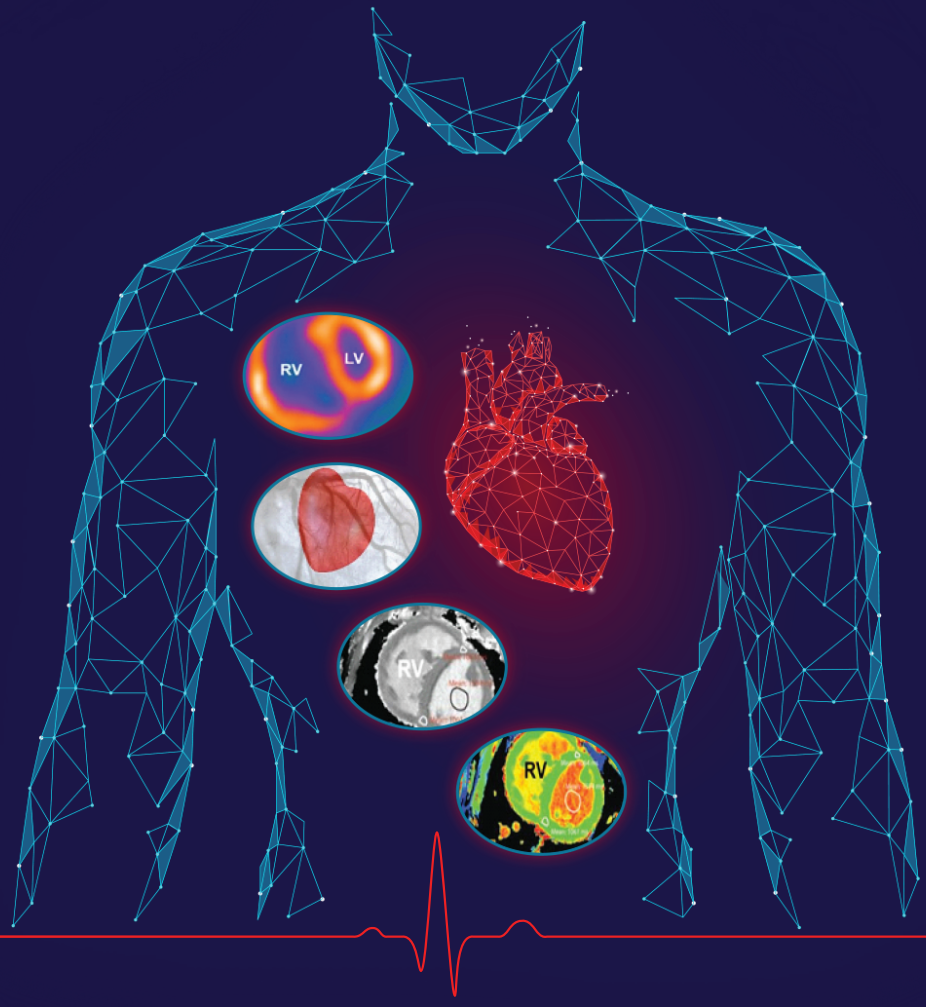
National Society of Cardiology of N. Macedonia

EHRA
European Heart Rhythm Association
European Society of Cardiology

Symposium with international participation

"HIGHLIGHTS IN CARDIOVASCULAR DISEASES"

ABSTRACT BOOK



04-06 November 2022,
h. DoubleTree by Hilton, Skopje, North Macedonia

Symposium with international participation
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CONTENT

WELCOME ADDRESS

Dear colleagues,

On behalf of the National Society of Cardiology of N. Macedonia, as well as the organizing committee, I welcome you to the Symposium "Higlights in Cardiovascular Diseases" which will be held from 4 to 6 November 2022 at the DoubleThree by Hilton hotel, Skopje.

It has already acquired the character of a traditional one, because it is being held for the third time.

It is intended not only for cardiologists, but also for internists and medical interns.

The main topics will be new guidelines and studies from cardiovascular medicine. The exchange of experiences at the regional and European level will be of no less importance.

The participation of domestic and European experts is expected, as well as the participation of pharmaceutical companies with commercial symposia.

I wish you successful Symposium

Sincerely,
Prof. Marijan Bosevski, MD, PhD, FESC, FICA
President of the National Society of Cardiology of N. Macedonia

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MULTIDISCIPLINARY APPROACH TO CARDIOVASCULAR PREVENTION: CHALLENGES AND CHOICES

NEW CONCEPTS IN DYSLIPIDEMIA: FROM RISK ASSESSMENT TO NEW THERAPEUTIC TARGETS

N. Kostova

University Clinic of Cardiology, Skopje, N. Macedonia

Introduction: Atherosclerotic cardiovascular disease (ASCVD) remains a major cause of cardiovascular morbidity and mortality. A number of tools are available to assess patient's CVD risk, depending on risk factors, comorbidities and medical history. The retention of apolipoprotein B (ApoB)-containing lipoproteins, mostly in the form of low-density lipoproteins (LDL-c) in the arterial wall is the initiating event in the development of atherosclerosis so targeting and lowering LDL-c is the principal strategy to reduce CVD risk in primary and secondary prevention. Statin therapy is the foundation of lipid-lowering treatment, but many individuals do not achive target values or have a residual risk.

The aim of the review is to discuss new approaches to further lower LDL-c despite statin therapy including inhibition of ATP-citrate lyase, proprotein convertase subtilisin-kexin type 9, angiopoietin-related protein 3, and cholesteryl ester transfer protein. Inclisiran(small interfering RNA) shows comparable effects to that of PCSK9 monoclonal antibodies . SiRNAs and anti-sense oligonucleotides (ASO) witch facilitate selective inhibition of the production of targeted proteins including Lp(a) apolipoprotein C3,and ANGLPTL3 are active areas of clinical investigation on beneficial effects on associated dyslipidemias. High dose icosapent ethyl shows cardiovascular benefits . Apolipoprotein A1 (apoA1) is might to be considered as a potential treatment target to exploit the athero-protective effects of high-density lipoprotein cholesterol (HDL-C).

Conclusion: Novel treatments for dyslidemia aim to lower risk of ASCVD not only by vigorous reduction of LDL-c but with influence on whole spectar of atherogenic compounds including Lp(a), and triglyceride-rich lipoproteins .Additional clinical evidence is necessary to established new therapeutic targets.

Key words: Dyspipidemia, PCSK9, SiRNA,Lp(a)

DIABETES AND CARDIOVASCULAR PROTECTION; OLD CHALLENGES, NEW POSSIBILITIES

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Patients with type 2 diabetes have a well-documented increased risk for cardiovascular disease (CVD) that is more than two to three times higher than the risk seen in non-diabetic subjects.

The incidence of diabetes mellitus (DM) continues to rise and has quickly become one of the most prevalent and costly chronic diseases worldwide. A close link exists between DM and cardiovascular disease (CVD), which is the most prevalent cause of morbidity and mortality in diabetic patients. Cardiovascular (CV) risk factors such as obesity, hypertension and dyslipidemia are common in patients with DM, placing them at increased risk for cardiac events.Therefore, targeting CV risk factors in patients with DM is critical to minimize the long-term CV complications of the disease.

Although current antidiabetic drugs are highly effective for the management of hyperglycemia, most T2DM patients remain exposed to a substantial and concrete risk of CVD. Over the last decade many glucose-lowering agents have been tested for their safety and efficacy in T2DM with CVD. Noteworthy, most of these studies failed to show a significant benefit in terms of CV morbidity and mortality, despite intensive glycemic control. The recent trials Empagliflozin Cardiovascular Outcome Event Trial in Type 2 Diabetes Mellitus Patients-Removing Excess Glucose (EMPA-REG OUTCOME);); Liraglutide Effect and Action in Diabetes: Evaluation of Cardiovascular Outcome Results (LEADER) Trial to Evaluate Cardiovascular and Other Long-term Outcomes with Semaglutide in Subjects with Type 2 Diabetes (SUSTAIN-6) have shed some light on this important clinical issue, showing a convincing effect of empagliflozin and liraglutide on CVD outcomes. Here I provide a critical and updated overview of the main glucose-lowering agents and their risk/benefit ratio for the prevention of CVD in patients with T2DM.

PREVALENCE AND OUTCOME OF YOUNG STROKE PATIENTS

D. Petrovska Cvetkovska, N. Baneva Dolnenec

University Clinic of Neurology, Clinical Centre Skopje, RSM

Approximately 15% of all ischemic strokes (IS) occur in young adults and adolescents. To date, only limited prior public health and research efforts have specifically addressed stroke in the young. Early diagnosis remains challenging because of the lack of awareness and the relative infrequency of stroke compared with stroke mimics.

Moreover, the causes of IS in the young are heterogeneous and can be relatively uncommon, resulting in uncertainties about diagnostic evaluation and cause-specific management. Emerging data have raised public health concerns about the increasing prevalence of traditional vascular risk factors in young individuals, and their potential role in increasing the risk of IS, stroke recurrence, and poststroke mortality. These issues make it important to formulate and enact strategies to increase both awareness and access to resources for young stroke patients, their caregivers and families, and health care professionals.

The newest recommendation of the American Academy of Neurology represented recently convened an expert panel to develop a consensus document concerning the recognition, evaluation, and management of IS in young adults and adolescents. We will represented also our experiences in young stroke patients.

THE EFFECT OF PHYSICAL ACTIVITY IN MIDDLE-AGED INDIVIDUALS ON CARDIOVASCULAR DISEASE

L. Stojanovska

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Emeritus Professor, College of Health and Biomedicine Victoria University, Melbourne, Vic. Australia

Regular physical activity (PA) has a positive role in preventing cardiovascular disease (CVD). Due to a trend toward a more sedentary lifestyle, the middle-aged population (35-65 years) is at greater risk of developing CVD. It is well established that PA improves cardiorespiratory fitness and reduces the risk of cardiovascular mortality and cardiovascular events, including stroke, coronary heart disease, heart failure, hypercholesterolemia, atherosclerosis, diabetes, and blood pressure. PA can potentially decrease oxidative stress and systemic inflammation which are the two main underlying mechanisms leading to CVD. By reducing CRP, TNF-γ, interferon-gamma (INF-γ), NF-γB and increasing IL-10, IL-4, and IL-8, PA

can prevent the initiation and the progression of CVD in middle-aged adults, highlighting the importance of being physically active for this age group. The general recommendation of PA to prevent CVD is at least 150 minutes/per week at a moderate level of intensity, with a type of PA that should be adapted to the fitness level and medical condition of the individual. However, standardized guidelines for middle-aged individuals with cardiovascular events still need to be established.

MODERN TREATMENT OF HYPERTENSION - LATEST RECOMMENDATIONS AND APPLICATION IN CLINICAL PRACTICE

N. Petkovikj

City General Hospital September 8th

The presentation uses official recommendations2018 ESC/ESH Clinical Practice Guidelines for the Management of Arterial Hypertension, 2020 ISH Global Hypertension Practice Guidelines, AHA Hypertension 2017 Clinical Practice Guidelines, Harmonization of ACC/AHA and ESC/ESH BP/Hypertension Guidelines.

Established strategies to reduce KP are lifestyle interventions and drug treatment. Device-based therapy has not yet been proven as an effective treatment option.

Non-pharmacological treatment: lifestyle changes, sodium restriction in the diet, moderate alcohol consumption, other dietary changes, weight loss, regular physical activity, smoking cessation. Lifestyle interventions can reduce KP, but most patients with hypertension need treatment with medication.

Pharmacological treatment: hypertension treatment drugs, five basic classes of drugs -ACE inhibitors, ARB, beta-blockers, potassium antagonists and diuretics (thiazides and thiazide diuretics such as chlorthalidone and indapamide). Other classes of alpha-blockers, central acting agents and mineralocorticoid receptor antagonists that are useful supplements of antihypertensive treatment in patients whose KP cannot be controlled with previous drugs. Recommendation for initial combination therapy with two medications for most patients.

European recommendations for arterial hypertension 2018 -therapy algorithms for hypertension without complications, hypertension and AF, hypertension and CAB, hypertension and heart failure, hypertension and chronic kidney disease.

Brief view of 2020 ISH recommendations.

Harmonization ACC/AHA and ESC/ESH recommendations for the treatment of hypertension.

Improving the patient's adherence to treatment using multiple approaches.

Possible causes of poor response to antihypertensive therapy.

ORAL POSTER SESSION

ARRHYTHMOGENIC RIGHT VENTRICULAR DYSPLASIA AS A POSSIBLE CAUSE OF SUDDEN CARDIAC DEATH IN 14-YEAR-OLD BOY

J. Jovanoski, E. Kovacheska-Bashuroska, L. Poposka, D. Mancheski, M. Zimbova

Center for CVD Ohrid

Introduction: Arrhythmogenic right ventricular dysplasia (ARVD) is a progressive condition with the right ventricular myocardium being replaced by fibrofatty tissue. It is a hereditary disorder mostly caused by desmosome gene mutations. Clinical presentation is usually related to ventricular tachycardias, syncope, presyncope or ventricular fibrillation leading to cardiac arrest, mostly in young people and athletes.

Case report: A 14-year-old boy was presented to critical care unit in cardiac arrest following an episode of loss of consciousness. He had collapsed whilst running in a school compound (for the second time, first time year before when he had normal ECG and echocardiography), after which he had recovered for 15 minutes when he had low blood pressure. His ECG showed a sinus rhythm, short PR interval, RBBB with LAH, and epsilon wave. Unfortunately, he had cardiac arrest in ambulance while transferring in our department. Monitor showed sustained ventricular tachycardia with LBBB morphology. On echocardiography, a normal left ventricle was seen with normal aortic and mitral valve morphology and function. The right ventricle was dilated with severe dysfunction. There was a massive tricuspid insufficiency with right atrial enlargement. He underwent cardiorespiratory resuscitation for over 2 hours and 30 min but could not be resuscitated and unfortunately died. Autopsy findings revealed a possibility of ARDV.

Conclusions: This case highlights the importance of good history taking, detailed cardiac investigations especially in young patients presenting with syncope during physical activity. Early identification and appreciation of risk will subsequently affect the outcomes of such patients affected by ARVD. Furthermore, important diagnosis like ARVD will have implications to relatives and future off-springs.

Key words: arrhythmogenic right ventricular cardiomyopathy, sudden cardiac death

ТРАЈНА ЕЛЕКТРОСТИМУЛАЦИЈА ПОСЛЕ ХИРУРШКА ИНТЕРВЕНЦИЈА НА ХИПЕРТРОФИЧНА ОПСТРУКТИВНА КАРДИОМИПАТИЈА

А.Гулевска Вучиниќ[1], Ф.Танески[2], К. Лазаровска[1],А. Антовски [1]

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ВОВЕД: Хипертрофичната опструктивна кардиомипатија е хипертрофична состојба на левата комора која е генетски детерминирана, која го вклучува генот кој го кодира протеинот на срцевиот саркомер. Преваленцата на оваа болест е релативно ниска, но останува предизвик во нејзиното рано откривање и нејзиниот третман заради варијациите во киничките манифестации.

Во прилог, случај на пациентка со доцна откриена опструктивна хипертрофична кардиомипатија.

СЛУЧАЈ: 65 годишна пациентка примена на оддел за Кардиологија заради синкопа, замор, тешко дишење, нерегулиран КП. Од направените инвестигации на ЕКГ е нотиран присутен strain pattern. Лабораториски анализи, со блага анемија Hgb 115g/L, NT-pro BNP 250pg/ml. Ехокардиографијата нотира хипертрофија на миокардот од тежок степен IVS 25мм, присутен SAM, субаортен градиент 148mmHg и очувана истисна фракција на лева комора, со присутна дијастолна дисфункција од рестриктивен тип. Во договор со кардиохирург, пратена за кардиохирушка интервенција, односно миектомија. Реализирана хируршка интревнција P2 triangular resection and Morrow procedure. Два дена пост оперативно кај пациентката на ЕКГ брадикардија околу 35/мин, нотирана комплетна АВ дисоцијација. Контролната Ехокардиогрфија со значајна редукција на субаортен градиент околу 60ммХг и дебелина на септум 20мм. Кај пациентката поставен траен двокоморен електростимулатор на срцето DDD. Испишана со висока доза на Б блокатор, статин и дихидропиридински калциум канал блокатор. На прва контрола пациентката во многу подбрена општа состојба, со подобрен квалитет на живот.

ЗАКЛУЧОК: Во текот на четири децении, извештаите од бројни центри ширум светот доследно и недвосмислено ги документираа придобивките од миектомијата за хемодинамиката и функционалната состојба, враќајќи го нормалниот и прифатлив квалитет на живот во сите возрасни групи кај пациентите, притоа и намалувајќи ги компликациите од срцева слабост.

КЛУЧНИ ЗБОРОВИ: хипертрофична опструктивна кардиомипатија, сам, лвот опструкција, миектомија, ав дисоцијација.

A CASE OF MYOCARDIAL INFARCTION IN A YOUNG PATIENT WITH A COMBINATION OF FACTOR V LEIDEN AND MTHFR GENE MUTATION

E. Vraynko, B. Zafirovska, B. Dimitrovska, I. Bede, S. Tomeski, M. Otljanska, N. Kostova

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Introduction: Inherited thrombophilia due to a combination of factor V Leiden and MTHFR gene mutation leads to a hypercoagulable state resulting in thromboembolic events and arterial thrombosis.

Case report: We present a case of a 35-year-old male patient who presented to the emergency room with intensive chest pain that started 2 hours ago while he was cycling for a distance of 11km. The ECG showed ST segment elevation of 3mm in the inferior leads. An emergent coronary angiography was indicated which showed thrombotic formations in the proximal right coronary artery (RCA), rPDA and RPL without atherosclerotic plaques. Percutaneous coronary intervention with plain old balloon angioplasty (PCI/ POBA) and thromboaspiration was performed, which was followed by tirofiban infusion and continuous infusion of unfractionated heparin for 24 hours. The molecular genetic analysis revealed the patient to be heterozygous for factor V Leiden and homozygous for methylenetetrahydrofolate reductase (MTHFR) C677T gene mutation. After completing the required clinical examinations, the patient was discharged in a good clinical condition with a recommendation for medical treatment including a prophylactic dose of direct oral anticoagulant. After a one-year follow-up, the patient had no symptoms or recurrent cardiovascular events.

Conclusion: Inherited thrombophilia is a significant risk factor for coronary artery disease and performing genetic testing in younger patients with a cardiovascular event, plays an important role for adequate treatment and prophylaxis from recurrent complications. Although individual patient consideration is recommended, the use of oral anticoagulation for prophylaxis is shown to be effective in these patients. However, further studies are needed for the indications and duration of prophylactic anticoagulation in patients with inherited thrombophilia after an arterial thrombotic event.

