrophilic guidewire 0.035" with a support of a micro catheter is used in passing through the thrombus. Due to major thrombus burden manual thromb aspiration was performed via 7Fr Thromb aspiration Catheter. Post interventional echocardiography was performed with finding for HFrEF (EF~20-25%) and visible LV thrombus, and consecutive diagnostic coronary angiography without significant stenosis. In the ICU the patient received anticoagulants and AFib was managed with beta blockers and digoxin. During hospitalization lung CT angiography was performed with visible thrombotic mass in the left auricula and no defects in filling of the aorta and pulmonary arteries. We discharged the patient with NOAK.

Results. Improvement on the limb was visible immediately. Color dopler ultrasonography was performed after 24 hours with normal, triphasic flow without residual thrombus.

Conclusion. Use of thromb aspiration is safe and effective for revascularisation of CLI as a primary therapy. Atrial fibrillation is prevalent in patients with lower limb ischaemia and is associated with substantial long-term risk of cardiovascular events. Patients with lower limb ischaemia and atrial fibrillation require special attention to anticoagulation to reduce complications and improve outcome.

Key words: CLI; AFib; Thromb aspiration;

A11 POPLITEAL VEIN ANEURYSM AND ITS CLINICAL ROLE IN EVERYDAY PRACTICE, CASE REPORT

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Introduction: Venous aneurysms (VA) are rare vascular disorders that can affect the venous system and can be potentially fatal due to high thromboembolic risk. Described as a saccular or fusiform dilatation of the venous lumen. The most frequent locations are the lower extremities, affecting superficial and deep vein system. Popliteal vein (PV) is the most common site.

Case report: Patient M.V. age 42, smoker, professional pianist, referred for complete venous ultrasound (VUS) of the lower extremities due to pain, heaviness and swelling in the left popliteal region and left calf, after a long trip with the car. She had similar symptoms one year ago, accompanied by short episodes of pleuritic chest pain and shortness of breath. VUS at the level of the left PV revealed large anechoic ellipse-shaped structure, with maximum lumen of 21 mm, connected with the PV with 6 mm wide neck, without evidence of formed thrombus within its lumen, completely compressible. B mode showed signs of spontaneous echo contrast, with present vortex in the lumen with augmentation on colour-doppler mode. Rest of the VUS examination was normal. The levels of D-dimers were slightly above normal (620 ng/ml), and the presence of thrombocytosis was detected ($Tr 560 \times 10^9/l$). Blood group type B+. Echocardiography was performed with normal findings. She was referred to vascular surgeon and conservative treatment was proposed. Major thrombophilia testing was negative, except for the presence of heterozygous mutation of the MTHFR C677T allele. During transatlantic flights, Rivaroxaban 10 mg was recommended. Regular periodic D-dimer and VUS surveillance was proposed. No increase in VA diameter and D-dimers in the 3 year surveillance period was found.

Conclusion: Early VA diagnosis with VUS is crucial, because of their higher risk of thromboembolism. Treatment is mostly surgical, depending on the anatomic and clinical criteria.

Key words: venous aneurysms, popliteal vein aneurysm, venous ultrasound, d-dimers, high thromboembolic risk

A12 INTRACARDIAC THROMBI IN A PATIENTS WITH ACUTE ABDOMEN

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Introduction. Predisposing factors for left atrial thrombosis (LA) are mitral valve pathology, prosthetic mitral valve, impaired left ventricular function, and abnormal left atrial contractile function, such as atrial fibrillation (AFF). Thrombus formation is less common in the right atrium (RA) than in the left atrium, is often dangerous, and is rarely diagnosed. They usually result from embolization from a peripheral venous source. Damage to the right atrial wall by intracardiac devices may be responsible for the presence of thrombosis. RA thrombi are associated with venous thromboembolic disease, such as RA transit zone (thrombi in transit) on the path between the lower extremities and pulmonary arteries, and in 7-18% of patients with pulmonary embolism. (3-4) When a systemic thromboembolic event occurs, paradoxical embolism should be suspected. Another condition more commonly associated with systemic thromboembolism is thrombosis in a patient with an open foramen ovale (PFO). (5) One study described a rare case of vascular complication of hepatic veins and inferior vena cava thrombosis (IVC) extending into the right atrium in a young man with a large amoebic liver abscess where the optimal result was achieved with early diagnosis by CT scan, percutaneous abscess drainage, intravenous metronidazole, perioperative anticoagulation, sternotomy, and thrombectomy.