Key words: Factor V Leiden mutation, MTHFR gene mutation, myocardial infarction

PENETRATING ATHEROSCLEROTIC ULCER RUPTURE IN ASCENDING AORTA PRESENTED AS ACUTE CORONARY SYNDROME

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Background: Penetrating atherosclerotic ulcer (PAU), intramural aortic hematoma and classic aortic dissection, are group of conditions with similar clinical symptoms and different pathophysiological mechanisms and clinical are presented as Acute aortic syndrome (AAS). PAU is an ulcerating atherosclerotical lesion that are usually asymptomatic in the initial stage and confined to the intimal layer. In the second stage, the lesion progresses to a deep atheromatous ulcer that penetrates through the elastic lamina into the media. It is usually located in the descending aorta and rearly diagnosed in ascendenting aorta

Case presentation: A 46-year-old man with a history of essential hypertension was brought to the emergency ambulance because of a sudden-onset of chest pain with propagation to the back, loss of consciousness, syncope, nausea, vomiting.. He had not been taking medication. His vital signs in the were a blood pressure of 130/90 mmHg, heart rate of 110/ min, respiratory rate of 22/min, and a body temperature of 36.5 °C. An electrocardiogram show an ST segment depression 1-2 mm, and cardiac enzymes were elevated. It was performed coronarography – with normal coronary arteries without stenosis. It was performed CT angiography of Aorta with finding of pericardial effusion without clear evidence for dissection. Echocardiography presented pericardial effusion with thrombotic masses. The diagnosis of PAU rupture in the ascending aorta with hemopericardium was made with revision of the CT angiography correlated with ehocardyography and clinical presentation. The patient was referred to a cardiac surgery clinic to emergent sternotomy and ascending aorta reconstruction. A ruptured ulcerative plaque through the intima to the adventitia without flap dissection in the ascending aorta was confirmed.

Conclusion: Although PAU in the ascending aorta is uncommon, it is commonly lethal when it ruptures. PAU tends to occur in elderly men with hypertension, tobacco use, and coronary artery disease. PAU is frequently asymptomatic and is diagnosed rather incidentally. Treatment of PAU in ascendenting aorta is classic surgical intervention sternotomy with ascendenting aorta reconstruction.

Keywords: Penetrating atherosclerotic ulcer, Acute coronary syndrome, Ascending aorta

LIFE SAVING THORACIC ENDOVASCULAR AORTIC REPAIR (TEVAR) IN TRAUMATIC ACUTE THORACIC AORTIC INJURY (TAI)

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Introduction: Acute traumatic aortic transection is a life threatening and emergent vascular surgical pathology with high mortality and morbidity. Fortunately, acute and chronic traumatic lesions of the descending aorta can now be treated via an endovascular approach in specialized centers.

A 22-year-old male suffered from a traffic car accident was admitted to our hospital. His mental status was confused but brain computerized tomography (CT) revealed nonspecific findings. He had no known history of hypertension or diabetes. His family history was nonspecific and he was an active smoker. On admission, his vital signs were stable except for a blood pressure of 100/70 mmHg. Electrocardiogram (ECG) showed normal sinus rhythm with 72 beats/min. The results of electrolyte panel and kidney function tests were all within the normal limits, except aspartate aminotransferase (AST) 225U/L and alanine aminotransferase (ALT) 248U/L. The patient had a serial rib fracture on the right, from the 2nd to the 5th rib and had an aortic transection distal to the descending part of the aortic arch and the descending aorta in a length of about 34 mm, as detected by CT. In cooperation with vascular surgery, thoracic endovascular aneurysm repair (TEVAR) was performed successfully, and all major branches were intact in the control aortography. Follow-up chest CT angiography showed vascular stent graft insertion state from distal aortic arch to proximal descending thoracic aorta, and resolution of previous traumatic aortic dissection. The patient was discharged after one week.

Conclusion: The surgical access is not easy in thoracoabdominal aortic surgery and the mortality and morbidity of surgery is high especially when there is trauma. In 1997, Kato et al7 were the first to report the use of stent grafts for BTAI. Over the last two decades, thoracic endovascular aortic repair (TEVAR) has become the gold standard treatment in these patients.

Key words: traumatic aortic injury, TEVAR

RETINAL ARTERY OCCLUSION IN A YOUNG HEALTHY WOMAN ASSOCIATED WITH PFO (PATENT FORAMEN OVALE): A CASE REPORT

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Case report

Patent foramen ovale (PFO) is a physiological opening present in fetal life between left and right atria and is pathological when it persists in adult life. It is present in 20-30% of the population. In a majority of cases, it is not a harmful condition but it can act as a potential source of a paradoxical embolus from venous circulation through the left atrium and into the systemic circulation. Retinal artery occlusion (RAO)is characterized by sudden obstruction of the arterial blood flow in the retinal circulation with consequent ischemic damage to the retina resulting in vision loss .RAO occurs in the elderly population above the age of 60 years due to carotid atherosclerosis but it can also develop due to paradoxical emboli from patent foramen ovale (PFO), which can happen in a relatively younger population. An interesting case of unilateral retinal artery occlusion associated with atrial septal defect (ASD) in a 27 old female is reported here. Our patient presented with sudden and painless loss of vision in her left eye, which was diagnosed as RAO on ophthalmoscope examination. Urgent head CT with cerebral angiography and head MRI was unremarkable for any acute insult. She was referred to a our hospital for cardiologist opinion for further evaluation and establishment of the etiology. All tests were within reference limit except a small PFO with a diameter of 9 mm revealed on a ransoesophageal echocardiogram.The percutaneous closure of PFO is preformed with PFO occluder in PZU Filip II Skopje . The success of closure at 48 h, 1 month, and 3 months postoperatively was defined as normal occluder morphology and position on TTE, no thrombus on the occlude and no left-to-right shunt at the atrial level. Conclusion: Despite the fact that ASD is left to right shunt, paradoxical embolus can lead to embolic phenomena elsewhere in the body and sometimes in the eye. Transcatheter occlusion of patent foramen ovale (PFO) has become a recognized treatment option for high-risk PFO-related diseases. No randomised trial evidence exists to show that closure of PFO in the case of otherwise unexplained systemic embolisation is protective. Detailed cardiac evaluation is mandatory to rule out possible causes to prevent ocular or systemic embolic events and associated morbidity.

Key words: retinal artery occlusion, PFO (Patent foramen ovale), PFO occluder

CASE REPORT: PATIENT WITH VENTRICULAR SEPTAL DEFECT FOLLOWING ACUTE MYOCARDIAL INFARCTION

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Introduction: Post-myocardial infarction ventricular septal defect (VSD) is a rare and potentially fatal complication. The clinical presentation includes chest pain and dyspnea. Once it's suspected, echocardiographic imaging is indicated.

Background: A 60-year-old male patient with acute anterior myocardial infarction went under coronary angiography with stent implantation in another medical center. Due to persistent chest pain, he consults our clinic.

Material and Methods: The patient was admitted in moderate general condition, with chest pain, hemodynamically stable. A systolic murmur was heard at the left sternal border. Electrocardiogram was sinus rhythm, 110 bpm, and ST-segment elevation in the precordial leads. Laboratory results showed elevated troponin.

Transthoracic echocardiography was performed in the first hour of the admission. Echocardiography showed reduced left ventricular ejection fraction (30%) with akinesia of the apex, middle and apical part of the intraventricular septum and lateral wall of the left ventricle. In the apical segment of the interventricular septum, a post-MI defect (a VSD) of 8 mm was visualized, with a Doppler gradient of 55 mmHg. This is a rare complication from acute myocardial infarction on the anterior wall, the apical segment of the left ventricle, and the intraventricular septum.

Results: After a cardiac and cardiac surgery consultation, the patient was qualified for urgent VSD repair. He refused the intervention and left our clinic, despite the medical recommendations. After a few days, the patient was dead.

Conclusion: Most septal ruptures occur within the first four days after MI. Echocardiography is the first imaging for detecting these complications. Urgent cardiovascular surgery or percutaneous repair is the treatment of choice. The mortality, despite the treatment, remains high.

Keywords: echocardiography, myocardial infarction, ventricular septal defect

NONINVASIVE IMAGING IN THE CONTINUUM OF CORONARY ARTERY DISEASE: FROM ATHEROSCLEROSIS TO HEART FAILURE

IMAGING IN ISCHEMIC HEART DISEASE: ECHO AND CMR

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Ischemic heart disease is a leading cause of death worldwide and its management is guided by the anatomical and physiologic significance of coronary artery stenosis.

Current guidelines recommend the use of non-invasive imaging as an initial test for diagnosing obstructive coronary artery disease (CAD) in patients with an intermediate risk of chronic coronary syndromes (CCSs) and to determine the appropriateness of referral for invasive coronary angiography (ICA) and subsequent revascularization

Stress echocardiography (SE) is an established technique to detect inducible myocardial ischemia. A recent ABCDE protocol has been proposed which includes the analysis of the B lines by lung ultrasound (Step B), LV contractile reserve (Step C), coronary flow velocity reserve (CFVR) (Step D), and the heart rate reserve (Step E), in addition to the standard regional wall motion assessment. This extended protocol aims at capturing the various sources of vulnerability of patients with coronary artery disease (CAD), such as pulmonary congestion, myocardial impaired contractility.

Advantages of stress echocardiography include its ready availability, relatively low capital cost, and incremental value in that it allows characterization of cardiac anatomy as well as the myocardial response to a potentially ischemic stimulus. According to 32 studies sensitivity of dobutamine stress echocardiography is 81% and its specificity is 82%.

Cardiac magnetic resonance (CMR) provides information about cardiac dimensions, function, and myocardial perfusion with high robustness and accuracy. CMR gives us insight into myocardial tissue characterization, precisely differentiating between ischemic and nonischemic injury and scar. This noninvasive and radiation-free combined approach of functional and morphologic cardiac assessment with CMR provides unique strengths compared with other imaging modalities.

Appropriate test selection is based on the patient's clinical picture, including the nature of symptoms, the risk profile, the clinical question being asked,

and the strengths and limitations of the testing modality. Other factors that may influence test selection include local expertise, availability and access to a given modality, cost, and patient preference.

Key words: ischemic heart disease imaging, stress echocardiography, cardiac magnetic resonance stress perfusion

PERSPECTIVES IN SPECT MYOCARDIAL IMAGING FOR CHRONIC CORONARY ARTERY DISEASE AFTER ISCHEMIA TRIAL

I. Mitevska

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Although current guidelines on the management of stable coronary artery disease (CAD) acknowledge that multiple mechanisms may precipitate myocardial ischemia, recommended diagnostic, prognostic and therapeutic algorithms are still focused on obstructive epicardial atherosclerotic lesions, and little progress has been made in identifying management strategies for non-atherosclerotic causes of myocardial ischemia. In recent years, conceptual models of ischemic heart disease (IHD) have continued to evolve. The hypothesis of obstructive atherosclerotic coronary artery disease (CAD) as the prevalent if not the only cause of myocardial ischemia is now being reconsidered, acknowledging that other mechanisms may precipitate myocardial ischemia, alone or in combination. Current management is focused on the "epicardial coronary obstruction-first" approach, assuming that obstructive atherosclerosis remains the primary and proximate cause of myocardial ischemia, and that, in the presence of obstructive atherosclerosis. Myocardial SPECT perfusion imaging and hybrid techniques allow us to parallel assess hemodynamic repercussions and anatomic assessment of CAD. The value of nuclear techniques for assessment of CAD and myocardial viability is well established, however it is recently challenged by the results of ISCHEMIA study showing that there is no difference in the major cardiovascular events and mortality during the 3.2 years of follow up in patients with stable CAD and at least moderate ischemia treated with optimal medical therapy vs. revascularization. The presentation is discussing the current role of nuclear SPECT imaging in the light of new study results in the patients with chronic coronary syndromes.

Key words: coronary artery disease, nuclear imaging, prognosis

EHRA ENDORSED SYMPOSIUM ATRIAL FIBRILLATION – ABLATION PROCEDURES: PVI– HOW TO START A NEW ABLATION CENTER?

2020 ESC GUIDELINES AND LATEST RECOMMENDATIONS FOR ATRIAL FIBRILLATION (AF) ABLATION

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When a patient with atrial fibrillation is referred to a cardiologist, the first task is to check the hemodynamic stability and immediately after that to assess the risk of thromboembolic complications. Choosing a rhythm control or rate control strategy is more or less a doctor's decision. Latest ESC Guidelines (published 2020) do not recommend rate vs rhythm control as better as the initial treatment.

In randomized clinical trials (AFFIRM, AF-CHF, ATHENA) rhythm control approaches have not emerged as superior to rate control for morbidity/ mortality end-points. This lack of benefit may be partially due to the side effects of the antiarrhythmic drugs chosen for rhythm control. The improvement of ablative techniques led to an increase in the number of patients in whom pulmonary vein isolation was chosen as a treatment strategy for rhythm control, thus in the randomized trials that followed in the rhythm control arm had fewer side effects caused by the use of antiarrhythmic drugs.

Currently available evidence from randomized clinical trials support rhythm control strategy only for reducing symptoms related to atrial fibrillation, and improve quality of life. However, it is rational to do an attempt to restore sinus rhythm in patients presenting with first episode of AF, in order to evaluate the response to therapy.

Catheter ablation is a well-established treatment for the prevention of atrial fibrillation recurrences, especially in high volume centres. It is a safe and superior alternative to anti-arrhythmic drug treatment. Still it should be discussed with the patient, concerning complication rate and rate of recurrences. There are many suggested models that could be used pre-procedurally to predict likelihood of recurrence.

But, in patients with heart failure, AF-catheter ablation results in higher rate of preserved sinus rhythm and improvement in LV ejection fraction and quality of life, compared with rate control, or rhythm control with antiarrhythmic medications. Therefore, ablation should be considered in patients with heart

failure to reduce HF-hospitalizations and potentially mortality.

Until new recommendations are published, ablation remains the second-line therapy, after failure of antiarrhythmic medications of restoring or maintaining sinus rhythm. Randomized trials after publication of the current guidelines: EAST-AFNET 4, EARLY -AF, STOP-AF give more positive data, supporting early rhythm control, as a strategy, leading to lower risk of mortality.

PERSONAL STRUGGLE! ROAD TO COMPLEX EP PROCEDURES

J. Taleski

University Cardiology Clinic, Skopje

1. Road to complex EP procedures, personal struggle

2. Who are the best candidates for AF ablation

First complex EP procedures in Macedonia – initial overview

Straight road through the desert without many stops. That is how I imagined road through EP and to complex EP procedures, when I started with it!

First EP procedures, my very beginnings (first diagnostics and first ablations)

More independent EP procedures and more confidence, less studying more mechanical work (mount stupidity)

EP fellowships in UCLA, and later in Zagreb (Sestre Milosrdnice University Hospital)

Proctors – Prof. Noel Boyle, MD, PhD; Prof Sime Manola, MD, PhD; Nikola Pavlovic, MD, PhD.

My moment of triumph! Fully certified EHRA EP specialist from January 2019.

Parameters to consider for patient selection. (for PVI) Individualized AF ablation strategy!

Overview from the "Influence of atrial fibrillation type on outcomes of ablation vs. drug therapy", results from CABANA. LAV/LAVI as predictors for AF recurrences. Risk factors for AF contributing – results from ESC guidelines 2020 for AF management!

Managing with the results from EAST-AFNET 4 – trial. How we pick our RF PVI candidates! Candidates for beginners!

Keywords: electrophysiology, education, guidelines

ACUTE HEART FAILURE: CHALLENGES AND CHOICES

LVAD OR BVAD? HOW TO DECIDE?

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Introduction: Ventricular assist device implantation play a key role in favorable outcomes in patients with advanced heart failure. The purpose of this review is to explain the decision-making process for candidacy for advanced therapies which is based on signs of advanced heart failure, specifically focusing on the importance of the syndrome of low cardiac output .

Material and methods: Right ventricular failure in combination with a failed left chamber is a serious complication associated with high mortality. In patients with or at high risk of developing right ventricular failure, biventricular support is recommended. It is important to recognize that those requiring biventricular support are a different population from patients who undergo univentricular support. These patients are generally sicker, with more profound multiple organ dysfunction than those requiring LVAD. Implanting LVADs into a patient with concomitant right ventricular failure (RVF) or at risk of developing RVF is associated with high mortality. Results: Echocardiographic parameters for left and right chamber estimation are basic during selection of this patients. Hemodynamic with Swan Ganz should make clearer the decision about the right heart condition. Precondition with Levosimendan and reevaluation of the right and left heart condition after that, very often can change the definitive decision for choosing of a type of mechanical circulatory support.

Conclusion: Deciding between univentricular and biventricular support remains complicated. This requires a holistic approach rather than considering isolated markers. Patients should be thoroughly screened and appropriately matched to the device that can yield optimum outcomes.

Patients with evident RVF may be considered for long-term dual VAD therapy for biventricular support. Those with mild signs of RVF may benefit from right-sided temporary percutaneous implantable pumps in the early perioperative period to allow for RV hemodynamic stabilization.

FROM ACUTE TO CHRONIC RIGHT VENTRICULAR FAILURE:A CASE REPORT

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Introduction: Right ventricular failure (RVF) is the final pathway of left-sided heart failure. Pulmonary hypertension (PH) is the commonest cause of right heart failure. Other causes are RV myocarditis, genetic cardiomyopathy, ischaemia and pericardial disease. A particular type of PH results from acute pulmonary embolism, and can result in acute RVF as the RV fails to maintain blood flow past an obstructing large embolus. Recurrent showers of smaller pulmonary emboli can end in chronic thromboembolic pulmonary hypertension (CTEPH).

Case report: We present a case of a 41y.o.male admitted to ICU because of dyspnoea, fatigue, ascites and leg swelling. He has a history of repetitive pulmonary thrombembolism (PTE) caused by thrombophilia-associated genetic risk of thrombosis, on direct oral anticoagulant therapy (DOAC). ECG shows signs of RV hypertrophy, right axis deviation, P pulmonale. Echocardiography reveals dominant RV/RA dilatation with volume overload, RV/LV basal diameter 2:1,D-shape of LV, severe TR, distended IVC with decreased inspiratory collapse, resulting in severe PAH (SPAP 90mmHg). CT pulmonary angiography (CTPA) is essential if CTEPH is suspected and right heart catheterization is needed for the diagnosis of PAH.

Conclusion: Due to the unusual anatomy of RV, assessment of its function is a challenge. However, technical advances, especially in echocardiography and cardiac MRI, are helping to evaluate RV function and volumes, as well as measurement of PAP. CTPA is essential if CTEPH is suspected and RV catheterisation is necessary for the diagnosis of PH through estimation of PAP and wedge pressure. Careful history-taking, clinical examination and the targeted use of investigations can elucidate the underlying pathology.

Key words: PTE, CTEPH, RVF

THE REVOLUTION OF SGLT2 INHIBITORS IN THE SPECTRUM OF HEART FAILURE

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Over the recent years, large randomized controlled trials have demonstrated that sodium-glucose cotransporter 2 (SGLT2) inhibitors improve cardiovascular outcomes irrespective of diabetes, including risk of hospitalization for heart failure (HHF), cardiovascular death, and all-cause mortality. Being a glucose-lowering medication, SGLT2 inhibitors proved to have a significant role in reducing major adverse cardiovascular outcomes and hospitalization for heart failure initially in patients with diabetes. The magnitude of their impact has been subsequently shown to be potentially independent—or, at least, separated—from their glucose-lowering value with a few hypotheses behind the exact mechanisms of their actions. Previous studies have shown that interventions anywhere along this chain of events can interrupt the pathophysiological cascade and provide cardiovascular and/or kidney 'protection'. More recently, clinical trials with SGLT-2 inhibitors (SGLT2i) have shown a significant reduction in cardiovascular and kidney outcomes. Evidence from EMPA-REG OUTCOME, CANVAS Program, DECLARE-TIMI 58, VERTIS-CV, CREDENCE, and more recently DAPA-HF, EMPEROR-Reduced, and DAPA-CKD show that the beneficial effects of SGLT2i are observed across all stages of the cardiorenal continuum, ranging from patients with diabetes and multiple risk factors to those with established cardiovascular disease and even independently of diabetes status. Sodium glucose co-transporter 2 (SGLT2) inhibitors empagliflozin (Jardiance) and dapagliflozin (Farxiga) are now recommended for treatment of chronic heart failure with reduced ejection fraction (HFrEF), according to the latest 5-year update of the European Society of Cardiology (ESC) Guidelines in acute and chronic heart failure, which were released early Friday during the ESC Congress 2021. These drugs have established cardiac. The presentation is discussing the role and position of the SGLT2 inhibitors in the continuum of heart failure phenotypes in the lights of the latest studies and guidelines.

Key words: heart failure, treatment, sodium-glucose cotransporter -2 inhibitors

STRUCTURAL AND ENDOVASCULAR INTERVENTIONS: INTERVENTIONAL CARDIOLOGY

CAROTID ARTERY STENTING IN HIGH RISK PATIENTS

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Background: Carotid artery stenting (CAS) is an alternative to carotid endarterectomy (CEA). The purpose of this study was to evaluate the safety and efficacy of CAS in high risk patients.

Methods: We did a prospective analysis including consecutive patients who had undergone CAS. Patients were defined as high risk patients (≥2 high-risk criteria) according to SAPPHIRE classification. We analyzed procedural characteristics, carotid anatomy, procedural results and complications after procedure and at 30 days follow up.

Results: TRA CAS was done in 544 patients (mean age 66±8, 72% male). CAS was successful in 544 (100%) patients. The right internal carotid artery was the target artery in 268 (49%), and the left in 276 (51%) of the cases. All procedures were successfully completed from the right wrist, with right radial access in 492 (90%) cases and ulnar artery access with previous radial artery occlusion in 52 (10%) cases. Seven different carotid artery stents were used. Proximal protection device was used in 15 (2.7%) cases and distal protection device was used in the others. Total procedural time was 26 (10–120) minutes with filter time of 5±2,5 minutes. Fluoroscopy time was 9 minutes (5-45minutes) and contrast volume was 150 ml (100–350ml). Adverse events included 2 major strokes (0.3%), minor strokes 0.5%, and 5 intraprocedural TIA (0.9%). There were no major bleeding complications. Minor bleeding access site complications were present in 22 (4%) patients. Hospital stay was 1±1 day in 95% of high-risk patients after the procedure. At 30 days follow up there were no additionally registered ischemic events.

Conclusion: CAS is safe and feasible in high risk patients when done by experienced CAS operators. Patient selection, procedural timing, choice of the therapeutic strategy and technical skills are essential to achieve optimal outcomes.

MINIMALIST APPROACH TO TAVI IN PATIENT WITH SEVERE AORTIC STENOSIS AND AORTIC ROOT FISTULA DUE TO ENDOCARDITIS

Z. Zimbakov, O. Bushljetikj, I. Spiroski, Z. Petrovski, J. Nestorovska, S. Jovanova

Introduction: Aortic stenosis remains as the most prevalent valvular disease in elderly patient, and occur as great therapeutic challenge. In the Euro Heart Survey on Valvular Heart Disease, aortic valve stenosis was the most common valve abnormality (33,9% and 46,6% in the overall group and surgical subgroup, respectively). The most infrequent etiology is post-endocarditis aortic stenosis, with 1,3 % incidence. Left-sided endocarditis accounts for 85% of all endocarditis cases, with perivalvular extension more common in the aortic valve endocarditis. Perivalvular complications of infective endocarditis include abscess and fistulae, the frequency of fistula formation is rare (1.6-3.5%)

Aim of our presentation is to highlight the opportunity of using minimally invasive Transcatheter Aortic Valve Implantation (TAVI) procedure, as treatment in patients with severe aortic stenosis, associated with perivalvular complication - aortic root fistula, entity with high mortality rate (41%) which traditionally require surgical intervention.

Case report: A 78-year-old male presented exertional dyspnoea eight months after past aortic valve (blood culture negative) endocarditis. He was admitted in our clinique for examination and treatment. ECG on admission showed sinus rhythm, HR 75/bpm, RBBB, 4/6 grade heart murmur was detected on auscultation, Laboratory findings on admission was with normal range of complete blood count, end products of metabolism and inflammatory markers (PCT-procalcitonin including).Transthoracic echocardiography revealed: severe aortic stenosis with calcified cusps, LVESD 47 mm, PSV (peak systolic velocity) 5,02 m/s, mean gradient 57,40 mmHg, AVA (aortic valve area) 0,8 cm2, Ejection Fraction 50%. Suspect echocardiographic signs for fistula. After 5 days hemocolture was made, left/right arm, resulted bacterial negative. According to protocol, coronary angiography was indicated, it described coronary arteries with no significant stenosis. Before making a final decision, heart team, took into consideration all factors and criterias: Age > 75 y, Clinical Frailty Score (CFS) 6, STS (Society of Thoracic Surgery Risk Score)/PROM 8% (intermediate risk patient) and no Duke criteria for endocarditis (minor or major) were present. Minimalist approach to TAVI was heart team decision. Procedure was performed with minimalist approach, right trans radial access (pigtail 6 F), temporary pacemaker (Right Ventricle), preparation of right common femoral artery with Proglide x 2, conscious sedation, with available echocardiography assessment during all procedural phases. Interventional shunt occlusion was successfully performed. Final result was optimal (no PVL, no valve regurgitation) and without peri and post procedural complication. Further monitoring was continued in Intensive Unit

Care, patient's parameters were stable. Four days after, he was discharged in good condition.

Conclusion: The Task Force (ESC) has attempted to address the gaps in evidence and provide recommendations concerning the indications for intervention and mode of treatment (Recommendations on indications for intervention in symptomatic and asymptomatic aortic stenosis and recommended mode of intervention) that are guided by the randomised controlled trials (RCT) findings and compatible with real-world Heart Team decision making for individual patients (many of whom fall outside the RCT inclusion criteria). Aortic stenosis is a heterogeneous condition and selection of the most appropriate mode of intervention should be carefully considered by the Heart Team for all patients.

FOLLOW-UP OF PATIENT WITH TRANSCATHETER AORTIC VALVULAR IMPLANTATION (TAVI) – MOST FREQUENT QUESTIONS

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Cardiologists in their daily practice increasingly have patients with transcatheter aortic valve implantation (TAVI), which is becoming the method of first choice. Since these patients are adults, with multiple comorbidities, careful monitoring and control of possible early and late complications from TAVI is required.

In the first 30 days, especially when episodes of fainting, dizziness occur, the appearance of a new heart rhythm disorder should be sought, especially when there is a right or left bundle branch block, or a wide QRS complex on an electrocardiogram.

Vascular access control is required for the occurrence of AV fistulas, pseudoaneurysms, stenosis or occlusion of a peripheral artery, especially when symptoms of leg ischemia occur. A case report with subacute occlusion of the femoral artery after use of a vascular access site closure device.

Periodic echocardiographic controls of the valve and left ventricular function, determining the structure of the valve and cusps, function and hemodynamics. Detection of the appearance of thickening and reduced mobility of the cusps and their thrombosis, determination of "patient-prosthesis mismatch" and monitoring of the appearance or increase of aortic paravalvular regurgitation (PVR). Presentation of several cases with PVR.

Correct and complete follow-up of patients with TAVI is important for prevention and timely treatment of early and late complications. It has a major impact on quality of life and mortality after TAVI.

Keywords: transcatheter aortic valve implantation, patient follow-up

TRANSRADIAL APPROACH IN ILIAC INTEREVENTIONS

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AIM

To compare the early and late results of transradial iliac artery stenting wth bilateral or single access.

Methods and results

We recruited 50 patients who underwent TRA iliac stenting.In 24 cases we used bilateral and in 24 patients we uset single access.In 8 patients bilateral wrist access was used for interventions on both iliac arteries.Mean age of patients was 62+5 years with 74% of the patients were males.Cardiovascular risk factors were evenly distributed in both groups.54% were smokers and 48% were diabetics.50% of the patients had prior percutaneous coronary intervention,14% prior coronary artery bypass surgery and 15% prior carotid artery stenting.Ankle-brachial intervention before intervention was 0.62(0.6-0.8).

Right iliac artery was the culprit vessel in 46% of cases.There were 46% of chronic total occlussions interventions on the iliac arteries.Trans radial approach was used in all patients except in 2 where cross over to transfemoral access was required due to patient height(not enough catheter lenth). Contralateral injections were utilized to confirm proper wire advancement and stent positioning.Stents were implanted in 96% of the patients in the bilateral group and 95% in the group with single access.Procedure duration (41[20-180] vs 40[20-150]minutes and contrast volume(200[150-450] vs 200[150-400]ml were similar in both groups.but fluoroscopy time was smaller in the bilateral group(15[18-54] vs 19[4-60].

Procedural success was 100%.All patients were discharged next day.

Overall we observed 4 <5cm haematoma and 3 asymptomatic radial artery occlusssions at hospital discharge.There were no major cardiovascular and cerebrovascular events up to 4 years of follow up in both groups.Iliac artery patency od duplex ultrasound at late follow up was 100% in all cases. 2(7.6%) patients in the bilateral group and 1(4.1%)patient from the single access group had persistent claudication symptoms due to bellow the knee PAD.

Ankle-brachial index improved to 1(0.8-1.2)after intervention and at follow up.

Conclusion-Using single or bilateral TRA for iliac artery lesions or occlusions can be effectively and safely treated without the risks of femoral or brachial access.Limitations in this technique are present due to shortage of transradial dedicated equipment.

CHRONIC HEART FAILURE: GUIDELINE APPROACH, IMAGING AND PROGNOSIS

DETERMINING THE ETIOLOGY OF HF - ARE WE DIGGING DEEP ENOUGH

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Background: Heart failure is a complex disease and a major cause of morbidity and mortality in developing and developed countries. It is defined as a clinical syndrome consisting of cardinal symptoms as breathlessness, ankle swelling and fatigue that may be accompanied by elevated jugular venous pressure, pulmonary crackles and peripheral oedema due to a structural and/or functional abnormality of the heart that results in elevated intracardiac pressures as well as inadequate cardiac output at rest or stress.

Identifying the etiology of the underlying cardiac dysfunction is the last and mandatory step in the diagnosis of HF, since it can modify the diagnostic, therapeutic and preventive approach, as well as determine prognosis.

Discussion: Heart failure most frequently occurs due to ischemic or valvular disease, arrhythmias or hypertension. During this discussion each one of them will be elaborated using tools provided from ESC and in accordance with ESC guidelines on real patients examples.

When dilated or restrictive cardiomyopathy is diagnosed on imaging, it leads to symptomatic treatments instead of directed etiological therapies that could preserve heart function, reverse myocardial damage and improve life quality. Risk factors may increase the risks of heart failure through their effects on coronary artery disease, although diabetes alone may induce important structural and functional changes in the myocardium, which further increase the risk of heart failure. In the prevention arm of SOLVD diabetes was an independent risk factor (about twofold) for mortality, the development of heart failure, and admission to hospital due to heart failure.

Hypertension and CAD are major risk factors for the onset and the progression of heart failure. They have additive and synergistic effects in the pathogenesis of the syndrome, and

frequently coexist. The diagnosis of etiology of HFpEF is challenging because it mostly affects adults with hypertension accompanied with multiple

comorbidities and risk factors although the HFA-PEFF score of ESC is a very help fool tool to establish diagnosis.

Primary mitral regurgitation is caused by abnormalities of the valve apparatus, secondary mitral regurgitation is mainly a disease of the left ventricle mostly due to CAD but also as a result of mitral annulus enlargement due to LA dilation.

Supraventricular arrhythmias, particularly atrial fibrillation, are often the precipitating events that herald the onset of either systolic or diastolic heart failure. Recognizing the presence of atrial fibrillation is critical, as AF and HF frequently coexist and can cause or exacerbate each other.

Numerous factors can lead to HF exacerbation and hospitalization.These include arrhythmias, myocardial ischemia, respiratory infection and uncontrolled hypertension. Determination of the precipitating etiology of acute exacerbations of HF is very important for the further prognosis and treatment especially for reversible condition such as CAD and AFF.

Conclusion: Identification of etiology is last and mandatory step in the diagnosis of HF. This is a challenging process but together with proper risk factor assessment can lead to better treatment and disease outcome.

THE ROLE OF ECHOCARDIOGRAPHY IN HEART FAILURE – FROM SCREENING TO THERAPY

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Heart failure (HF) is a major health burden and despite significant therapeutic advances in the treatment of HF, it remains a condition marked by progressive deterioration and premature mortality. Cardiac imaging plays a central role in the diagnosis, assessment of cause, treatment planning and prognostication in heart failure. It typically incorporates multiple imaging modalities, each with unique but complimentary roles in the assessment of patients with HF.

Echocardiography is recommended as the key investigation for the assessment of cardiac function, which is mandatory for the diagnosis of HF and determining distinct HF phenotypes (heart failure with reduced, mid-range and preserved ejection fraction). As well as the determination of LVEF, conventional echocardiography and Doppler analysis in conjunction with novel techniques such as tissue-Doppler imaging, strain analysis and real-time 3D echocardiography provide sufficient information on other parameters such as chamber size, eccentric or concentric LVH, regional wall motion

abnormalities, RV function, pulmonary hypertension, valvular function, and markers of diastolic function. Furthermore, echocardiography plays valuable role in risk stratification and guiding therapeutic interventions in patients with HF and in screening of patients at risk for HF. Early recognition of HF permits therapeutic intervention thereby retarding clinical progression and in some reversal or arrest of pathologic state.

Challenge for advanced echocardiographic modalities are: screening of preclinical myocardial dysfunction in patients at risk for developing HF, asymptomatic patients with HF, patients with LVEF in "gray zone" ,indication for CRT in patients with borderline criteria, follow-up of patients with HF, mismatch between symptoms and LV systolic impairment and contribution of diastolic dysfunction for symptomatology.

END- STAGE (ADVANCED) HEART FAILURE – PATIENT SELECTION FOR HEART TRANSPLANT

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Introduction

Advanced Heart Failure (HF) is defined as "persistent HF with symptoms at rest despite repeated attempts to optimize pharmacologic and nonpharmacologic therapy" by The Heart Failure Society of America. Many patients with HF progress into a phase of advanced HF, characterized by persistent symptoms despite maximal therapy. Stratification is important to identify the ideal time for referral to an appropriate center. Mechanical circulatory support (MCS) is used to treat medically refractory end-stage heart failure as a bridge to recovery, bridge to transplant and bridge to candidacy or decision, initially with short-term ventricular assist devices (STVADs) and in the last decades with long-term ventricular assist devices (LTVADs), creating a possibility of destination therapy in patients who are not candidates for heart transplant (HT).

Considering heart transplantation as the best treatment option in these patients, a thorough evaluation involves reviewing potential indications for transplantation in the individual patient and determining whether any absolute or relative contraindication to cardiac transplantation is present. Without any of the treatment options mentioned before, the prognosis in patients with advanced HF remains poor, with a 1-year mortality ranging from 25% to 75%.

Discussion

Damage to ventricular function results from numerous causes, including myocardial ischemia or infarction. Decreased left ventricular function (LVF) leads to symptoms of forward HF (low output), which causes confusion, fatigue, anorexia, and renal dysfunction. Decreased LVF also leads to backward pressure (high filling pressure) on the cardiopulmonary system resulting in dyspnea, ascites, liver congestion, and peripheral edema. Additionally, decreased LVF causes a cascade of neurohormonal mediators such as the renin-angiotensin-aldosterone system, the sympathetic nervous system, and tumour necrosis factor. These neurohormonal mediators sustain and increase damage to the ventricles, which sets up a vicious cycle whereby decreased LVF causes neurohormonal changes that worsen LVF. In addition to symptoms of dyspnea, fatigue, and confusion, patients with advanced HF experience pain, anorexia, depression, and anxiety. Numerous studies show that patients with end-stage HF experience symptoms similar to patients with cancer at the end of life.

Nonischemic cardiomyopathy and coronary artery disease are the disease processes leading to the vast majority of cardiac transplants, though increasing numbers of adults with complex congenital heart disease, restrictive cardiomyopathies, hypertrophic cardiomyopathies, and those requiring re-transplantation are represented.

Criteria for definition of advanced heart failure

All the following criteria must be present despite optimal medical treatment:

1. Severe and persistent symptoms of heart failure [NYHA class III (advanced) or IV].

2. Severe cardiac dysfunction defined by at least one of the following:

• LVEF 1 unplanned visit or hospitalization in the last 12 months.

• Isolated RV failure (e.g., ARVC)

• Non-operable severe valve abnormalities

• Non-operable severe congenital abnormalities

• Persistently high (or increasing) BNP or NT-proBNP values and severe LV diastolic dysfunction or structural abnormalities (according to the definitions of HFpEF).