Case report. 68-year-old male patient admitted to the internal medicine ward due to abdominal pain localized under the right costal arch with nausea, afebrile. A few days ago he was treated by a cardiologist due to hypertensive crises. On physical examination, his body temperature was 36.7 °C, pulse 90/min and saturation SpO₂=95%. On palpation of the abdomen: soft, with mild painful tenderness especially under the right costal arch. The ultrasound of the abdomen showed a liver with a homogeneous structure, in segment 6 a larger heteroechoic septal change with several cystic changes in it and with a diameter of 9 cm. Gallbladder distended with dense contents and a few calculi in the lumen. The wall is thick, layered. Intrahepatic bile ducts undilated. Pancreas and spleen echo neat. Kidneys with moderately reduced parenchyma without congestion and calculus in the duct system. Bladder empty, no free fluid in the abdomen and small pelvis. The finding of a native X-ray of the abdomen seen two aeroliquid levels in the right hemiabdomen. Due to the

deterioration of the condition a few days after the application of infusion, antibiotic, analgesic and vitamin therapy, with a rise in body temperature and elevated inflammatory markers, CT of the abdomen was performed with contrast where a clearly limited encapsulated change with thickness in segment 8 of the liver was shown. followed by a clearly limited encapsulated change with a capsule thickness of 4 mm and dimensions 118x119mm where daughter cysts are seen in it - hydatid cysts. Gallbladder distended with very dense contents and present air and free fluid around it. The finding goes into a pirogy for necrotizing gangrenous cholecystitis with suspected perforation. Ascending colon and segment of transverse colon with a painted wall affected by inflammatory process. Enlarged lymph nodes are seen in the ileocecal region and around the ileocolic artery. Sections involving the heart show a suspected defect in the left atrium - a thrombus? The echocardiographic finding showed a present TU formation in the left atrium, mobile, which gives the impression that it is attached to the IAS loop, the same with dimensions 2.41x1.19 cm, as well as the present TU formation in the right atrium, attached to a thick loop in area of the mouth of this v.cava superior, with dimensions 1.35x1.05 cm. From laboratory analyzes, there were elevated values of D-dimers: 5540, CRP> 320, Le = 16.32, other lab findings in reference values. On the recommendation of a cardiologist, a CT pulmonary angiography was performed, where there are no signs of pulmonary thromboembolism. The patient is referred for digestive surgery for further treatment.

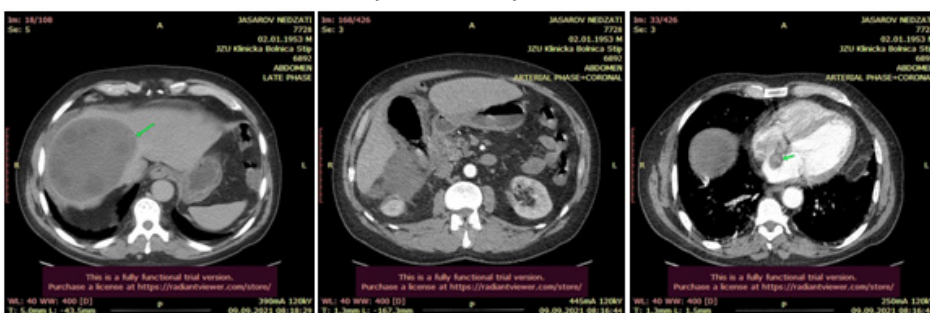


Figure 1 and 2 (09.09.2021). Abdominal CT with contrast (liver cyst, perforated gallbladder, and free fluid). Figure 3 (09.09.2021). Abdominal CT with contrast (Random finding of left atrial thrombus)

Conclusion. Diagnosis and management of intracardiac thrombi combined with acute abdomen is best done with an interprofessional team that includes an internist, cardiologist, radiologist, vascular, abdominal surgeon, and a team of specialized nurses. It is vital to treat intracardiac thrombi, as this may reduce the risk of stroke, myocardial infarction, and pulmonary embolism.

Keywords: intracardiac thrombi, left atrial thrombus, right atrial thrombus, acute abdomen

POSTER PRESENTATION - AWARD SESSION

P1 DYNAMIC LVOT OBSTRUCTION AS A REASON OF SYNCOPE

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Aim. We present a rare case of dynamic left ventricular outflow tract obstruction (LVOTO) as a reason of syncope.

Case report. A 71-year-old man presented in an emergency room because of dyspnea and syncope, exercise related. Dyspnea on exertion was recurring for over two years, but at the last 4 months was more intense. The two-dimensional transthoracic echocardiography showed asymmetric hypertrophy of the interventricular septum (IVS), with thickness of 19 mm at the beginning of the basal anterior septum. At the basal IVS an insertion of an accessory muscle bundle was also revealed, that additionally was thickening the basal IVS. Resting systolic anterior motion (SAM) of the anterior mitral leaflet was present, as a sign of LVOTO. The remaining segments of IVS were slightly thickened, 15 mm in diastole, and posterior wall thickness was 13 mm. By continuous wave Doppler, LVOT peak velocity was 5 m/s and peak pressure gradient was 100 mmHg at rest. There was also a functional, moderate mitral regurgitation, with eccentric, postero-laterally oriented jet, with maximal flow velocity at the late systole. Elevated left ventricular filling pressure was also measured, with grade I diastolic dysfunction. Turbulent flow and high pressure in LVOT damaged the aortic valve and it was also reason for dilatation of the ascending aorta up to 47 mm and mild aortic regurgitation. Because of the hemodynamically significant LVOTO and symptoms, the patient was referred to a cardiac surgeon for ventricular septal myectomy.

Conclusion. We can conclude that basal septal hypertrophy which obstructs the LVOT and makes the patient symptomatic, has an indication for invasive treatment.