3. Episodes of pulmonary or systemic congestion requiring high-dose i.v. diuretics (or diuretic combinations) or episodes of low output requiring inotropes or vasoactive drugs or malignant arrhythmias causing >1 unplanned visit or hospitalization in the last 12 months.

4. Severe impairment of exercise capacity with inability to exercise or low 6MWT distance (<300m) or pVO2<12mL/kg/min or <50% predicted value, estimated to be of cardiac origin.

Management

1. Pharmacological therapy and renal replacement - inotropes may improve haemodynamic parameters, reducing congestion, augmenting cardiac output, and aiding peripheral perfusion.

2. Mechanical circulatory support MCS- can improve survival and symptoms of patients with advanced HF

3. Short-term mechanical circulatory support- short-term MCS devices are indicated to reverse critical end-organ hypoperfusion and hypoxia in the setting of cardiogenic shock. They can be used for a short, limited, period of time, from a few days up to several weeks.

4. Long-term mechanical circulatory support- long-term MCS is indicated in selected patients when MT is insufficient or when short-term MCS has not led to cardiac recovery or clinical improvement

5. Heart transplantation- heart transplantation remains the gold standard for the treatment of advanced HF in the absence of contraindications. Post-transplant 1- year survival is around 90% with a median survival of 12.5 years

Evaluation and selection for heart transplant

Cardiac transplantation evaluation at the transplant center involves reviewing potential indications for transplantation in the individual patient and determining whether any absolute or relative contraindication to cardiac transplantation is present. This determination includes performing baseline and periodic follow-up testing, including right heart catheterization to ascertain if pulmonary hypertension is present.

Estimation of prognosis is the most important component of the selection process for cardiac transplant recipients. The key prognostic indicators are peak volume of oxygen consumption (VO2) and prognostic scores such as the Heart Failure Survival Score and the Seattle Heart Failure Model. Many other predictors of poor prognosis have been identified, including New York Heart Association functional class III or IV, reduced left ventricular ejection fraction, and hyponatremia. However, use of an individual clinical factor to identify high risk is frequently problematic, given the complexity of HF and the multiple neurohumoral, hemodynamic, and electrophysiologic factors that may contribute to morbidity and mortality. Use of multivariable models has significantly improved our ability to identify high-risk patients.

Absolute contraindication

- Systemic illness with a life expectancy <2 years despite heart transplantation.
- Irreversible pulmonary hypertension is considered an absolute contraindication, but there is some variation among centers as to the threshold level of pulmonary hypertension above which cardiac transplantation is not performed. Pulmonary hypertension with irreversible pulmonary vascular resistance (PVR) >3 Wood units (>240 dynes-sec/cm5; normal is ≤1.5 Wood

units [120 dynes-sec/cm5]) is commonly considered a contraindication to isolated heart transplantation [2]. Patients whose PVR can be reduced to ≤3 Wood units (320 dynes-sec/cm5) while maintaining a systolic blood pressure ≥85 mmHg are usually considered acceptable candidates for isolated heart transplantation.

●Clinically severe symptomatic cerebrovascular disease

●Active substance abuse (drug, tobacco, or alcohol)

●Multiple demonstrations of inability to comply with drug therapy.

●Multisystem disease with severe extracardiac organ dysfunction

Relative contraindications

●Age >70 years old. However, carefully selected patients >70 years old may be considered for transplantation.

●Obesity (ie, body mass index [BMI] >35 kg/m2).

●Diabetes mellitus with poor glycemic control (glycated hemoglobin [HbA1c]>7.5 percent or 58 mmol/mol) despite optimal effort or end-organ damage other than non-proliferative retinopathy.

●Irreversible renal dysfunction (estimated glomerular filtration rate <30 ml/min/1.73 m2) is a relative contraindication for isolated cardiac transplantation.

●Neoplasm (requires individualized assessment of severity, treatment options and prognosis).

●Infection (requires individualized assessment of severity, treatment options, and prognosis).

●Acute pulmonary embolism (within six to eight weeks).

●Tobacco use (within six months).

●Recent past (eg, within six months) substance (drug or alcohol) abuse.

●Inadequate social support or cognitive-behavioral disability that would prevent compliant care. (See 'Inadequate social support or cognitive-behavioral disability' below.)

●Other conditions that increase the risk of perioperative complications or limit tolerance of immunosuppression, eg, peripheral vascular disease that would limit rehabilitation and is not amenable to revascularization.

●In addition, frailty may be considered a relative contraindication although further data are needed to define its role is assessing transplant candidacy.

Conclusion

In patients with refractory HF, mechanical circulatory support may be used as a bridge to cardiac transplantation, a bridge to decision on whether to proceed with cardiac transplantation, or as destination therapy for patients who are not candidates for heart transplantation. Patients with drug refractory end-stage HF receiving support with inotropic drugs had a 3-, 6-, and 12-month survival of

51%, 26%, and 6%, respectively, with a mean survival of only 3.4 months. For these patients, heart transplantation remains the only option. In comparison with conventional treatment, heart transplantation significantly provides a better quality of life and increases survival: it is associated with a 90% 1-year and an 80% 3-year survival.

CORONARY ARTERY DISESE: INTERVENTIONAL CARDIOLOGY

MAGMARIS OVER ABSORB AFTER FIVE YEAR RESTENOSIS

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Introduction: Current clinical practice guidelines recommend the use of either DEB or DES in patients with ISR. The implantation and value of Bioresorbable scaffold (BRS) in this scenario remains unsettled. A longer follow-up is required to confirm the long term safety and efficacy of this novel strategy. No published article or case report for similar intervention.
Conclusion: Magmaris BRS implantation due to restenosis on segment of previous Absorb BRS implantation is safe and effective. Maybe it's time for new paradigm: "Nothing to left behind after double BRS implantation".

OPTICAL COHERENCE TOMOGRAPHY (OCT), OUR DAILLY PRACTICE

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Introduction: In diagnosing coronary artery disease, angiography has proven a valued technique, but with well-established limitations. Intravascular imaging – Optical Coherence Tomography (OCT) enables cross-sectional tomographic imaging of the coronary artery and provides additional information complementary to angiography and treatment during percutaneous coronary intervention (PCI). OCT can be used to identify the culprit lesion, assess lesion morphology and guide lesion preparation strategies, allowing precise selection of the length and diameter of balloons and stents.

Case report

A 57 years old man, presented in the emergency department with chest pain and ECG changes showing inverted T waves in precordial leads. High sensitive troponin was elevated with 5927 ng/l. The patient was diagnosed with NSTEMI and was planned for an invasive coronary angiography. Before procedure a loading dose of Clopidogrel 600mg and Aspirin 300 mg was given, along with a UFH 7500 units i.v. bolus. On diagnostic angiography we observed a significant stenosis of the proximal LAD and a plaque extending to the Left Main. After administration of intracoronary NTG, angiography showed a

regression of the finding and an angiographicly assessed insignificant plaque on the LAD, with TIMI 3 flow. A diagnosis of coronary vasospasm was set as the most appropriate answer for this clinical manifestation, so the patient was referred for conservative medical treatment. Two days after, patient still displayed angina symptoms with dynamic ST changes, and after review of the symptoms, a decision was made for a repeat coronary angiography with OCT control. OCT showed plaque erosion in the Left Main and Thin Cap Fibroatheroma (TCFA) with soft plaque in proximal LAD as the real cause for the narrowing of the vessel wall and a direct cause of the clinical symptoms. Afterwards we proceeded with OCT guided PCI with a DES stent implantation along Left main and proximal LAD, with satisfying result in all side branches. Proximal optimization technique with an NS balloon was performed in the Left main branch, with good apposition of stent struts.
Conclusion: The routine use of OCT guidance during PCI upgrades our daily practice, providing better intracoronary visualization and improving short- and long-term outcomes.
Key words: Optical coherence tomography (OCT) ; NSTEMI

SPONTANEOUS CORONARY ARTERY DISSECTION: CASE REPORTS

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Introduction. Spontaneous coronary artery dissection (SCAD) is a non-traumatic, non-iatrogenic, non-atherosclerotic separation of the coronary artery wall caused by intramural hemorrhage (IMH) alone which forms false lumen or intimal tear alone or both in the same time. It encompasses relatively young population and dominantly female sex. Clinical presentation and severity of manifestations are variable and they are in range from complete absence of symptoms up to acute coronary syndrome, cardiogenic shock, cardiac arrest and sudden cardiac death.
Case reports. We present two clinical cases of SCAD. First one refers to a 51-year-old female patient, non-smoker, with history of treated arterial hypertension and epilepsy. She complained on sudden onset of general weakness, fatigue, exercise intolerance a few days ago and chest pain on the day of admission. ECG was consistent with ischemia in lateral leads. Echocardiography showed reduced EF with multiple segmental wall motion abnormalities. Laboratory findings detected high troponin values. Because of the manifestation of an acute coronary syndrome with heart failure, coronary angiography was performed with presence of SCAD along left coronary stem. We approached to stenting of the left main (LM) and left anterior descending

artery (LAD) and after that clinical status was stabilized.
Second case is about 53-year-old male, smoker, hypertensive who was hospitalized in our clinic because of the episode of chest pain a day before. ECG on admission was with no obvious signs of ischemia whereas laboratory showed significantly increased troponin values. Echocardiography described several hypokinetic segments of the myocardium. Coronary angiography was performed with no significant lesions. There was SCAD detected along coronary arteries. Patient was treated conservatively.
Conclusion. SCAD is one of the most prevalent non-atherosclerotic cause of acute coronary syndrome. Treatment modalities include conservative approach, percutaneous coronary intervention (PCI) or CABG. Treatment approach is individual and it depends on manifestation and patient`s clinical status.
Key words. SCAD, intramural hematoma, intimal tear, acute coronary syndrome, PCI.

TRANSULNAR ARTERY ACCESS WITH IPSILATERAL RAO FOR PERCUTANEOUS CORONARY INTERVENTIONS

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Background: Transulnar arterial approach (TUA) is a safe and successful alternative to TRA for percutaneous coronary interventions. Our purpose was to prove the safety and success of ulnar approach with ipsilateral RAO.
Materials and methods: We included 103 consecutive patients that underwent PCI through primarily chosen right ulnar approach with ipsilateral radial occlusion. Clinical and procedure characteristics, access site bleeding and ischemic complications and failure mode of initial TUA was examined. We performed functional assessment of the arm using JAMAR dynamometer for hand strength and self-assessment with QUICK DASH questionnaire. Clinical and duplex ultrasound evaluation for ulnar patency were examined.
Results: Mean age of patients was 62.9 ± 9 years with 30% females. Previous TRA was present in all patients, 32% of patients had multiple previous TRA (>3), with 10 being the largest number. Procedural success through primary chosen TUA with ipsilateral RAO was 96%. Procedural success after UA puncture was 100%. 20% of patients needed over 2 punctures to obtain successful access. Access site bleeding complications according to EASY score criteria over 2 were detected in 4%. On duplex ultrasound follow up there wasn't a single case of UAO detected. There were no clinical or ischemic hand complications seen during long-term follow up. Dynamometer values of arm strength showed a statistically non-significant small decrease in values

12 hours after procedure (72.6±23 vs.71.9p, p=0.029), but without changes in initial strength on follow up on 1, 6 and up to 1 year after procedure. QUICK DASH self-assessment showed no significant changes in the follow-up period.
Conclusion. Thorough hand function assessment showed that transulnar approach with ipsilateral radial occlusion is safe and successful for percutaneous angiographic procedures with minor bleeding complications.
Indexing words: Transulnar access, Transradial access, Radial artery occlusion.

DISTAL RADIAL ACCESS – THE NEW FRONTIER

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Introduction: Use of different access sites for coronary intervention have been changing over the last several decades. Access changed from transfemoral to transradial approach (TRA), as it has proven to have less access site complications, decreased mortality rate and is cost-effective compared to the transfemoral approach. In 2015, the European Society of Cardiology guidelines for the management of acute coronary syndrome gave class I recommendation to use the TRA as the preferred method of access for any percutaneous coronary intervention irrespective of clinical presentation. However, the use of TRA is associated with certain complications: radial artery occlusion (RAO), radial artery spasm, radial arterial perforation, radial artery pseudoaneurysm, arteriovenous fistula, bleeding, nerve damage, and complex regional pain syndrome. In the past few years there are publications who showed safety, feasibility and lower access site complications when using distal radial access (dTRA) for cardiac catheterization . However limited data is available regarding the technique of distal radial artery access in patients presenting with Acute coronary syndrome, treated with primary percutaneous coronary intervention.
This study investigated the feasibility, safety, and potential benefit of dTRA in patients acute coronary syndrome. 152 patients had primary PCI through distal transradial access. The success rate of the puncture was 98.7% (150/152). Rate of radial artery occlusion 0%, and local hematoma according to EASY score (grade I: 15.13%, grade II; 0%, grade III : 0%, grade IV,: 0% ,Radial artery spasm (grade I 7.2%, grade II 2.7%, grade III 1.3%, grade IV 0%) access site crossover 2 patients), access time 38.6 sec,time of hemostasis 30-60 min.
Conclusion: dTRA is safe and successful in patients with acute coronary syndrome, when performed by experienced radial operators, with previous experience with dTRA.
Key words: Distal Radial Access

INTERESTING CASES FROM THE ECHO/VASCULAR LAB

RARE AND UNUSUAL FINDINGS IN THE ECHO LAB- HOW TO RECOGNIZE THEM AND WHAT TO DO ABOUT IT

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Cardiac sonographers who work in a busy echo-lab can frequently encounter incidental or rare and unusual findings. Recognizing them requires broad knowledge and experience in the field of cardiology and echosonography. Furthermore, making a decision for further treatment highly depends of the importance of the finding and the possible consequences for the patient in the future.

Case 1. 38 y/old female patient was referred for echocardiographic evaluation because of loud systolic ejection murmur best heard at the right upper sternal border. The patient consulted physician because of atypical chest pain 10 days prior the evaluation. She had an old echocardiographic evaluation 3years prior this event, which was described as normal. However the echo revealed normal tricuspid aortic valve with signs of mild subvalvular obstruction. The presence of subvalvular aortic membrane was obtained in multiple ehocardiographic views. The mean gradient across the membrane was 25mmHg, there were no signs of LVH ant there was no aortic regurgitation.

This type of congenital heart disease is often discovered incidentally and in cases with no or mild obstruction, it can remain stabile for a long time. It can be isolated, or associated with other cardiac defects. Nevertheless, our patient did not appear to have any other congenital anomalies.These kind of patients should be followed periodically, and some of them will eventually require surgery if the gradient approaches 50mmHg. Another indication for surgical treatment is the development of severe AR.

Echocardiography is a key diagnostic tool for the diagnosis of SAS,estimation of the degree of obstruction, assessment of dimensions and function of the LV, and determination of the integrity of the aortic and mitral valves.

Case.2 20y old female was referred for evaluation under the suspicion of cardiac contusion after a motor vehicle accident. The patient had a sharp,

stabbing chest pain that worsens during inspiration and shortness of breath. She had a proximal femoral fracture detected on X ray, and because of the symptoms she underwent chest CT prior the consultation with cardiologist but the results from the recording were not available at the time of the examination.

She had normal ECG, no signs of heart failure or shock and normal levels of hs troponin. Her physical examination revealed diminished breath sounds on the right side of the chest .The echocardiographic exam didn't show any abnormalities. Bedside LUS was performed after the echo and it revealed right-sided absence of lung sliding and barcode sign, findingc suggestive of pneumothorax . The results from the chest CT confirmed the suspicion and the patient was immediately treated with chest drain insertion.

Case 3. 72y/old female patient was referred for echocardiograhic evaluation because of shortness of breath . She had a surgical removal of cardiac tumor 4 months prior this visit at another hospital , which was initially believed that its myxoma. The hystopathological analysis revealed LA fibrosarcoma which was completely removed ,however 2 months later the echo showed mass (15x18mm) and patient started with chemotherapy. The current echo findings were suggestive of rapid enlargement of the mass which was attached on the left atrial free wall.(23x36mm) and the patient was advised for cardiosurgical and oncological reevaluation. Left atrial sarcomas are one of the rarest primary cardiac tumors with aggressive nature, and are often resistant to treatment.

We presented 3 rare and unusual cases from our echocardiography department, each of them per se highlights the importance of using the imaging techniques in order to detect the pathologic findings, but also the significance of the basic steps , thorough physical examination before referring the patient for further diagnostic work up with different imaging techniques.

Keywords: rare cases, subaortic membrane, fibrosarcoma, pneumothorax

ECHOCARDIOGRAPHIC PARAMETERS (SPECIFITY AND SENSITIVITY) WITH SPECIAL EMPHASYS TO RIGHT HEART CHAMBER STRUCTURES IN PATIENTS WITH CHRONIC OPSTRUCTIVE PULMONARY DISEASE (COPD)

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Aim: The aim of the study was to evaluate which echocardiographic parameters in assessment of right ventricular function may contribute to risk stratification in patients with severe/very severe chronic obstructive pulmonary diseases (COPD) in correlation with the degree of specificity and their sensitivity. These echo-parameters are important as markers for disease progression in different manner.

Material and methods: We have analysed 94 patients with COPD devided in 4 groups according to Gold classification system. Gold I and Gold II class had 18 patients and Group III and IV 28/30 patients. All patients were evaluated by basic and advanced echocardiography parameters (13 in number) that are important for disease progression. Thirteen echo-parameters were evaluated due to their sensitivity and specificity: right ventricle (basal diameter), right atrium, right atrial area, S' (tissue doppler) of the right chamber, TAPSE, FAC %, SPAP, Vmax of tricuspid regurgitation, Acceleration time-AT of pulmonary artery, Pulmonary vascular resistance -PVR, Myocardial performance index-MPI of the right venricle, Global strain of the right ventricle-GL strain, collapsibility of vena.cava inferior >50 %.

Result: Evaluation of abnormal values and potential use of each echo-parameter was made as a predictor for developing more seriose stage of COPD (class III/IV). Parameteres with highest degree of sensitivity were: acc. time (AT) of pulmonary artery (100%), pulmonary vascular resistance-PVR (96.5%). Parameteres with the highest specificity index for disease progression were: right atrium and ventricle diameter (100 % and 97.22%) , right atrial area(91.66%) , S' of the right chamber(100%), TAPSE (100%), FAC (100%), SPAP(100%), V max of tricuspid regurgitation (94. 4%).Our study confirmed the significance of Myocardial performance index (MPI) of the RV , global strain of RV and collapsibility of v. cava inf>50% as parameters with sensitivity and specifity for disease progression in high percentage.

Conclusion: Echocardiography is a non invasive and repetitive method for evaluation and close monitoring of patients with COPD. Special emphasys was given to patients with severe/ very severe stage of COPD(III/IV)where echocardiographic changes are more prominent. All this indicates that new and more subtile echo-parameters such as MPI and global strain of the right ventircle help us to discover reduction of longitudinal strenght of the right

heart in COPD patient but in early subclinical phase of the disease. This study showed that echocradiography has power to show structural changes of the right heart in patients with COPD even when there is subclinical reduction of the right ventricular function.

HOW LONG IS ENOUGH TO ANTICOAGULATE IN PATIENTS WITH VTE AND INHERITED THROMBOPHILIA?

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INTRODUCTION After an initial 3 to 6 months of anticoagulation for venous thromboembolism (VTE), clinicians face an important question: "How long is enough to anticoagulate?".

CASE REPORT We present a case of 41 y.o. male, admitted for first time at our Clinic with symptoms of pain and oedema of the left leg last couple of days, and dyspnea last two days. The patient has unprovoked deep vein thrombosis (DVT) 14 years ago, treated with anticoagulation therapy, followed by ASA. His mother has a history of DVT.

On physically exam, remarkable was the swollen left leg. TA=130-80mmHg. On EKG sinus tachycardia(114bpm) and incomplete RBBB.

Doppler ultrasound showed thrombotic masses in left common femoral and popliteal vein, and echocardiography showed enlarged right ventricle and mild tricuspid regurgitation. From the laboratory exam notable was high CRP, and elevated D-dimers. CT angiography of pulmonary blood vessels showed centrally located intra-luminal thrombi at the bifurcation level of both main pulmonary arteries and also in lobar branches. According the PESI Score, the patient was with low clinical risk and we decided to start DOAC by protocol. After 2 weeks, the patient felt clinically well, the ultrasound shown recanalization of the thrombi in the veins and was discharged from hospital. After 6 months doppler ultrasound and CT angiography on pulmonary vessels shown complete resolution of the thrombi. In the meantime, genetic investigations shown presence of homozygous gene mutation for Factor V Leiden and Prothrombin. We decided to continue with DOAC indefinitely.

CONCLUSION For patients with a low to moderate bleeding risk and a second episode of unprovoked VTE and "high risk" thrombophilias, indefinite anticoagulation is recommended,

Keywords: venous thromboembolism, DOAC

CAROTID STENTING IN HIGH RISK PATIENT-DUS ASSESSMENT

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Purpose: Transradial carotid artery stenting has been validated as an acceptable alternative to carotid endarterectomy in patients at high risk for open surgery. The utilization of carotid stenting as a less invasive technique has progressively increased.

Methods and Results: In this report we present a 63-year-old man with neurological symptoms and critical stenosis. Carotid duplex ultrasonography demonstrated marked stenosis of the proximal right internal carotid artery and contralateral occlusion. On grayscale, this stenosis was characterized as a uniformly echogenic plaque (homogeneous plaque). Due to the increased surgical risk according SAPPHIRE criteria in this patient carotid stenting was performed. We used right radial access and double-layer micromesh Roadsaver stent was successfully implanted, without any peri and post-procedural complications. At six months and 1 year follow up there were no additionally registered ischemic events and in-stent restenosis.

Conclusions: Management of CAS is challenging in high-risk patients. When there are several factors that make the patient with increased surgical risk for endarterectomy, carotid stenting is a reasonable and safe alternative for revascularization.

Keywords: carotid artery stenting, carotid stenosis, duplex ultrasonography, high risk, radial approach

NEW GUIDELINES 2021/2022

ВОДИЧИ ЗА КАРДИО-ОНКОЛОГИЈА 2022

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Потребата за кариолошка проценка на пациентите кои се подложуваат на онколошки третман следењето на срцеата функција како и проценката на ризик од васкуларни компликации се дел од новите водичи по кардио-онкологија. Еден значаен дел опфаќаат и профилактичките методи како и предлог терапијата кај онколочките пациети со кардиоваскуларно засегање. Кардио-онкологијата преставува нова интердисциплинарна област во медицината која побарува засебно внимание и знаење.

INTERVENTIONAL CARDIOLOGY IN THE CURRENT GUIDELINES OF THE EUROPEAN SOCIETY OF CARDIOLOGY

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During the past two pandemic years, the activities and new guidelines in cardiology were presented at the congresses of the European Society of Cardiology (ESC), but there was no adequate application and adherence to the guides globally in the cardiology community, including in our country. The reason for that was precisely the pandemic, which changed the practices and the way of using resources globally in medicine, including cardiology.

It is time to move our cardiology clinical practice back toward guideline adherence, so in this presentation we will focus on the current ESC guidelines and recommendations related to interventional cardiology.

Several different guidelines have been published in the past period, and in each of them there is a larger or smaller part that refers to recommendations

for the use of resources and treatments of interventional cardiology, which modifies the separate guide for myocardial revascularization published four years ago. The current guidelines for the treatment of chronic and, not long since 2020, the guide for acute coronary syndrome, as well as the guide for chest pain, set out even more precisely the recommendations and which algorithm we should follow in order to achieve better results.

In the intervention-focused presentation, we will address all current guidelines in order to increase our cardiology community's adherence to current recommendations in daily practice, as part of the main theme of this symposium.

Keywords – guidelines, recommendations, ESC, interventional cardiology

2022 ESC GUIDELINES ON CARDIOVASCULAR ASSESSMENT AND MANAGEMENT OF PATIENTS UNDERGOING NON-CARDIAC SURGERY

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The annual volume of major surgery worldwide is estimated to be more than 300 million patients (about 5% of the world population), which is a 34% increase from 2004 to 2012.Nearly 74% of these operations are performed in countries spending substantial amounts on health care. The prevalence of comorbidities, the clinical condition of patients before surgery, and the urgency, magnitude, type, and duration of the surgical procedure determine the risk of peri-operative complications. In a recent cohort study of 40 000 patients aged ≥45 years

undergoing inpatient NCS, one of seven experienced a major cardiac or cerebrovascular complication at 30 days. Cardiovascular complications can particularly occur in patients with documented or asymp-tomatic coronary heart disease, left ventricular (LV) dysfunction,

valvular heart disease (VHD), and arrhythmias, who undergo surgical procedures that are associated with prolonged haemodynamic and cardiac stress. In the case of peri-operative myocardial ischaemia, three mechanisms are important: (i) oxygen supply–demand mis-match on the background of coronary artery stenosis that may become flow-limiting by peri-operative haemodynamic fluctuations; (ii) acute coronary syndrome (ACS) due to stress-induced erosion or rupture of a vulnerable atherosclerotic plaque in combination with proinflammatory and hypercoagulable states induced by sur-gery, and the haemodynamic distress resulting from fluid shifts and anaesthesia; and (iii) surgery-associated bleeding risk requiring interruption of

antiplatelet therapies, which might lead to stent thrombosis among patients undergoing NCS after recent coronary stent placement. Left ventricular dysfunction and arrhythmias may occur for various reasons at all ages. Because the prevalence of CAD, VHD, heart failure, and arrhythmias increases with age, perioperative CV mortality and morbidity are predominantly an issue in the adult population undergoing major NCS.

The 2022 ESC Guidelines on cardiovascular assessment and man- agement of patients undergoing NCS focus on the pre-operative CV risk assessment and peri-operative management of patients in whom cardiovascular disease (CVD) is a potential source of complications during NCS.

Key words: Non cardiac surgery, cardiovascular disease, heart failure, valvular heart disese

JOIN SESSION OF THE MACEDONIAN SOCIETY OF CARDIOLOGY AND ASSOCIATION OF CARDIO-THORACIS, VASCULAR AND ENDOVASCULAR SURGERY: HIGHLIGHTS IN INFECTIVE ENDOCARDITIS

INFECTIVE ENDOCARDITIS - CHALLENGE TO DISCOVER THE CAUSE, RECOGNIZE IT AND PREVENT IT

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Infective endocarditis (IE) is now the third or fourth most common life-threatening infectious disease. IE is an infection of the cardiovascular endothelium and occurs on heart valves, in the cardiac chambers or on the intimal surface of blood vessels. It is a rare but deadly disease and is often difficult to diagnose and as a result has a high mortality. IE is an uncommon disease, with an estimated incidence of 3.1 to 3.7 episodes per 100 000 inhabitants/year. It is increasing in incidence due to an increase in vascular and cardiac interventions and devices. It is also becoming a disease in an elderly population with comorbidities like diabetes. Left sided valves are the predominant structures affected with growth of infective vegetations and valve destruction. Right sided valves are affected in intravenous drug use. In the last few decades, the spectrum of heart diseases predisposing to infective endocarditis has changed, since degenerative heart disease is the most common valve disease, and there are an increasing number of infective endocarditis patients without previously known valve disease. The organisms have changed over the decades from Streptococcus species to Staphylococcus. Other miscellaneous bacteria and fungi may also cause IE. However between 5 and 24% of suspected IE cases yield negative blood culture results; there are several possible explanations for this, including prior antibiotic therapy, fastidious and cell-dependent organisms or fungi. The clinical presentation is very diverse ranging from cardiac sudden death to heart failure, pyrexia, weight loss and stroke, so clinical suspicion is important in a patient with risk factors. Complication include myocardial, cerebral, splenic, renal and peripheral infarction due to emboli. Echocardiography, serology, PCR and blood cultures are the cornerstone of diagnosis. Diagnosis and thus treatment relies on clinical, laboratory and imaging techniques. As a result of substantial epidemiological changes, few cases of infective endocarditis can be prevented by antibiotic prophylaxis.

Key words: infective endocarditis, heart valves, heart disease.

ANALYSIS OF INFECTIVE ENDOCARDITIS PATIENTS AT THE UNIVERSITY CLINIC OF CARDIOLOGY IN 2022 - A PILOT STUDY

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Introduction. Infective endocarditis (IE) is infectious disease of the heart caused by bacteria, which can damage the heart valves, but also myocardium and pericardium can be involved.

The aim of study was to analyze the patients with IE who were hospitalized in University Clinic of cardiology in 2022.

Material and methods. We analyzed 12 patients hospitalized in University Clinic of cardiology, Skopje, admitted and treated with infective endocarditis from the 1-st of January to the 30-th of September. All patients were analyzed according to gender and age, as well as according to clinical signs. All patients had a blood culture taken according to the protocol and the diagnosis was confirmed according to Duke's criteria.

Results. During the 1-st of January until the 30-th of September, 11 patents with IE were analuzed, 10(91%) patients were male and 1 (9%) female. The age analysis showed that 40% of patents were from 24-46 years old, 30% from 47-70 years old and 20% were older than 70 years old. According to the symptoms we found that 90% of patients were presented with chest pain, 90% with dyspnea , 100% had myalgia, 90% had fatigue, 100% presented fever (37.0-38.5: 50% , 38.6-40°C: 30% , >40°C: 20 %). Valve vegetation discovered by echocardiography was found in all patients with different characteristics in terms of size, shape, mobility, localization. In terms of localization 55% vegetations were localized on the Ao valve, 35% on mitral valve, and 20% of tricuspid valve. We had positive hemoculture in 40% of patients and in 60% they were negative. After different antibiotics protocol treatment (duration and type) 45% patient had urgent surgical intervention (45%). During the treatment 80% stay alive, and 20% died.

Conculsion. Diagnosis and treatment of patients with IE is very challenging and should be individualized in terms of choice of antibiotics and timing of valvular surgery.

Key words: infective endocarditis, vegetation of the heart valve

ИНФЕКТИВЕН БАКТЕРИСКИ ЕНДОКАРДИТИС СО ГОЛЕМА МОБИЛНА ВЕГЕТАЦИЈА – КОГА ДА СЕ ОПЕРИРА?

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Вовед. Инфективен ендокардитис (ИЕ) е болест која се поврзува со висок морбидитет и морталитет без оглед на достапниот третман. Еден од најчестите компликации се емболичните настани, кој можат да бидат животозагрозувачки. Тие се појавуваат кај 13 % до 49 %% од пациентите со ИЕ. Многу студии ја имаат опишано големината на вегетацијата како прогностички фактор за појава на емболичен настан. Тимот за ендокардитис составен од неколку специјалности, вклучувајќи кардиолози, кардиохирурзи, имиџинг специјалисти, микробиолози, невролози, експерти за срцеви болести и останати спецјалности е многу важен во донесување одлука за оптимално време за хируршка постапка.

Приказ на случај. Ние претставуваме случај на пациент, маж, 28 годишна возраст. Во последните 3 месеци, пациентот имал повремено покачена телесна температура до 38 степени пропратена со треска, за која употребувал аналгетици. Пред 3 месеци, имал стоматолошка процедура, по коа добил ифекција на увото на истата страна, за која бил лекуван со антибиотска терапија краток период. Три дена пред хоспитализација на Универзитетската Клиника за Кардиологија, пациентот имал висока телесна температура, над 39 степени, со треска, палпитации и замор. На ургентниот ехокардиографси преглед била дијагностицирана огромна мобилна вегетација, 25 мм долга. Пациентот имал бикуспидна аортна валвула и умерена аортна регургитација. Левиот вентрикул бил зголемен (LVEDd 61 mm), со зачувана функција. Пациентот бил хоспитализиран на Универзитетската Клиника за Кардиолигија. Пред да се започне со антибиотска терапија, биле земени хемокултури, согласно протоколот. Хемокултурите биле позитивни на streptococcus viridians. На почетокот беше ординирана двојна антибиотска терапија емпириски, и по добивање на резултатите од хемокултурата продолжено е со истата терапија со оглед на сензитивноста на бактеријата кон терапијата. Леукоцитите на прием биле 12.8 10^9/L а CRP било 128mg/l. Пациентот бил во добра општа состојба, но направи почетни знаци за релапс. Во консултација со кардиохируршкиот тим пациентот бил опериран на шеснаесеттиот ден од хоспитализацијата. Иако пациентот беше клинички стабилен, имаше тежок и долг постоперативен период, со развој на срцева слабост. Сега, по 2 месеци, пациентот има подобрена левокоморна систолна финкција, подобрена ежекциона фракција, но сепак има промена во лонгитудилната левокоморна функција.

Заклучок. Околу половина од пациентите со ИЕ се подложени на оперативен третман за време на болничкото лекување. Важна е рана дискусија со оперативниот тим во сите случаи на комплициран ИЕ. Голема мобилна вегетација е инта индикација за оперативен третман.

Клучни зборови. Инфективен ендокардитис, вегетации, хирургија

BACTERIAL ENDOCARDITIS OF BICUSPID AORTIC VALVE COMPLICATED WITH PANCARDITIS

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INTRODUCTION: Infective endocarditis (IE) is more prevalent amongst adults with valve malformation. Although rare, IE can be complicated by pancarditis, which occurs as a complication in immunocompetent adults and has a high mortality rate, reaching up to 40% even in treated patients, regardless of their age. One of the most common causative pathogens is Staphylococcus aureus (SA).

CASE REPORT: We represent a case of a 53 – years old male patient with urosepsis and wound infection caused by SA, complicated by development of endocarditis of bicuspid aortic valve, myocarditis and pericarditis. His previous medical history shows diabetes mellitus with recently worsening renal function. Echocardiography on admission revealed severely reduced left ventricular systolic function (HFrEF) with an ejection fraction (EF) of 26% and a small pericardial effusion. A vegetation, that was not mobile, was present on the right coronary cusp of a bicuspid aortic. The initial laboratory showed elevated inflammatory markers with C- reactive protein (CRP) 220 mg/L, leucocytes (LEU) 14.4 with neutrophilia, an elevated Troponin I (424 ng/L) and NT – pro-BNP (32673 pg/ml). Glomerular filtration rate (GFR) was 25 ml/min. The patient was already receiving broad spectrum parenteral antibiotic therapy for one week prior hospitalization. Since the heart failure was not due to valvular disease, we interpreted the condition as acute myocarditis. Unfortunately, it could not be confirmed by magnetic resonance. Because there was no valvular malfunction, nor high risk for septic embolism, we decided on conservative medical management with broad spectrum dual parenteral antibiotic therapy. During his course of treatment an improvement of the inflammatory markers and cardiac function was noted. Controlled echocardiography showed improved EF of 40% with no pericardial effusion. Unfortunately, there was a worsening in the renal function and the patient ended on hemodialysis.

CONCLUSION: Community- acquired SA is an etiology for infective endocarditis

that rarely leads to pancarditis in patients with no predisposing factors, such as previous cardiac surgery, implanted intracardiac device or immunodeficiency. Patients with infection entry point warrant close monitoring and high suspicion for cardiac involvement when developing symptoms of heart failure. Mortality rate in delayed treatment reaches up to 85% and is usually due to cardiac tamponade, systemic toxicity, cardiac decompensation and constriction. Prompt diagnosis and early treatment is of atmost importance.

KEY WORDS: Pancarditis, bicuspid aortic valve, endocarditis, urosepsis, wound infection, staphylococcus aureus

POSTER SESSION

PVCS AS THE FIRST MANIFESTATION OF UNDERLYING STRUCTURAL HEART DISEASE IN YOUNG ADULTS

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Introduction: Identifying heart failure (HF) in young patients can be challenging, most often due to difficulties in the detection of the signs and symptoms. In young adults, HF is uncommon despite rising incidence in the last decade and still often initially misdiagnosed in favor of more common diagnoses.

Case report: A 36-year-old female patient with no previous medical history presented to the emergency room with fatigue, dizziness, and two episodes of syncope in the last month. EKG revealed sinus rhythm with HR of 82/min and VES bigeminy, TA=90/60 mmHg. The 24h "Holter" report revealed sinus rhythm throughout the whole period of monitoring with monomorphic VES (inferior axis early precordial transition) in over 30% of the total number of beats. The carotid doppler was with normal findings. The echocardiography revealed an enlarged left ventricular chamber with slightly reduced global systolic function and EF 55%, the rest of the finding was normal. The N-terminal proBNP was 357.5 pg/ml (ref. value 0-125). The MRI stated slightly dilated LV and reduced EF (results that favor post-myocarditis fibrosis). The patient was discharged with a therapy consisting of a diuretic, angiotensin receptor blocker, and beta-blocker.

Conclusion: Although PVCs usually have a benign prognosis, especially in young people, a clinician should always evaluate each patient individually. Sometimes PVCs may be the only clinical presentation of structural heart disease. We should consider as well that frequent PVCs may induce ventricular dilatation and dysfunction thus producing a clinical presentation of heart failure.