Key words: LVOTO, Muscle bundle, Syncope, SAM.

P2 SECONDARY HYPERTENSION ASSOCIATED WITH AORTIC COARCTATION IN A 21-YEAR-OLD FEMALE PATIENT – A CASE REPORT

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Coarctation of aorta is a congenital vascular malformation which occurs as a discrete stenosis or as a long, hypoplastic aortic segment. It accounts for 5-8% of all congenital heart defects. In most cases it is diagnosed during infancy and childhood, while adult cases with aortic coarctation are rare. Clinical findings depend on the severity of the vascular lesion. Hypertension can be the only manifestation present and it may not become evident until adulthood.

Case report. We present the diagnosis of aortic coarctation in 21-year-old female patient detected during the evaluation of hypertension. Transthoracic echocardiography findings revealed a coarctation of descendent aorta with dimension of 5mm and a mean systolic gradient of 60mmHg, which was confirmed by CT angiography of aorta. It was managed by percutaneous balloon angioplasty with stent placement. Although rare in adults, coarctation of aorta should be considered in differential diagnosis of secondary hypertension. Delayed diagnosis and management of aortic coarctation is associated with increased risk of serious cardiovascular complications and a high mortality rate.

Key words: aortic coarctation, secondary hypertension, echocardiography, CT angiography

P3 MYOCARDITIS – CLINICAL DIAGNOSTIC CHALLENGE

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Introduction. Myocarditis is an inflammation of the heart muscle from different etiology. This condition contains a wide variety of symptoms and clinical presentation ranging from chest pain to cardiogenic shock. It remains a clinical diagnostic challenge.

The aim of the presentation is to describe uncommon scenario of patient presented with acute heart failure.

Case report. A 56 years old male was transferred to The University Clinic of Cardiology from the Emergency Center due to increased high sensitive Troponin level 105 ng/L and ECG changes, left bundle branch block (LBBB) de novo. Upon admission to the Emergency Center, day before this event, the patient was hypotensive (90/60 mm Hg) with altered mental state (confused, unconscious). The ER colleagues had reported syncope. Computer tomography of the head was applied which was with regular finding. Rapid antigen test for Covid 19 was negative and from hetero anamnesis the information for COVID 19 infection, five months ago, with mild symptoms was reported.

Upon admission to The Intensive Care Unit of our Clinic the patient was hypotensive, subfebrile 37,2, but conscious. He reported medical history of nephrolithiasis, hydronephrosis stage 3 and double J ureteral stent placement 7 months ago. Due to the increased value of troponin an urgent angiography was made which didn't show significant stenosis of the coronary arteries. Laboratory findings detected increased inflammatory markers (white blood cells 16×10^9 g/L, C reactive protein 265 mg/L and troponin 115 ng/L). Procalcitonin with value 1,6 according to referent scale means mild risk of sepsis, but we started immediately with empiric antibiotic treatment. The urine culture detected bacteria – 250.000 in ml, but no colony was isolated so thus the empiric treatment was continued. The echocardiography showed a slight increase in the size of the left ventricle (LVED d 58mm), there was globally reduced kinetics of the LV walls, decreased global left ventricular systolic function (EF 37%), reduced longitudinal function of the LV, diastolic dysfunction, hypertrophy of the left ventricular wall, mild functional mitral regurgitation. The echocardiography suspected myocarditis. On Holter ECG, rate dependent LBBB was discovered. Cardiac magnetic resonance was performed and considered indicative for myocardial inflammation so the diagnose was defined. A urology specialist was consulted, an ultrasonography evaluation of the patient's urinary tract was made and extraction of double J stent after complete recovery was recommended. The patient's condition became stable, laboratory parameter correspondent to the condition resulted in lower inflammatory markers and troponin value after being treated with dual antibiotic therapy and therapy for heart failure.

Conclusion. Diagnosing acute myocarditis is often a challenge. Considering all the parameters allows us to set an indication for magnetic resonance imaging which is the only non-invasive procedure that can establish a reliable diagnosis of myocarditis. Echocardiography is an important tool in assessing a patient with acute heart failure, setting the indication for magnetic resonance imaging and monitoring the patient in the recovery phase.

Key words: myocarditis, cardiovascular imaging, acute heart failure

P4 MYOCARDITIS AS A POST COVID-19 COMPLICATION

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Introduction: Covid-19 has many potential sequelae, secondary conditions directly resulting from the infection. Perhaps one of the most concerning is myocarditis, which is defined as inflammation of the heart muscle and is commonly associated with a viral infection. The incidence of Covid-19-induced myocarditis is not well established. Evidence to suggest that myocarditis develops after Covid-19 and its incidence need to be further investigated, however.

Case report. We present a 41 years old female patient with Covid 19 infection (positive PCR test) with mild symptoms 3 months before examination. Few days before the examination the patient started to feel fatigue, shortness of breath, chest pain and tachycardia. ECG– Sinus rhythm, HR 75/min. ST segment depression with biphasic T waves in inferior leads and V4-6. Blood pressure 135/85mmHg; 20rpm. Color Doppler echocardiography– edematous, thickened walls of the left ventricle, thickened, hyper echoic pericardium, with normal dimensions of LV and normal LV EF (61%) and normal valvular function. ECG and Color Doppler echocardiography one year ago were completely normal. Holter ECG for 24 hours: sinus rhythm with average heart rate 90/min., heart rate above 100/min. in 45% of the monitoring, 2% monomorphic VES. Laboratory findings: WBC 5.1, Hgb 122g/L, PLT 215, Fe 14.2, Se 9, CRP 2.0, LDH 150, AST 14, ALT 21, CPK 110, Troponin 4.2 (<15.6ng/L), hemostasis –normal finding, urea, creatinine, electrolytes, TSH, urine –normal finding. Chest X ray and ultrasound of abdomen – normal finding. The diagnosis of myocarditis was very likely. Therapy with B blocker and ACE inhibitor was prescribed. The patient was advised to rest and to avoid physical activity. MR imaging of the heart and a regular follow up is planned.

Conclusion. Myocarditis is challenging to diagnose. Clinical presentation, ECG, Color Doppler echocardiography, Chest X ray, laboratory analyses and cardiac MRI are useful for diagnosing myocarditis.

Key wards: COVID, myocarditis, cardiovascular imaging

P5 ТРОМБИ ВО ДЕСНА КОМОРА И ДЕСНА ПРЕДКОМОРА КАЈ ПАЦИЕНТ ПОСЛЕ ПРЕЛЕЖАН КОВИД19-ПРИКАЗ НА СЛУЧАЈ

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Вовед: Тромботичните настани се јавуваат кај повеќе од третина од пациентите заболени од КОВИД-19, особено кај оние кои се со тешка клиничка слика. Ова е поради ексцесивниот имунолошки одговор, при што настанува ендотелна инфламација, оштетување на ѕидот на крвните садови и коагулациони абнормалности, како што се покачени вредности на д-димери и фибриноген.

Приказ на случај: 56 годишен пациент, до пред 3 недели лекуван амбулантски од Ковид 19,а од пред 3 дена почнал да се жали на замор, гушење и срцебиење. Од наодот: пациент донесен во нашата установа во тешка општа состојба, хипотензивен ТА 80/50ммХг, хипоксичен, СПО2 67%. Нема податок за претходно кардиолошко заболување. Методи и материјали: Ехокардиографија на прием: ЛВДд 60мм, ЛВДс 51мм, ЕФ 28%, ЛА 44мм, РВ базал 45мм. Зголемени димензии на левата комора, со глобална хипокинезија и со редуцирана систолна функција. Дилатирана десна комора, која е со редуцирана систолна функција, ТАПСЕ=11мм. Во луменот на десните срцеви кавитети се следат бројни ситни, мали тромботични маси кои слободно флукутираат. Изразена ТР која го исполнува скоро целиот лумен на десната предкомора. КТ пулмоангиографија на прием: Не се добиени индиректни, ниту директни знаци за пулмонална емболија. ЕКГ: АФФ, хр околу 140/мин. ЛАБ: К 2.3(3-3-5,0), Тр 167(150-450), д-димери 31.230 (<500).Пациентот третиран во единицата на интензивна нега со нефракциониран хепарин 80ед/кг/ТТ/болус, а потоа 18/ед/кг/ТТ/час, напоредно со Табл. Аценокумарол /по шема, антиаритмична терапија, Амп.Допамин/ континуирана инфузија, терапија за електролитен дизбаланс и симптомаска терапија. По четири дена, пациентот на свое барање беше отпуштен од нашата установа. **Заклучок:** Фатални тромботични насатани може да се јават кај пациенти со КОВИД-19, поради што мора да се направи идентификација на пациентите со висок ризик за тромбоза и да се одреди соодветна антикоагулантна терапија.

P6 ACUTE HEART FAILURE AND SEVERE MITRAL REGURGITATION

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Introduction. Mitral regurgitation is an abnormal return of blood from the left ventricle to the left atrium, due to disruption of one or more functional components of the mitral valve apparatus. Rupture of the chordae tendinae can be a reason of acute mitral regurgitation and occurrence of acute heart failure.

Case report. We present a patient 60 years old, women, who complained of chest pain, fatigue, swelling of the lower legs, and she could not lie flat for the last 2-3 days. The patient has been treated for bronchopneumonia just before the hospitalization of our Clinic. She doesn't have any risk factors for cardiovascular diseases, except more cardiovascular disease in the family. The patient was admitted in our Clinic with signs of acute heart failure. After hospitalization in our clinic, appropriate examinations were performed. ECG showed normal sinus rhythm, there was no signs of acute myocardial infarct, the value of estimated troponin was normal (Troponin I 1,58). And other laboratory analysis was normal. On echocardiography we found rupture of chordae tendinae with dysfunction of posterior mitral valve and severe acute mitral regurgitation (vena contacta was 6mm, EPOA 0.3 cm² and regurgitant volume was 49 ml.). There was moderate tricuspid regurgitation with SPAP which showed elevated pressure in lung (SPAP 48mmHg). Other valves were normal. Dimension of the heart was normal (LVEDd 45 mm, RVd 29, LA 39mm). Global LV systolic function was normal, with signs of volume overload. The right ventricular function was also normal. There was normal kinetics of the walls, and the pericardium was normal. Coronary angiography showed coronary arteries without significant stenoses, except plaque in pCIRC. With all examinations and clinical presentation of the disease, we diagnosed acute mitral regurgitation due to rupture of the chordae tendinae and we referred her to a cardiac surgeon, who accepted the patient for surgery. The patient was transferred to a cardiac surgery clinic for surgical treatment.