Keywords: Premature ventricular complex, heart failure

PAPILLARY MUSCLE RUPTURE AS A COMPLICATION OF BARLOW'S DISEASE

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Introduction: Mitral regurgitation (MR) is the second most common valvulopathy worldwide, which can be divided into primary and secondary. According to Charpentier's classification, the primary MR is further divided into three types. Type II, which includes Barlow's disease, is described as excessive mobility of the mitral valve (MV) leaflets. Morbus Barlow is a common form of degenerative disease, with an incidence of 2-3% of the general population. Echocardiography plays an important role in its diagnosis. It is a usually benign condition, with only a few severe complications.

Case report: A 75-year-old male with a history of MR, for more than ten years. On admission the patient presented with severe fatigue and dyspnea with signs of heart failure and pleural effusion. On auscultation a systolic murmur was noted, on all the precordium. The ECG revealed sinus rhythm with HR of 71/min and intermittent VES. An immediate transthoracic echocardiography was performed showing myxomatous degeneration of both MV leaflets and a prolapse of the posterior leaflet. A severe MR was detected with a presumption of papillary muscle rupture. It also revealed enlarged left atrium and ventricle (LVEDd 67mm, LA 46mm), with preserved systolic function (EF~54%) and tricuspid regurgitation accompanied by pulmonary hypertension. The laboratory analyses were within normal ranges. The patient was transferred to a cardiovascular surgery clinic, where an immediate MV repair was performed.

Conclusion: Barlow's disease is a common echocardiography finding. Although a benign condition, it can rarely present with serious complications such as papillary muscle rupture, ventricular arrhythmias and even sudden cardiac death. Early recognition and treatment play a key role in patient survival and overall prognosis. Echocardiography is the first imaging used for detection of Barlow's disease and other mitral valve diseases.

Key words: Barlow's disease, Papillary muscle rupture, Echocardiography

STENT LOSS AND RETRIEVAL DURING PERCUTANEOUS CORONARY INTERVENTION

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Background Studies shows the incidence of stent loss 0.8-2.8% occurred in PCI procudure. In the majority of cases, stent loss is caused by unfavorable vessel characteristics while device-related reasons are relatively rare. With applying proper maneuvers in almost all cases the lost stent can bee retrieved, redeployed or crushed.

Case Report A 67-year-old woman had the history of DM, CAD, s/p PCI LAD. Under the physician's advice, the patient was admitted for percutaneous coronary angioplasty on the left circumflex coronary artery and second obtuse marginal branche (LCX-OM2). After predilatation of the critical stenosis at the LCX-OM2 with balloon 2.75x20mm, disection of proximal LCx occurred. Drug-eluting stent (DES) 3.5x24mm was used in order to cross the critical stenosis. Resistance was noted during the stent advancement. In atemt to retrieve the stent, the stent dislodgement occurred in the left main coronary artery (LM) and the wire position on the stent was lost. After visualization of the stent lost into the ostioproximal part of LM prolapsing into the aorta successful recross with GW into the stent was performed. Balloon 1.5x20mm was advanced and inflated after the stent and whole system GC, GW, balloon and stent were retrieved. Unfortunately the stent couldn't got into the femoral sheet (FSH) and was lost at the end of the FSH. The left femoral artety approach was used to catch the lost stent with lasso and than was retrieved outside. After retrieval of lost stent deployment of DES in critical stenosis of LCX-OM2 was successfully performed. The patient was asymptomatic during the whole procedure.

Conclusion with applying proper maneuvers in most of the cases the lost stent can bee retrieved.

ACUTE MYOCARDITIS AFTER PFIZER-BIONTECH COVID-19 M-RNA VACCINATION

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Introduction

Coronavirus disease-2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), has impacted the global population, leading to a worldwide pandemic affecting millions of lives in one way or another. This novel coronavirus predominantly affects the respiratory system, causing acute respiratory distress syndrome in severely affected patients, which can result in death from respiratory failure. Cardiovascular complications, such as myocarditis, heart failure, acute coronary syndromes (ACS), pulmonary embolism, stress cardiomyopathy and arrhythmias, have been described in these patients. COVID-19 vaccines were developed in record time to control and reduce the spread of the pandemic and therefore prevent such complications. Among currently available COVID-19 vaccines, mRNA-based vaccines have shown high efficacy against SARS-CoV-2 infection and severe disease in clinical trials and real-world setups. However, according to the World Health Organization (WHO) vaccine safety committee report, a small proportion of individuals, especially young adults, mostly males, may develop viral myocarditis, more often after receiving the second dose of mRNA COVID-19 vaccines. The estimated incidence per million was 40.6 cases among males and 4.2 cases per million among females aged 12-29 years.[2] Most cases of myocarditis were mild or moderate in severity. Symptoms can include chest pain, shortness of breath, or palpitations. In rare cases, myocarditis can lead to cardiac arrhythmias.[3]

Case report

A 24-year-old male with no medical history was admitted to our emergency department (ED) with a chief complaint of chest pain. The day before admission, he developed acute midsternal chest pain radiating to the jaw that lasted for ~30 minutes and was associated with nausea and vomiting. He had no history of recent viral illness symptoms and no known COVID-19 exposures. He received his second Pfizer-BioNTech COVID-19 vaccine dose three weeks ago. ECG revealed ST-segment elevation in anterior and lateral leads. Notable laboratory studies included elevated cardiac biomarkers: high-sensitive troponin I >50000 ng/L, normal range: <34,2 ng/L, creatine kinase (CK) 2251 U/L, normal range: <173 U/L, creatine kinase-MB (CK-MB) 227 U/L, normal range: <25 U/L, Non-terminal-pro b-type Natriuretic Peptide (NT-proBNP) 235 pg/ml, normal range: <125 pg/ml, lactate dehydrogenase (LDH) 726 U/L, normal range <248 U/L, myoglobin 369 ng/ml, normal range <75 ng/ml, elevated transaminases: aspartate aminotransferase (AST) 286 U/L, normal range: <34 U/L, alanine aminotransferase (ALT) 51 U/L, normal range: <45 U/L. The transthoracic

echocardiography revealed mildly reduced left ventricular systolic function with ejection fraction (EF) 52%, normal range: >55%, borderline left ventricular (LV) global longitudinal strain (GLS) -17%, and mildly hypokinetic left ventricular anterior and lateral wall. A coronary angiography was performed and revealed absolutely normal coronary arteries without significant stenosis. Results of a nasopharyngeal SARS-CoV-2 PCR were negative; antibody testing revealed positive neutralizing SARS-CoV-2RBD (Receptor-Binding Domain) IgG antibodies (>100,0 AU/ml, normal range: <1,00 AU/ml). All other viral diagnostic studies were negative. In order to provide definitive diagnosis, cardiac magnetic resonance imaging (MRI) was indicated. It revealed delayed gadolinium enhancement at the left ventricular anterior, lateral and mid- to apical segment of inferior wall. There was evidence of myocardial edema on T2 mapping and mild pericardial enhancement. The presence of elevated cardiac markers and inflammation on cardiac MRI prompted the diagnosis of acute myocarditis. Additional evaluation included a 24-hour ambulatory blood pressure and heart rate monitoring that revealed normal values of blood pressures over 24 hours and normal sinus rhythm with occasional premature ventricular contractions (PVCs), one triplet of PVCs and nodal rhythm with a rate of 50 beats per minute during sleep but was otherwise normal. He remained well appearing, hemodynamically stable and cardiac markers level had normalized throughout the 14-day hospitalization. He was treated with 6 mg dexamethasone intravenously, followed by dexamethasone 4 mg orally once daily over 2 weeks, B-blocker and ACE inhibitor. He also received colchicine 0,5 mg orally twice daily and aspirin 400 mg orally once daily, and was discharged with a 3-month prescription for colchicine 0,5 mg orally once daily, 2-week prescription for aspirin 400 mg orally once daily and then aspirin 100 mg once daily, lower dosage of beta-blocker nebivolol 2.5 mg orally once daily, and angiotensin-converting enzyme (ACE) inhibitor perindopril 2 mg once daily, as well as gastroprotective drug famotidine 40 mg once daily. At one-month, 6 month and 1 year follow-up, the patient remained asymptomatic, with normal ECG and normal echocardiography finding .

Discussion

Vaccine-induced myocarditis is an extremely rare side effect that has been reported in the literature with a variety of vaccines such as tetanus, smallpox, and influenza vaccines. This, however, has not been reported in the clinical trials of the Pfizer-BioNTech COVID-19 mRNA vaccines. It has been postulated that the underlying mechanisms for vaccine-associated myocarditis include a molecular mimicry between viral spike protein or non-specific inflammatory response. The occurrence after the second vaccine dose raises the possibility of a hypersensitivity response.Our patient had typical symptoms, ECG pattern, biomarkers and imaging findings of myocarditis. He was diagnosed with vaccine-associated myocarditis because of the strong temporal relationship of systemic inflammatory symptoms and cardiac injury following administration. Ischemic mechanisms were excluded by coronary angiogram. The ECG changes were

diffuse and transthoracic echocardiogram showed a decreased left ventricular ejection fraction. Treatment with beta-blocker and angiotensin converting enzyme inhibitor was initiated. Cardiovascular magnetic resonance (CMR) is the gold standard and the primary tool for noninvasive assessment of myocardial inflammation in patients with suspected myocarditis showing late gadolinium enhancement associated with myocardial oedema involving most of the myocardium and mild pericardial enhancement. These results satisfied two of the three Lake Louise tissue criteria for myocarditis diagnosis. Endomyocardial biopsy was not performed as the patient experienced mild symptoms, had no hemodynamic or electrical instability, and responded promptly to initial management, therefore would have incurred unnecessary procedural risk. Steroids and high-dose NSAID use were considered as a treatment. Colchicine was utilized as the patient's predominant symptom was chest pain and there was evidence of pericardial enhancement on magnetic resonance imaging.

In the medical literature, there have been three papers detailing myocarditis following administration of Pfizer-BioNTech COVID-19 vaccine. In a review of reports to VAERS, a US spontaneous reporting (passive surveillance) system that functions as an early warning system for potential vaccine adverse events, between December 2020 and August 2021, myocarditis was identified as a rare but serious adverse event that can occur after mRNA-based COVID-19 vaccination, particularly in adolescent males and young men. However, this increased risk must be weighed against the benefits of COVID-19 vaccination.[14] In April 2021, the Center for Disease Control and Prevention (CDC) issued recommendations for clinicians regarding reported cases of myocarditis and pericarditis after the Pfizer-BioNTech mRNA COVID-19 vaccines stating that most cases responded well to medical therapy and rest, and that most occurred in young male adolescents and young adults, more commonly after the second dose. The CDC is currently investigating these reports, but continues to recommend the vaccine for everyone aged 12 years or older.[15] As the rapid vaccine rollout continues, further data may help shed new light on whether myocarditis could be an adverse effect of Pfizer-BioNTech mRNA-COVID-19 immunization. Pfizer-BioNTech mRNA-COVID-19 vaccines have so far shown to be relatively safe and effective. The benefits of administering the vaccine will still overwhelmingly outweigh the risk of developing myocarditis, if such an association was to be established; however, clinicians should be aware of this potential relationship.

Conclusion

The exact mechanism of myocarditis in young men who received the second dose of mRNA COVID-19 vaccine is not yet known. However, this is a rare complication and most people generally recover quickly requiring only supportive treatment. In contrast, the risk of developing myocarditis from the viral infection is much higher. According to the data from the Vaccine Adverse Events Reporting System, the CDC has estimated that the incidence of myocarditis is 1.2 cases per 100,000

among vaccine recipients between the ages of 18 and 29 years. Among available imaging techniques, echocardiography and cardiac magnetic resonance, along with the cardiac biomarkers are established and highly valuable diagnostic tools in patients with clinically suspected myocarditis.

CASE REPORT: FOLLOW UP OF A PATIENT WITH OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Hypertrophic cardiomyopathy (HCM) is a complex and relatively common myocardial disorder defined by left ventricular hypertrophy in the absence of a secondary cause. It often goes undiagnosed because patients have only few, if any, symptoms such as shortness of breath, chest pain or changes in the heart's electrical system, which is resulting in life-threatening arrhythmias or sudden death.

Background: A 63-year old female was presented with chest pain and dyspnea. The patient had existing *comorbidities including hypertension and breast cancer which was surgically treated.*

Material and Methods: The patient was already diagnosed with HCM by other medical center and treated with optimal medical therapy. However, the symptoms were refractory to medication.

Electrocardiogram was in a sinus rhythm, with 67 bpm and sign of left ventricular hypertrophy (LVH). Physical examination revealed systolic murmur, best heard at the left lower sternal border.

Transthoracic echocardiography revealed severe left ventricular hypertrophy with *LVOT* obstruction (4,5m/s) and pressure gradient of 75 mmHg at rest. Also systolic anterior motion of the mitral valve (SAM) was observed. Dimensions of intraventricular septum (IVC) 24mm and posterior wall 18mm were described as well. According to the symptoms, patient has been labeled as NYHA Class III.
Results: As advised by a multidisciplinary group of medical doctors, it was decided that surgical myectomy is the best solution for this patient.

Conclusion: Patients with hypertrophic obstructive cardiomyopathy may develop acute heart failure precipitated by other conditions, such as infection or anemia. The first-line therapy is medication. Alcohol ablation and septal myectomy are indicated when symptoms are refractory to medication.

Keywords: echocardiography, obstructive hypertrophic cardiomyopathy; myectomy;

АКУТНА ДИСЕКЦИЈА НА АОРТА (ТИП СТАНФОРД Б) -ПРИКАЗ НА СЛУЧАЈ

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Вовед:Акутен аортен синдром (ААС) вклучува акутна аортна дисекција, интрамурален хематом и пенетрирачки аортен улкус. Тоа е животозагрозувачка состојба која се карактеризира со потребата од брза дијагноза и соодветен третман. Аортната дисекција опфака 70-80% од ААС а како најчести причини се наведуваат артериската хипертензија, инфламоторни заболувања на аорта и траумата. Најчести компликации на аортна дисекција се руптура на аорта, хипоперфузија на органи и ретроградна дисекција. Стандфорд Б аортна дисекција го зафаќа торакалниот дел на аорта кој зависно од карактеристиките може да се третира конзервативно или со поставување на торакална ендоваскуларна протеза (TEVAP) која се покажа како ефикасна процедура во третманот при вакви состојби. Комплицираната аортна дисекција Стандфорд Б се третира хирушки.

Приказ на случај: Пациент на 46 годишна возраст хоспитализиран на клиниката со силна болка во грбот која се јавува дента на приемот. Анамнестички пациентот негира претходно заболување со несигурни податоци за артериска хипертензија, инаку пациентот е пушач години наназад. Електрокардиограмот при прием во прилог на атријална фибрилација со РР-130/80mmHg. Од направените лабораториски наоди при прием со покачени вредности на тропонин, дидимери и креатинин. Вредностите на CRP со тенденција на покачување до вредности до 157mg/L на шестиот ден од хоспитализацијата. Дента на приемот кај пациентот направен е КТ на аорта кој оди во прилог на аортна дисекција Стандфорд Б. Медицинскиот третман во единицата на интензивна нега опфати соодветна контрола на крвниот притисок со примена на бета блокатори, не-дихидропиридински калциум антагонисти, АЦЕ инхибитори и купирање на градната болка е од битно значење за срцевата фрекфенција и крвниот притисок со морфиум сулфат. На 12 ден од хоспитализација кај пациентот беше изведена интервента процедура со поставување на ендоваскуларна протеза во торакална аорта (TEVAP) по претходно извршен каротидно-субклавијален bypass за креирање на идеална проксимална landing зона за протезата. На 18 ден од хоспитализацијата пациентот беше испишан од клиниката во добра здравствена состојба.

Заклучок: Дисекција на аорта преставува акутна состојба со висок морталитет која мора порано да се дијагностицира и третира. Третманот на дисекција на аорта Стандфорд Б опфаќа интензивен медикаментозен

третман-конзервативен третман или TEVAP како ефикасна инвазивна процедура.

Клучни зборови: аротна дисекција, дијагноза, третман

AORTIC ANEURYSM DISSECTION WITH COMPLETE ATRIOVENTRICULAR BLOCK AND SUB ACUTE MYOCARDIAL INFARCTION

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Background: Acute aortic dissection (AAD) with concomitant complete atrioventricular block (CAVB) and concomitant sub acute myocardial infarction (SAMI) is a highly lethal cardiovascular emergency. In many deceased patients, the diagnosis is not confirmed until autopsy, and 85 % receive the wrong therapy as a result of misdiagnosis. Case presentation: A 63-year-old male patient with chronic aortic dissection Stanford B, chronic renal failure (CRF), diabetes mellitus and arterial hypertension presenting with prolonged precordial discomfort, as well as cold sweats, nausea and dizziness, was admitted to the cardiac emergency service. The patient was diagnosed with SAMI of inferior origin, acute progression of Stanford type B chronic aortic dissection with new dissection in right iliac artery and right subclavian artery and concomitant CAVB with heart rate 30 per minute. The patient was refused from urgent surgical treatment. The decision of cardiac teem was to be implanted dual chamber pacemaker. Sub acute myocardial infarction was treated conservatively because of acute progression of Stanford type B chronic aortic dissection with strong possibility to get with catheter in to the fault lumen and CRF. Two weeks later after careful consideration of angiography findings of aorta coronary angiography was performed and complete impairment of the right coronary artery in the mid segment was found with existing strong collaterals from left coronary system. Three weeks later in other hospitalization successful percutaneous revascularization of right coronary artery was performed. Conclusion: Careful examination and the treatment planning involving cardiac team is essential to be able to dissolve complex acute cardiovascular emergency.

Key words: aortic aneurism, myocardial infarction, diagnosis, treatment

DIGOXIN INTOXICATION IN A PATIENT WITH ATRIAL FIBRILLATION: A CASE REPORT

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Introduction: Digoxin intoxication is a potentially life-threatening condition, manifested by many systemic symptoms, the most important of which is cardiac arrhythmias.

Approximately 1% of outpatients treated with digoxin develop its toxicity, and the incidence rises to over 3% in patients over age 85.

Case Presentation: A 79-year-old man presented in the Emergency Department with nonspecific symptoms of malaise, dizziness, and blurry vision. On questioning, he reported seeing yellow halos (xanthopsia) for the past two days.