Conclusion. Acute mitral regurgitation is a condition which can be reason for acute heart failure and can be cause of poor outcome. Rupture of chordate tendinae is one of the reason for acute mitral regurgitation. Echocardiography is method which can give us quick information for the diseases, and will allowed us direction for treatment.

Key words: acute heart failure, acute mitral regurgitation, rupture of chordate tendinae

P7 SGLT2 INHIBITORS IN PATIENTS WITH HFrEF

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Introduction Although the sodium-glucose cotransporter-2 (SGLT2) inhibitors were originally developed to manage hyperglycemia in people with type 2 diabetes, they have consistently been found to improve heart failure and kidney outcomes. **The new guidelines, presented at ESC Congress 2021, endorse SGLT2 inhibitors as medications that benefit patients with HFrEF.**

EMPEROR-trial enrolled patients with heart failure with reduced ejection fraction- 3730 patients were enrolled, and they were randomly allocated to empagliflozin 10 mg or matching placebo. DAPA-HF trial was a trial that was almost similar to EMPEROR-reduced, but it was with dapagliflozin 10 mg. Among 8474 patients combined from both trials, the estimated treatment effect was a 13% reduction in all-cause death (pooled HR 0.87, 95% CI 0.77–0.98; $p=0.018$) and 14% reduction in cardiovascular death (0.86, 0.76–0.98; $p=0.027$). SGLT2 inhibition was accompanied by a 26% relative reduction in the combined risk of cardiovascular death or first hospitalisation for heart failure (0.74, 0.68–0.82; $p<0.0001$), and by a 25% decrease in the composite of recurrent hospitalisations for heart failure or cardiovascular death (0.75, 0.68–0.84; $p<0.0001$). Although EMPEROR-Reduced and DAPA-HF represent 2 trials, they tell 1 story in HFrEF. The 2 trials establish SGLT2 inhibitors, independent of diabetes status and glycemic effects, as highly effective and well-tolerated therapies that reduce cardiovascular death/HHF and improve quality of life in HFrEF

Conclusion In patients with reduced ejection fraction heart failure receiving SGLT2 in addition to standard therapy, risk of worsening heart failure or death from cardiovascular disease is decreased and symptom scores are improved. These benefits are seen regardless of history of diabetes.

Key words SGLT2; dapagliflozin, empagliflozin

P8 VENTRICULAR FIBRILLATION IN PATIENT WITH LVAD - CASE REPORT

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Introduction. Congestive heart failure is a growing global health problem. LVAD (left ventricular assist device) is a method used to extend the life of these people as a definitive treatment or to bypass the period until heart transplantation. Ventricular arrhythmias in patients with LVAD are uncommon.

Case report: We present the case of a 54-year old patient, A. D., with implanted LVAD - HeartMate III due to severe congestive heart failure. The patient was admitted with jaundice at the PHIU Clinic for Gastroenterohepatology with performed ERCP (Endoscopic retrograde cholangiopancreatography) procedure and a stent was placed in the choledochus duct. The request for an urgent cardiac consultation was due to the patient's immeasurable blood pressure and abnormal ECG. The cardiac examination revealed that the patient had LVAD implanted almost 2 years ago. There was immeasurable blood pressure and pulse, the ECG was approaching VF (ventricular fibrillation) and it was all asymptomatic by the patient. The impeller in a mechanical pump rotates thousands of times per minute. This leads to continuous blood flow, which means that patients with LVAD have no pulse or measurable blood pressure. In patients with LVAD, ECG pulses are with electrical disturbances. VF and ventricular tachycardia (VT) are ventricular arrhythmias that are often seen on ECG in patients with implanted LVAD. Most often due to continuous flow and electrical interference these arrhythmias occur with unknown duration and terminate spontaneously.

Conclusion: the continuous development of medical devices leads to a continuous educational and clinical approach to patients.

Key words: LVAD, ventricular arrhythmias, ECG, blood pressure, pulse.

P9 TAKOTSUBO CARDIOMYOPATHY - A RARE REVERSIBLE FORM OF HEART FAILURE

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Introduction. Takotsubo cardiomyopathy or broken heart syndrome is a temporary heart condition that develops in a response to an intense emotional or physical experience. It is a non-ischemic cardiomyopathy with findings of hypokinesis or akinesis of the midsegments and apical segments of the left ventricle. This gives the ventricle a shape similar to a pot used by Japanese fisherman to trap octopus (tako- tsubo) - a narrow neck and a round bottom. The most commonly discussed mechanism is stress-induced catecholamine release with toxicity and subsequent stunning of the myocardium. Patients mostly at risk are Asian or white, postmenopausal women.