He had a history of ischemic cardiomyopathy with permanent atrial fibrillation and was on concomitant beta-blockade and digoxin. Physical examination was notable for bradycardia and hypotension, and a 12-lead ECG showed atrial fibrillation with slow ventricular response of 45 beats per minute, downsloping ST-segment depression with a characteristic "reverse tick" and shortened QT interval. Initial laboratory findings revealed serum potassium of 5.1 mmol/L, blood urea nitrogen of 8,9 mmol/L, and creatinine of 122 μmol/L. He was admitted to our hospital for close monitoring. The beta-blocker and digoxin were discontinued. The 24-hour Holter monitoring noted occasional premature ventricular contractions, ventricular ectopics run of 4, and two episodes of accelerated idioventricular rhythm. With supportive care over the next two days, the patient had a complete resolution of symptoms and was discharged.

Discussion: Due to its narrow therapeutic window, patients treated with digoxin are at risk of intoxication even with mildly increased digoxin plasma levels, especially in renal insufficiency or severe hypokalemia. Since digoxin toxicity can lead to malignant arrhythmias, monitoring patients closely and providing prompt treatment is vital. On-time treatment usually leads to positive outcomes, but any delay can be fatal.

Keywords: digoxin intoxication, ST-segment abnormalities, arrhythmias

PAPILLARY MUSCLE RUPTURE ASSOCIATED WITH MYOCARDIAL INFARCTION

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Introduction

Hemodynamically, papillary muscle rupture is the most serious complication involving the mitral valve with an incidence of 0.5-5%,and usually happens 5-7 days after the initial event. The posteromedial papillary muscle is supplied by a single coronary artery therefore the rupture of the posteromedial papillary muscle is more common. Auscultation is crucial to detect heart abnormalities and to evaluate differential diagnosis. Echocardiography is very precise diagnostic tool with 65-85% sensitivity in visualizing structural abnormalities of the heart and is the most available and fast method.

Case report:58 y.o. patient, with strong chest pain, without signs of heart failure was admitted in ICU. The chest pain started 5 days ago and most intense was on the day of admission.ECG showed sinus rhythm, ST-elevation in inferior leads. On heart auscultation remarkable was systolic murmur on ictus cordis. Urgent echocardiography showed wall motion abnormality on infero-lateral and inferior wall. Rupture of the papillary muscle P1 segment of the mitral valve was found with severe mitral regurgitation and normal size of left atrium. Left ventricle was enlarged with systolic and diastolic disfunction. From the laboratory analysis high levels of |Troponin-I (11359ng/L) were found..Dual antiplatelet and anticoagulant therapy was given and diagnostic coronarography was performed. Multivessel CAD was found(pRCA 70%,pLAD85%,mCx99%).CABG and mitral valve replacement were recommended. The patient was transferred on the Clinic of cardiosurgery for further treatment. Conclusion: Auscultation is valuable first-line tool and echocardiography is first diagnostic imaging method for detecting papillary muscle rupture. With early recognition and diagnosis there has been a continued improvement in the mortality rates related to papillary muscle rupture.

Key words: Papillary muscle, rupture, echocardiography

PATENT FORAMEN OVALE AND THROMBOPHILIA – A PARADOXIAL COMBINATION OF THROMBOTIC EVENTS

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INTRODUCTION: Paradoxical thrombosis is a rare condition, especially in young patients. The following diagnostic criteria are required: presence of deep venous thrombosis, right – to – left communication and significant shunt, evidence of systemic embolism. Elevated homocysteine is an independent factor for ischemic stroke and cardiovascular disease. We are presenting a young male patient with patent foramen ovale (PFO) and previous history of ischemic stroke presenting with an acute myocardial infarction. Genetic investigation revealed homozygote mutation of the MTHFR gene.

CASE REPORT: A 29 year- old patient complaining of chest pain four hours prior admission was transferred to our clinic due to acute anterior myocardial infarction. His previous medical history reveals history of ischemic stroke and a diagnosed PFO. The patient was at the time referred for percutaneous closure which he refused. On admission he was hemodynamically stable, with an ongoing chest pain. The ECG revealed sinus rhythm with ST segment elevation and inverted T wave in anterolateral leads. Laboratory findings noted elevation in the troponin I, homocysteine and LDL levels. Coronary angiography found thrombus occluding the proximal part of LAD, in otherwise healthy vessels. Thromboaspiration was made and drug eluting stent was placed. Echocardiography showed preserved systolic function and anterior wall hypokinesia. Thrombus with an area of 4cm was found in the left ventricle. An interatrial septal defect with shunt was detected. The thrombophilia panel diagnosed the patient as a homozygote for MTHFR 677 gene, heterozygote mutation for *ITGA2* (Integrin Subunit Alpha 2) and FGB (*fibrinogen B beta (Bß) chain) genes.

DISCUSSION: MTHFR enzyme deficiency is linked with mild to moderate hyperchomocysteinemia, a factor that is positively associated with atherosclerosis. The increased cardiovascular risk is thought to be in the setting of folate deficiency, vitamin B6 and B12. Although vitamin supplementation is recommended, it does not prevent recurrence of thromboembolic event. Use of anticoagulant therapy is controversial. Mutations in and FGB (*fibrinogen B beta (Bß) chain) lead to several disorders, including afibrinogenemia, dysfibrinogenemia, hypo dysfibrinogenemia and thrombotic tendency. PFO becomes a transitional bridge for arterial ischemic events. Although percutaneous closure is recommended in patients with cryptogenic stroke, in patients requiring lifelong anticoagulation, there is a discussion should the patient be treated with lifelong anticoagulant therapy without the closure of

the PFO – or the communication should be closed.

CONCLUSION: In all patients with PFO who have recurrent ischemic stroke and cardiovascular events genetical testing should be performed for hypercoagulable states. Patients with repetitive thrombosis should be on anticoagulation, at least until PFO closure is performed. There is an ongoing debate about the need for anticoagulation in those patients where the shunt will be closed.

KEY WORDS: PFO, THROMBOPHYLIA, MHTFR, STEMI

PERIPARTUM CARDIOMYOPATHY DUE TO GESTATIONAL HYPERTENSION AND TOCOLYTIC THERAPY

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Introduction: Peripartum cardiomyopathy (PPCM) is a rare and sometimes fatal systolic heart failure that affects women during late pregnancy or the early postpartum period. Risk factors contributing to this condition are: advanced maternal age, multiparity, administration of tocolytic agents, underlying cardiac disease, iatrogenic volume overload, preeclampsia, hypertension and In patients with gestational hypertension (GH) and other risk factors close monitoring is mandatory during pregnancy as well as in the postpartum period.

Case report: A 38 year- old patient previously treated for endometriosis, infertility and GH was transferred from the Clinic of Gynecology due to diagnosed congestive heart failure. Five days prior admission she gave birth to her first child. Prior delivery she was treated with tocolytic therapy. She received methyldopa due to GH, that was abruptly discontinued after her delivery. Echocardiography on admission revealed moderately reduced left ventricular systolic function with an ejection fraction (EF) of 37% with dilated left ventricle (LV) and pulmonary artery hypertension (PAH) secondary to left ventricular failure. During hospitalization the patient was with signs of volume overload, but with well response on parenteral diuretic therapy. She was additionally treated with guideline recommended heart failure therapy. The controlled echocardiography showed improvement of the left ventricular function with an EF of 42%.

Conclusion: PPCM is a rare condition with high morbidity and mortality. An LVEF <30%, marked LV dilatation, LV end-diastolic diameter >6.0 cm, and RV involvement are associated with adverse outcomes. Although delivery of the fetus and the placenta trigger resolution of symptoms and recovery to

the nonpregnant state of various organism, the contrary happens with blood pressure. Its peaking time is three to six days after delivery. Hypertension medication must not be immediately terminated. Prolonged tocolytic therapy are a risk factor for PPCM due to causing decreased baroreflex sensitivity Patients with risk factors should be closely monitored for eventual cardiac complications.

Keywords: postpartum cardiomyopathy, gestational hypertension, tocolytic therapy

THE COUMADIN RIDGE: AN EXAMPLE OF A LEFT ATRIAL PSEUDOTUMOR DEMONSTRATED BY ECHOCARDIOGRAPHY

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The coumadin ridge also called left atrial (LA) pseudotumor is a normal anatomic variant of a small smooth muscular structure called left lateral ridge, that lies in the left atrium in between the left superior pulmonary vein and left atrial appendage (LAA). Although it represents normal finding, its shape and location can be mistaken for a tumor or thrombus.

A 75-year old woman was referred to cardiology clinic with complaints of dizziness, shortness of breath on exertion, fatigue and chest pain. Electrocardiography showed normal sinus rhythm with signs of pressure overload while 2D transthoracic echocardiography revealed calcified aortic valve with severe aortic stenosis and left ventricular hypertrophy. However, presence of prominent hyperechogenic, rigid, linear structure with a rounded tip at the LA lateral wall in close proximity to LAA, extending into atrial cavity was detected. Given that pts was symptomatic and TEE could not be done, in order to differentiate the structure from intracardiac tumor or thrombus along with necessity to prepare the pts for aortic valve replacement intervention, cardiac CT was performed. Thus, CT confirmed the presence of structure with fixed and unique location, lack of mobility and particular shape, excluding intraatrial tumor or thrombus as well as excluding necessity for further interventions regarding its presence.

We can conclude that coumadin ridge is a must-know normal anatomic variant occasionally found in the LA and despite its rarity we emphasize the need for cardiologists and radiologists to be aware of its typical location and features in order to distinguished it from tumor or thrombus, leading to unnecessary treatments and/or interventions.

Key words: coumadin ridge, left atrial pseudotumor, echocardiographic anatomic variants

DIAGNOSTIC SCORES IN PATIENT WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Introduction: Heart failure with preserved ejection fraction (HFpEF) is challenging clinical syndrome that includes patients with signs and symptoms of heart failure, with left ventricular ejection fraction (LVEF) higher than 50%.

Objectives: Objectives of this case is to show the use of the image diagnostic procedures and recommended diagnostic score systems in early detection of HFpEF.

Materials and Methods: Examination included ECG and transthoracic echocardiography with contemporary ultrasound machine. We used on-line calculators to calculate HF2PEF score, HFA-PEFF score, $CHADS_2VASC$ score and Has Bleed score.

Results: A 71 years old patient presents with fatigue and malaise for a month. The patient is with persistent atrial fibrillation for two years and on regular therapy for hypertension. The ECG showed AFF with irregular ventricular response with 75/min. The transthoracic echocardiography on PLAX revealed enlarged dimension of the left atrium (47mm), with LAVI (left atrial volume index) 30ml/m^2. The LVEF (Biplane) was 55% with normal end diastolic and systolic volumes. Transmitral flow showed e' septal of 4 cm/sec, E/e' of 10. Tricuspid regurgitation was 2,4m/sec with normal dimension of the right atrium and RA volume of 28mm, /18ml.

Out of the recommended diagnostic scores, according ESC, we used H_2FPEF and HFA-PEFF score. The H_2FPEF was 7 points, with probability of HFpEF of 92.3%. For biomarkers, we performed NT-proBNP (N-terminal pro-B-type natriuretic peptide) and was 2000pg/ml. After scoring according the HFA-PEFF score, the patient had 5 points, 4 points of major criteria and 1 point of the minor criteria for HFpEF. Using the scoring algorithms, help us to differentiate between the diastolic dysfunction and HFpEF.

Conclusion: Diagnosis of HFpEF is frequently challenging and relies upon careful clinical evaluation, echo-Doppler cardiography.

Key words: HFpEF, NT-proBNP, H_2FPEF, HFA-PEFF.

MYCOTIC AORTIC ANEURYSM AND ENDOCARDITIS

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Introduction

Mycotic aneurysm of the aorta is an aortic aneurysm caused by infection. This rare syndrome is predominantly seen in male patients over age 65. The term mycotic suggests fungal etiology but it can be also bacterial origin. Despite the discovery of both bacterial and fungal causes the term mycotic has remained. A majority of the initial reported MAA cases were associated with endocarditis. The classic triad of fever, abdominal pain and pulsatile mass is a rare finding in these patients. Mortality ranges are between 15% - 75%.

Case report 67 y.o. patient, with strong chest pain, fatigue, fever and dyspnea was admitted in hospital. The symptoms started 1 month ago and the patient had already done CT of aorta with finding of aortic aneurism of the descending part of thoracic aorta with 122mm in diameter and mycotic inflammation. The patient is a smoker with previous PCI:PTCA/Stenting Rms et LAD. Laboratory analysis revealed high level of CRP- 98.7...104.18mg/L. Echocardiography was performed and showed bicuspid aortic valve with threaded vegetations. Infectologist was consulted and hemoculture was taken with MRSA positive. Dual antibiotic therapy was given till negative hemoculture. Cardiac surgent was consulted for further treatment and surgical intervention was indicated. Conclusion The diagnosis of MAA requires high index of suspicion and recognition. There are not specific laboratory findings that are highly suggestive of the diagnosis, however high leukocytosis and CRP have been noted abnormal. It is also important to obtain blood cultures as they are positive in 50-90% of the cases. Imaging is the key to establishing diagnosis. Treatment generally involves multidisciplinary team of infectologist, cardiothoracic surgery and vascular surgery.

Key words mycotic aortic aneurysm, cardiac surgery, endocarditis

EARLY CORONARY ARTERY DISEASE (CAD) IN A FEMALE PATIENT WITH DISCOID LUPUS ERYTHEMATOSUS (DLE) AND HASHIMOTO'S THYROIDITIS

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Introduction: Atherosclerosis is a chronic inflammatory condition involving the endothelium of the blood vessels, predominant the coronary arteries. Main risk factors are dyslipidemia, hypertension, diabetes, smoking, obesity and lack of physical activity. Patients with autoimmune diseases, including rheumatoid arthritis, systemic lupus erythematosis, systemic sclerosis etc., have a twofold increased risk of developing CAD at younger age, compared with the general population.

Case report: A 41-year-old female patient, with history of smoking and dyslipidemia, was admitted to our hospital with acute inferoposterior myocardial infarction. Initially, coronary reperfusion therapy per protocol was administrated and primary percutaneous coronary intervention (PCI) was performed. Multivessel CAD was found and two stents were implanted on obtuse marginal and circumflex artery. Transthoracic echocardiography (TTE) revealed left ventricle systolic and diastolic dysfunction with segmental hypokinesis. Additionally, the patient was first diagnosed with DLE at the age of 15, but the disease was uncontrolled in the last 7 years. She also has hypothyroidism, regularly treated with hormone replacement therapy. The patient was discharged with medicamentous therapy including dual antiplatelet agents, statin, beta-blocker, angiotensin-receptor blocker, potassium sparing diuretic and proton pump inhibitor. One month later, recoronarography was performed with stenting of left anterior descending artery. TTE showed improvement of the left ventricle systolic function with preserved ejection fraction. Blood test showed elevated levels of antithyroid antibodies. A rheumatologist was consulted, who recommended therapy with hydroxychloroquine and regular follow-ups.

Conclusion: In younger patients with chronic inflammatory diseases, inflammatory mediators play a significant role in the development of the atherosclerotic plaques, regardless of co-existing risk factors. Therefore, an early cardiovascular assessment is required in these patients for preventing severe or life-threatening cardiovascular events.

Key words: Atherosclerosis, chronic inflammatory disease, CAD

COVID-19 INFECTION-INDUCED ATRIAL FIBRILLATION WITH ACCOMPANYING COMPLICATION

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Background: Atrial fibrillation(AF) is the most common sustained supraventricular arrhythmia worldwide and is common in acute settings of COVID-19 infection and is associated with more complications and mortality rates. The presence of AF in patients with COVID-19 deserves increased attention and should be managed appropriately to prevent adverse outcomes. This case report aims to bring attention to increased follow-up and careful management of AF in patients with COVID-19 infection.

Case Report: We present a case of a 61years male patient with a medical history of ablation of pulmonary veins 2years ago because of AF and no new episode of AF after that. The patient came because of collapse, swelling of inferior extremities, and hypotension. ECG was obtained and AF was diagnosed. He was tested with a rapid COVID-19 test and came out positive and admitted to ICU. Antiarrhythmic and anticoagulant therapy was started with amiodarone and LMWH after which he was converted to sinus rhythm. A blood test was taken and came out with hyponatremia (Na 123..120mmol/L), hypoalbuminemia(albumins 28..27g/L), hypothyreosis (TSH 13.32uIU/ml, FT4 13.32pmol/L, FT3 2.25pmol/L, aTPO 28.5U/ml, ATG 1.6IU/ml), and signs of rhabdomyolysis(CK >42670U/L, Myoglobin 889.71..1104.27ng/ml). He was associated with new COVID-indicated conditions: Hypothyroidism, rhabdomyolysis, and kidney involvement with hypoalbuminemia. Consultation with a nephrologist, infectologist, and endocrinologist was made. Substitution with electrolyte, albumin, and thyroid hormone as well as hydration was started after which clinical condition started to improve. He was dismissed in good health

Conclusion: In COVID-19-positive patients, occurrents of AF is a frequent complication, but often these patients show other complications.

Keywords: Atrial fibrillation, COVID-19

DISTAL TRANSRADIAL APPROACH IN HIGH RISK PATIENT PRESENTED WITH STEMI

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Introduction:Conventional transradial acces has been considered as the default and recomended choice in PCI and miocardial revascularisation.The vascular complication such as radial artery occlusion, perforation and spasm, have led to development of new approach, which was proposed to overcome theese limitation. This was a distal transradial approach (snuffbox approach).

AIM : The efficacy of dTRA as alternative approach in high risk patient.

Case report: A 74 year old women presents in the emergency department with oppressive chest pain and dyspnea of more than 3 hours span. On clinical examination the patient appear pale and diaphoretic, with weak and rapid pulsation and sistolic blood pressure below 70mmHg. An 12 lead ECG lead was performed, which shows ST segment elevation of 4 mm in inferior lead. She was admitted to the cathlab with blood pressure 70/40mmhg and norepinephrine vasopressor support. A 6Fr introducer sheath was placed in distal radial (anatomical snuffbox). The coronary angiography revealed RCA with acute total occlusion and high thrombotic burden TIMI 5 in proximal segment, normal LMCA, LAD and Circumflex. RCA was engaged with a JR4 6Fr guide catheter and advanced distally a 0.014" Runthrough floppy guidewire, then the occlusion site was predilated with 2.0x15mm balloon and advanced 3.0x48mm everolimus stent from proximal segment and was deployed at 14 atm with TIMI3 final flow. A day after 2D transtoracic echocardiography was performed, it shows heart failure with mildly reduced ejection fraction and hypokinesia of inferior wall. Conclusion: Distal transradial acces is new approach which might offer several advatages over conventional radial acces such as reduction of the risk of radial artery occlusion, short haemostasis and saving the radial artery for possible future coronary artery graft.