Case report. A 46 - year old female patient with history for hypertension presented in our emergency room due to typical severe chest pain irradiating towards the back and her right arm. She complained of an emotionally intensive situation two days ago. At presentation she was hemodynamically stable, with no pain. The ECG showed sinus rhythm with inverted T waves in the inferolateral and precordial leads. She was admitted in the coronary care unit. Coronary angiography was performed that showed no coronary lesions. Laboratory results showed an elevated Troponin (354 ng/L) and LDL cholesterol (5.1 mmol/L). At the same day, bed side echocardiography was performed, that showed normal dimensions of the left ventricle with mildly reduced ejection fraction (44%), reduced kinetics of the apex and the apical segments of the anterior, lateral and inferior wall, a finding highly suspected for Takotsubo cardiomyopathy. The patient was treated with double antiaggregant, anticoagulant and statin therapy, beta blockers and ACE inhibitors. During the whole stay she was hemodynamically stable, did not complain of chest pain. She was discharged on the third day of admission with recommendation for therapy and control.

Conclusion. Takotsubo cardiomyopathy is an acute reversible form of left ventricular dysfunction with a good prognosis. It is a rare condition and is important to recognize as it mimics acute myocardial infarction and acute coronary syndrome.

Key words: Takotsubo cardiomyopathy, broken heart syndrome, reversible heart failure

P10 ROLE OF GUEZILLA II GUIDE EXTENSION CATHETER IN COMPLEX PERCUTANEOUS CORONARY INTERVENTIONS

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Aim: To show the benefit of using Guiding extension catheter in complex calcific lesions

Methods and Results: 55 years old patient with minimal effort angina was scheduled for PCI in which we detected heavy calcific chronic total occlusion of the mid part of the right coronary artery. We used Amplatz 2 Guiding catheter 6F via trans-radial approach for better support and various CTO dedicated wires for opening the occlusion. (Whisper, Pilot 150). Pre-dilatation was performed with compliant balloons (Mini Trek 1.5/20mm, Trek 3.0/20 mm). Due to heavy calcifications using various techniques (incl. buddy-wire technique with two wires) the selected stents were not able to be deployed, that's why we decided to use guide extension catheter Guidzilla II which we inserted deep into the right coronary artery after what two Drug Eluting Stents were successfully implanted (Resolute Integrity) with excellent result.

Conclusion: The use of Guedezilla II Guide extension catheter is a safe and feasible tool in the cath lab for interventional cardiologist by creating a smooth pathway for balloon/stent delivery by providing greater support especially in complex lesions, calcium, tortuous vessels, distal lesions and CTO.

P11 КАРДИОГЕН ШОК КАКО КОМПЛИКАЦИЈА НА АКУТЕН МИОКАРДИЈАЛЕН ИНФАРКТ – ПРИКАЗ НА СЛУЧАЈ

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Вовед: Акутниот срцев удар со елевација на СТ сегментот (СТЕМИ), зависно од инфарктната артерија и сегментот каде е оклузијата, доведува до исхемија на соодветен дел од миокардот. Проксималните оклузии на предната меѓукоморна артерија (ЛАД) доведуваат до загрозување на голем дел од мускулната маса на левата комора, поради што и прогнозата е полоша. Како компликација на овој тип на СТЕМИ се јавува кардиогениот шок

и живото-загрозувачки аритмии како вентрикуларна тахикардија и фибриларација (ВФ).

Приказ на случај: Пациент на 39 години со силна града болка и белодробен застој, со електрокардиографски промени, дијагностициран е како СТЕМИ на предниот сид, во локална болница, одалечена околу 100 км од Скопје. За време на транспортот пациентот направил ВФ, по што е дефибрилиран и било изведено срцево-белодробно оживување. Хемодинамски стабилизирани и донесен на нашата клиника. При прием во тешка општа состојба, со белодробен едем. Лабораторија со вредности на тропонин I од 50000 ng/L. Поради неможноста да лежи на рамно, веднаш е дадена фибринолитичка терапија по протокол. Во следните часови пациентот во кардиоген шок, со интензивна инотропна и диуретска стимулација. По постигнување на хемодинамска стабилност и добиен оптимален диуретски одговор на терапија, кај пациентот е направена коронарографија со наод на оклузија на остиумот на ЛАД. Направен обид за реканализација на ЛАД, но не е постигнат проток. Ехокардиографијата покажа аневризма на левата комора со мурален тромб и тешко редуцирана систолна функција со ежекциона фракција под 25%. Пациентот почина 14-тиот ден од хоспитализација.

Заклучок: СТЕМИ на предниот сид, поради исхемија на голема зона на левата комора може да доведе до кардиоген шок, кој и покрај интензивен реперфузионен третман, често завршува со смртен исход.

Клучни зборови: миокарден инфаркт со елевација на СТ сегментот, кардиоген шок

P12 УЧЕСТВО ВО GHATI (GLOBAL HEART ATTACK TREATMENT INITIATIVE) РЕГИСТЕРОТ КАКО ЕВАЛУАЦИЈА НА ТРЕТМАНОТ ЗА МИОКАРДЕН ИНФАРКТ

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Вовед: Од Април месец, 2020 година, универзитетската клиника за Кардиологија во Скопје е дел од GHATI (Global Heart Attack Treatment Initiative) регистарот. Овој регистар е создаден на

почетокот на 2019 година од страна на интернационални членови од American College of Cardiology (ACC) со цел за се направи евалуација на примената на препораките за третман на акутен миокарден инфаркт во земјите со низок и среден ред на приход.

Методи: Секој пациент постар од 18 години, кој е дијагностициран со акутен миокарден инфаркт со СТ елевација (СТЕМИ) и примен на клиниката за Кардиологија се вклучува во регистарот. Се следат повеќе времиња од прием на пациентот до соодветниот третман: времена поставување на дијагнозата, време на пристигнување во болница (доколку пациентот е транспортан од друга медицинска установа), време на внес на пациентот во ангио-сала, време до поминување на жица низ инфарктната лезија при примарна перкутана интервенција, или време до вклучување на фибринолитична терапија. Се регистрира начинот на лекување и целиот медикаментозен третман во болница и препорачан за дома. Податоците се предаваат на тримесечно ниво, преку "on-line" алатка која се пристапува преку посебен линк, нов за секое тримесечие.

Резултати: Досега имаме поднесено податоци за четири тримесечии, односно една година (април 2020 година до март 2021 година). Внесени се податоци за вкупно 354 пациенти, од кои 24% се женски пол, 58% пушачи, 51% транспортани од друга медицинска установа со просечно време на транспорт од 2 часа и 8 мин. Кај 94% е реализирана реперфузија на коронарни артерии, од кои кај двајца пациенти е искористена фибринолитична терапија, кај останатите е направена перкутана коронарна интервенција (ПКИ). Кај 29,4% пациенти ПКИ е реализирана за ≤ 90 минути.

Заклучок: Водење на медицински регистри на глобално ниво помага во изготвување на нови медицински препораки, нивна евалуација и подобрување. Учеството во овој проект, обработката и споредување на податоците од поединечни тримесечии, овозможува јасно согледување на лекувањето во нашата установа. Споредбата на нашите резултати, со резултатите од другите центри кои се вклучени во овј регистер покажува каде се нашите недостатоци и кои параметри треба да се подобруваат.

Клучни зборови: акутен срцев удар со СТ елевација, национална мрежа, национален регистер

P13 HOMOCYSTEINE AND MTHFR MUTATIONS IN ASSOCIATION WITH THROMBOSIS AND CORONARY ARTERY DISEASE

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Aim of the presentation was to describe association between homozygote for MTHFR C677T polymorphism gene for homocysteine and the cardiovascular and thromboembolic events in a 37 year old female patient with prior history of surgical repair of atrial septal (ASD) and ventricular septal defect (VSD) and DM type 1.

Case Report. We describe a case of myocardial infarction in a 37 year old female patient with sudden onset of vomiting and chest discomfort. For the following symptoms the patient seeks medical care in the local Emergency unit. An emergency blood analysis showed: Troponin 37059; AST 248, CK-MB 222; LDH 1076; ALT 108, PLT 642. Due to the high Troponin levels the patient was sent to the University Clinic for Cardiology. At admission the patient presented ST segment elevation acute myocardial infarction. The changes were in inferior region. Prior to this condition the patient has a history of surgically repaired ASD and VSD 35 years before, cerebrovascular insult 7 before. She gave information for iatrogenic DM type 1 and genetic finds for thrombophilic gene mutations: a homozygote mutation of the MTHFR C677T polymorphism and presence of heterozygote for: FGB 455G/A gene, PAI-1 5G/4G, MTRR A66G. Echocardiography showed hypokinesis of the basal part of the inferior wall, slightly reduced global left ventricular function (EF 50%). Other parameters were normal. On angiography there was occlusion of the right coronary artery (RCA), and stent was placed on RCA. During the hospital stay the patient was treated with dual antiplatelet therapy, anticoagulant therapy, statin therapy and insulin. In consultation with a hematologist following analysis were made: H.Pylori scan(negative), Homocysteine(normal), Further consultation for the elevated PLT levels was advised at the Clinic for hematology.

Conclusion. MTHFR C677T is found in about 30 to 40% of the American population. Approximately 25 % of Hispanic descent and 10 to 15% of Caucasian descent are homozygous for this variant. Molecular finding of C677T MTHFR mutation allows us to identify a part of population with a potential risk factor for ischemic vascular disease, with the advantage that is an easily revertible factor by modulation of the diet. Key words: acute myocardial infarction, gene polymorphism, thromboembolic event

P14 THE ROLE OF TROPONIN IN PULMONARY THROMBOEMBOLISM - CASE REPORT

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Introduction: Troponins are a group of proteins found in skeletal and cardiac muscle fibers that regulate muscle contraction. The normal range for troponin ranges from 0 to 0.4 ng / ml. High troponin levels are most often the result of heart disease, or myocardial infarction. However, troponin levels may be elevated in other conditions such as sepsis, chronic kidney disease, chemotherapy, myocarditis, and pulmonary embolism. Troponine may be associated with a worse prognosis in the acute phase of pulmonary thromboembolism. Between 30 and 60% of patients with acute pulmonary thromboembolism have elevated plasma levels of troponin I and tropinin T, leading to higher mortality even in hemodynamically stable patients.

Case report: The paper shows a 66-year-old female patient presenting for examination for chest pain over the past 3-4 days, fatigue at the slightest physical activity, patient with ECG changes, elevated terponin I values, hospitalized with a diagnosis for acute coronary syndrome. After the performed laboratory and cardiological examinations (ECG, echo of the heart), coronary angiography is indicated - the finding is without significant stenosis of the coronary vessels. The patient was prescribed the recommended medication (aspirin 100mg, statins). After 26 days, the same patient reappears on the foreskin, with chest pain with increased intensity in the last 3-4 days, suffocation, fatigue and as a new symptom states loss of consciousness (syncope) on several occasions. After laboratory examinations, elevated levels of troponin I and high levels of dimers were found again. The patient underwent CT angiography of the lungs according to the PTE protocol, in addition to massive pulmonary thromboembolism. After the condition has stabilized, the patient is prescribed the recommended therapy and instructions for regular check-ups are given.

Conclusion: In this paper we presented the role of troponin levels in a state of massive pulmonary thromboembolism. People who have the following symptoms need to be hospitalized: pain at rest (which can occur at night), with minimal effort, angina that progresses rapidly despite increased medical therapy is a serious health problem. Early diagnosis and appropriate treatment provide an opportunity for a new and better life. Of course, it is necessary to periodically monitor the condition of patients and regular use of therapy.

Keywords: troponin, myocardial trauma, pulmonary thromboembolism

P15 ACUTE DISSECTING ANEURYSM OF THE ASCENDING THORACIC AORTA (STANFORD A): CHALLENGES IN EARLY DETECTION AND MANAGEMENT

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Introduction: Type A acute aortic dissection is rare but serious and life-threatening condition that requires early diagnosis and prompt surgical treatment. Undiagnosed aortic dissection can have mortality rate as high as 33 percent within the first 24 hours, 50 percent within 48 hours and 75 percent within two weeks.

Case report: A 70 years old man with a history of coronary artery disease, hypertension and type 2 diabetes, presented to the Emergency Department with acute sharp chest pain radiating to the jaw and back started one day prior to presentation. Evaluation of a 12-lead electrocardiogram and laboratory examinations excluded myocardial infarction. He was then admitted to the Intensive Care Unit. Five years previously, the patient underwent PCI (one coronary stent in the left anterior descending branch, and another in right coronary artery). After admission onto the Intensive Care Unit, he was given intravenous Morphine for pain relief and bedside transthoracic echocardiography was performed and showed a mild aortic regurgitation and dilatation of the ascending aorta with a diameter of 50mm with suspected intimal flap. Urgent Computed Tomography (CT) angiography was done which showed a continuous double-lumen sign indicating acute luminal dissection with flap formation. The patient was then transferred to the Department of Cardiac Surgery for further surgical treatment.

Conclusion: This case emphasizes the importance of making a rapid and accurate diagnosis without delay and providing appropriate intervention to prevent any fatal or severe complications.

Keywords: Aortic aneurysm; Aortic dissection; Computed tomography; Complications; Surgery

P16 PREOPERATIVE OPTIMIZATION FOR SURGERY IN PATIENT WITH THYROTOXICOSIS

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Background: Thyrotoxicosis as a clinical condition characterized by excessive thyroid hormone activity in the bloodstream, show different effects on different organ systems. Commonly symptoms include palpitations, tachycardia, tremor, anxiety, weight loss, and if the state is not controlled, extreme and detrimental cardiovascular symptoms may occur (1,2).

Case Report: We present a case of 20-year-old female with thyrotoxicosis scheduled for surgery. Patient hormone levels were: TSH 0.022 mIU / L; T3 14, 4 pmol / L; T4 38.4 pmol / L and she was preoperatively treated for 3 weeks with Thiamazole 2x20 mg and Propranolol 40mg 2x1/2. In the operating theater, patient had high blood pressure of 170/90mm Hg; sinus tachycardia 140bpm and SaO2 98%. Short time sedative (midazolam 3 mg), short time beta blocker esmolol hydrochloride (30 mg) was given, surgery was postponed, and patient was referred for therapy adjustment to the Institute of Pathophysiology. After two months of adjusted therapy with Thiamazole 3x20 mg and Propranolol 40mg 2x1 patient was referred to surgery in near euthyroid state with TSH 0.206 mIU / L; FT4 28.18 pmol / L with parameters TA 140/80 mm Hg; heart rate of 105bpm min; SaO2 98%. Total intravenous anesthesia was given with remifentanyl and propofol. Patient was intubated gently. During the intervention patients' vital parameters were stable, total thyroidectomy was done and postoperative course went uneventfully.

Conclusion: this case emphasizes the need for proper and timely optimization of preoperative cardiovascular and hormonal changes that occur in thyrotoxicosis due to the fact that thyroid physiological status can contribute in reducing intraoperative morbidity. (3)

Key words: thyrotoxicosis, surgery, pre-operative therapy.

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