Keywords: distal transradial acces, STEMI,

LIPID-MODIFYING EFFECTS OF KRILL OIL ALONE AND IN COMBINATION WITH STATINS IN PATIENTS WITH PRIMARY AND SECONDARY DYSLIPIDEMIA

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Introduction: The lipid-modifying effects of Krill oil have been demonstrated in some clinical trials. Krill oil is rich in phospholipids that contain n-3 polyunsaturated fatty acids, mainly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Aim of the study: observe the effectiveness of using Krill Oil in reducing the level of total cholesterol, LDL cholesterol and triglycerides, either using as a monotherapy in people with primary dyslipidemia or in combination with statin therapy in patients with secondary dyslipidemia.

Material and methods: A total of 90 individuals were enrolled in the study, divided arbitrary in two major groups: primary and secondary dyslipidemia group. The first group was divided in two subgroups: The Krill Oil group (n=29) and no-therapy group (n=17). The second group was also divided in two subgroups: the Krill Oil + statin group (n=21) and the only-statin group (n=23). Analysis of the lipid profile was done at the baseline and after 6 months, using Wilcoxon signed ranks to assess differences between two points.

Results: Individuals with secondary dyslipidemia treated with a combination of Krill oil and Statin demonstrated significantly lower values of Total Cholesterol (30.9%; p<0,001) , LDL-c (17.8%; p<0,001), Triglycerides (29.7%; p<0,001), and had higher significance in improving HDL-c levels (6.1%; p=0, 0027) which was not seen to be at this levels in the only-statin group (2.9%; p=0, 16). Individuals with primary dyslipidemia, treated with Krill oil demonstrated significantly lower values of Total Cholesterol (14.7%; p<0,001), LDL-c (6.2%; p<0,001), Triglycerides (25.3%; p<0,001), while the no therapy group had minimal changes but not statistically significant. The Krill oil improved HDL-c levels (6.3 %; p=0, 0003), comparing (1.8 %; p=0, 22) of the no-therapy group.

Conclusion: It can be concluded that the magnitude of increased HDL, followed by decreased values of total cholesterol, LDL, and Triglycerides would seem to indicate that Krill oil may be one of the most effective cholesterol aid.

Key words: Krill oil, dyslipidemia, total cholesterol, EPA, DHA

MYOCARDITIS- CLINICAL DIAGNOSTIC CHALLENGE

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Introduction: Myocarditis is a disease with a variable clinical presentation, ranging from asymptomatic to a fatal outcome. Dilated cardiomyopathy (DCM) with chronic heart failure is the major long-term sequela of myocarditis

Case report: A 39 old male was transferred to The Special Hospital for Cardiovasculare disease-Ohrid from Emergency Center due to high sensitive Troponin level 110 ng/L, EKG with LBBB de novo ER colleagues had reported syncope, altered mental state,hypotension (Computer tomography of the head with regular finding). Rapid antigen test for Covid 19 was negative and from hetero-anamnesis the information for Covid 19 infection six months ago was reported.

Diagnostic pathway: Urgent angiography- didn't show significant stenosis of the coronary arteries. Laboratory findings-detected increased inflammatory markers (white blood cells 16x10'9 g/L, C reactive protein 286 mg/L and Troponin 125 ng/L).The echocardiography showed a slight increase in the size of the left ventricle (LVED=58 mm).Globally reduced kinetics of the LV walls, decreased global left ventricular systolic function EF=38%. Hypertrophy of the left ventricular wall, mild functional mitral regurgitation. The echocardiography suspected myocarditis. On Holter EKG, rate dependent LBBB was discovered. Patient was young and Cardiac magnetic resonance was performed and considered indicative for myocardial inflammation , so the diagnose was defined. **Treatment.** Immediate empiric antibiotic treatment. Therapy for heart failure.

Conclusion: 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.Magnetic resonance imaging is the only non-invasive procedure that can establish a reliable diagnosis of myocarditis.

Keywords: myocarditis,acute heart failure,coronarography, MRI

DILATED CARDIOMYOPATHY, CONSEQUENCE OF CAD OR MYOCARDITIS – CASE REPORT

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Introduction: Coronary artery disease (CAD) is the most common cause of cardiomyopathy, and the term ischemic cardiomyopathy (ICM) is commonly used to describe patients with obstructive CAD and a left ventricular ejection fraction (LVEF) <40 percent. Myocarditis due to viral infection can lead to substantial cardiac damage and severe acute heart failure or to involve in dilated cardiomyopathy. In a patient with newly diagnosed dilated cardiomyopathy, both etiologies, CAD and myocarditis should be considered.

Case report: S.J.- 44 years old male patient with symptoms of fatigue, palpitations, dispnea, ortopnea and pretibial edema, which started one month ago, with progressive worsening. Symptoms started after short episode (a few days) of fever, vomitus and diarrhea. ECG showed sinus tachycardia with heart rate 120/min, LBBB. Color Doppler echocardiography showed enlarged dimensions and volumes of the left ventricle (LVEDd 67mm, LVEDvol.290ml, LVESvol. 219ml), with reduced systolic function (EF by Simpson method 22%), GLS – 4.6%. Signs of inter-ventricular and atrio-ventricular dyssynchrony, PEP Ao-PEP a.pulm 50msec and rocking of the apex. Mild functional mitral regurgitation, mildly enlarged left atrium. Right ventricle 35mm. TAPSE 19. Patient was admitted in University clinic of cardiology. During the hospitalization coronary angiography was done and stent was implanted because of 95% stenosis of LAD. He was treated anti thrombotic therapy, statin, diuretic therapy, ACE inhibitor and supportive therapy with clinical improvement. The patient fulfills the criteria for CRT which is planned to be done in the next period.

Conclusion: Causative etiology in this patient is challenging. After optimization of the medical treatment, because of the presence of wide QRS complex with LBBB morphology and appropriate echo- cardiographic criteria CRT should be considered.

CASEOUS MITRAL ANNULAR CALCIFICATION- RARE CAUSE OF SEVERE MITRAL VALVULAR DYSFUNCTION

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Caseous mitral annular calcification (CMAC) is rare variant of mitral annular calcification (MAC), that despite the typical calcification of the lesion also contains caseous transformation of the basic material. CMAC commonly has a benign course, unless it is complicated with mitral valve dysfunction, systemic embolization or conduction abnormalities.

A 71-year-old female with a history of long-standing, not treated dyspnea, hypertension and atrial fibrillation was admitted to hospital because of worsening dyspnea and palpitation. Transthoracic echocardiography revealed ovoid, soft echodense mass with calcified borders and echo-lucent area excentrically sited, with dimensions 58x45mm, without acoustic shadow effect, attached to the mid-posterior mitral leaflet, causing severe mitral stenosis with severe regurgitation. Transesophageal echocardiography was not done because of the existence of severe dyspnea, while the cardiac computed tomography revealed ovoid mass with central homogenous hyperattenuation and a rim of peripheral calcification-"shell-like"calcification, suggestive of CMAC. Coronary angiography revealed 80% stenosis of the mid LAD. The patient underwent mitral valve replacement and coronary artery bypass surgery. The microscopic finding of the extracted mass confirmed the diagnosis of CMAC. Unfortunately the patient during the intervention suffered a massive stroke and died few days later.

The importance of diagnosing the CCMA is in discovering hemodynamically compromitation of the mitral valve, discovering the risk of systemic embolization, and to skip the misdiagnosis of the lesion as a tumor, abscess or infective endocarditis.

Keywords: Caseous mitral annular calcification, mitral stenosis, mitral regurgitation

A CASE OF NATIVE VALVE INFECTIVE ENDOCARDITIS IN A PATIENT WITH PROLONGED FEVER

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Background: Infective endocarditis (IE) is a disease caused by microbial, usually bacterial, endocardial infection. Up to 90% of patients present with fever, therefore IE has to be suspected in any patient presenting with prolonged fever of unknown origin. The aim of this case report is to highlight the importance of echocardiography in the diagnosis of IE.

Case report: A 64-year-old man was referred to an emergency room with ten months history of fever, associated with poor appetite and weight loss. A pan-systolic murmur at the apex was found during the cardiac auscultation. The blood test showed leukocytosis with neutrophilia and an increased C-reactive protein. Transthoracic echocardiography (TTE) revealed severe mitral regurgitation with one vegetation on both the anterior- and posterior mitral leaflet with diameter 10x10mm, and increased left ventricle end-diastolic diameter with preserved ejection fraction. Transoesophageal echocardiography was not performed since the positive vegetation finding on TTE prompted the diagnosis of infective endocarditis, according the ESC guidelines. After hospitalization, the patient started empiric antibiotic therapy with maximal dose of cephalosporin and glycopeptide antibiotic. Blood culture was taken per protocol and *Staphylococcus coagulase-negative* was isolated. TTE was reperformed and showed ruptured tertiary chordae tendinae of the mitral valve, without worsening of left ventricle systolic function. A cardiac surgeon was consulted, but the patient refused valve replacement surgery.

Conclusion: IE should always be suspected in patients presenting with prolonged fever of unknown origin. TTE is recommended as the first-line imaging modality in patients with suspected IE and plays a key role in early diagnosis of these patients, reducing the mortality and severe complications associated with IE.

Key words: infective endocarditis, prolonged fever, transthoracic echocardiography

SUBCLAVIAN AND AXILAR VEIN THROMBOSIS AFTER PACEMAKER IMPLANTATION — CASE REPORT

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Introduction. DVT and thromboembolic events of upper extremities is gaining the special significance in times of the common use of transvenous intracardiac stimulation devices. It is one of the most frequent 'after-pacemaker' complications, although in its symptomatic form it is regarding only 1–3% of cases. The most common place for thrombus forming after implantation of cardiac stimulator is the proximal section of the left subclavian vein. Below we present the case of DVT in the left subclavian and left axilar vein in our patient, who was treated successfully by only three-month with NOAK.

Case report: A 74 -year-old male with hypertension, hypercholesterolemia, Parkinson's disease was hospitalized at our hospital in order to undergo an implantation of a heart pacemaker due to paroxysmal second-degree atrioventricular block with concomitant vertigo . The procedure of permanent DDDR pacemaker(Medtronik SpheraDR) implantation was performed via left subclavian vein, with no complications.One week after the discharge patient is admitted to department again with a painful left shoulder and adjoining part of the chest and arm, with accompanying swelling and excess warmth of skin.He also reporting a single episode of dyspnea at rest without complete loss of consciousness one day before. His family history towards venous thrombosis and cancer was negative. In laboratory tests a raised level od d-dimers paid attention; echocardiography didn't disclose any abnormalities. An ultrasound with doppler imaging showed the presence of thrombi in left axillary and subclavian vein Internal jugular vein and other veins of upper extremity were passable .CT pulmonary angiogram without clear signs for pulmonary embolisam. His renal functuion was normal.

The patient was administered the oral anticoagulant in the therapeutical dose(Rivaroxaban for the first 21 days twice daily ,starting at day 22, once daily) The pacemaker was controlled – there was no evidence of malfunction. In consecutive days the swelling and the pain of the left arm gradually diminished. Antithrombotic treatment was being continued for 3 months .The repeat ultrasound was performed one month and three months after the beginning of treatment and showe due the recanalization of thrombotic masses.

Conclusion: The presence of transvenous leads for cardiac device therapy may increase the risk of venous thromboembolisms.Colour doppler ultrasound is an effective and repeatable method for imaging veins. The discussion on applying anticoagulation as prevention in pre- and post-implantation period remains still open, especially in the context of constantly appearing new anticoagulant drugs .

CASE OF PATIENT WITH DILATED CARDIOMYOPATHY AND REDUCED EJECTION FRACTION, TREATED WITH SACUBITRIL/VALSARTAN

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Introduction: Heart failure is a clinical syndrome consisting of cardial symptoms such as breathlessness, ankle swelling, and fatigue, that may be accompanied by signs: elevated jugular venous pressure, pulmonary crackles, and peripheral oedema. Heart failure remains a global epidemic with more than 64 million patients worldwide and continues to be the most common cause of hospitalization and in-hospital death**. AIM:** Treatment with sacubitril/valsartan, (ARNI) to improve symptoms of heart failure and reduce CV mortality, according the PARADIGM-HF trial and 2021 ESC guidelines for diagnosis and treatment od heart failure.

Method and materials: We report a case of 41-year old male, with symptoms of breathlessness and fatigue, and history oh hypertension. Echocardiography report : EF=30 %, LVDd=68mm, LVDs=58mm, LA=43mm, Ao=37mm, RV=25mm, IVSd=12mm, global hypokinesis of left ventricul, moderate mitral regurgitation and mild aortic regurgitation. Laboratiry: hsTroponin= 7,2 ng/L(<34,2), CK= 125 U/L(<200), CK=MB=22,3 U/L (<25), LDH=205 U/L (<400), Tot.Hol=5,23 mmol/L, TRIG=1,55 mmol/L, Glikemia =5,78 mmol/L. Coronary artery diasese was excluded with coronary angiography, and treatment with sacubitril/valsartan 24/26 mg twice daily was initiated three days before discharge of our hospital. The patient was hospitalized in our department for 11 days. **Results and conclusion:** Regular visits were made after the first month, sixth month and after one year. Control echocardiography after one year: EF= 46%, LVDd= 53mmmm, LVDs= 40mm, LA= 40mm, mild mitral and mild aortric regurgitation was detected. The patient was without symptoms

of heart failure. Sacubitril/valsartan is optimal medical therapy of patients with HFrEF, effective in reducing hospitalization and CV mortality.

Key words: dilated cardiomyopathy, Sacubitril /Valsartan, echocardiography.

THE LONG TERM EFFECT OF SARS-COV-19 INFECTION ON OCCURRENCE OF ARTERIAL HYPERTENSION AND DETERIORATION OF PREEXISTING ARTERIAL HYPERTENSION

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Introduction: The SARS CoV2 virus is binding to the human ACE- receptors, found in the lungs and other organs and tissues, causing their damage. Patients with preexisting hypertension have a higher inclination to develop covid - infection and have more severe form of covid- infection and higher incidence of death.

Objective: The aim of this study is to analyze the incidence of newly diagnosed hypertension in patients after covid- infection and worsening of the pre-existing hypertension.

Material and methods: In this study 203 consecutive patients, hospitalized in the Modular Hospital-Clinic for Infectious Diseases in Skopje, from December 2020 to May 2021, were retrospectively analyzed. Pre-existing hypertension was defined based on history, medical records, or ongoing antihypertensive therapy. Newly diagnosed hypertension was defined as systolic blood pressure ≥140 mmHg and/or diastolic BP ≥90 mmHg, measured in the office of the family doctor and noted in the electronic medical record (EMR). The worsening of hypertension was also registered by the family doctor and noted in EMR.

Results: In this study we included 203 patients with an average age of 63, 24 +/- 13, 23. 59% of the patients had diagnoses of hypertension prior to covid-infection. Newly diagnosed hypertension during the follow-up period of 1 year was detected in 14 patients (7%). Worsening of hypertension with a need of addition of one or more antihypertensive medications was noted in 25% of patients that survived covid-infection, during the period of follow-up.

Conclusion: Covid-19 raises systolic and diastolic blood pressure and can lead to new-onset of hypertension. It also worsens the preexisting hypertension.

Keywords: Covid-19, hypertension

PAGET SCHROETTER SYNDROME -CASE REPORT

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Introduction: Paget-Schroetter syndrome (PSS) is a primary effort-induced deep venous thrombosis of the subclavian-axillary vein complex occurring after repetitive and vigorous use of the shoulders and arms. It is the venous variant of thoracic outlet syndrome associated with compression of the subclavian vein at the thoracic outlet. PSS is more commonly seen in younger male athletes (20s and 30s) on the right side with a incidence ranges from 1 to 2 per 100,000 individuals per year. Treatment begins with anticoagulation and may include catheter-directed thrombolysis, pharmaco mechanical thrombectomy and surgical decompression. Complications as pulmonary embolism, post-thrombotic syndrome and recurrent thrombosis could be avoided by early diagnosis and adequate treatment. **Case report**: 27 years old male patient was presented with swelling and pain in the right arm. Arm was tense ,cyanotic and enlarged compared to the contralateral side. Symptoms occurred after weightlifting. Ultrasonography confirm thrombus in the axillar vein .D dimer value was high 9492 ngr.ml .We started with initial bolus of intravenous heparin and decided to switch to oral factor X a inhibitor Rivaroxaban 15 mg bd for 21 day followed by 20 mg once per day. After 7 days ultrasound confirmed thrombus organization and recanalization , d –dimer value dropped to normal and patient was dismissed. Laboratory workup included a thrombophilia panel and multiple gene disorders were confirmed. Six months follow up confirmed successful thrombus recanalization and arm function restoration.**Conclusion**: PSS was accompanied with coagulation disorder in 67 % of cases according several studies . The duration of anticoagulation in patients with underlying hypercoagulability disorders remains unclear. Oral treatment with factor X a inhibitor is successful as curative and prophylactic choice.

Key words: Paget-Schroetter syndrome

TAKOTSUBO SYNDROME: A RARE REVERSIBLE FORM OF HEART FAILURE

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Takotsubo Cardiomyopathy (Broken heart syndrome). Reversible heart condition that develops in a response to an intense emotional and physical experience, death of close relatives, domestic abuse or fierce conflict, major trauma or operation, use of drugs, unexpected surprise, extreme happiness. **Non-ischemic cardiomyopathy that manifests as an AMI or ACSy:** ST segment elevation or T wave inversion in precordial leads, DII and aVR, chest pain, dyspnea, palpitations, syncope, nausea, vomiting , mildly elevated troponin, absence of coronary artery disease on angiography, hypo/akinesis of the mid and apical segments of the left ventricle.Majority of patients are Asian or White, with close to 90% of cases reports in postmenopausal women median age 68 years. Tako-tsubo – a pot used by Japanese fisherman to trap octopus.

Case presentation: 52 – year old female postmenopausal patient with history of hypertension, with positive family anamnesis for CVD. Chest pain and dyspnea two days before admission, after hard emotional stress. ECG on presentation:sinus rhythm with inverted T waves in V2-V6, DI,DII,DIII,aVL,aVF. Vital sign: TA 125/85 mmHg, HR=83/min, TT 36.2C, SO2 93%, Troponin:554 ng/L, Inter TAK diagnostic score:61 (<70 low/intermediate probability of TTS). Admitted in the ICU. Received double antiaggregant,anticoagulant and statins. Coronarography-absence of stenosis in the coronary artery. Echocardiography- EF-43%, hypokinesis of the apex, and apical segments of anterior,lateral and inferior wall. of left ventricle GS-11 %. Beta blockers, ACE inhibitors,diuretics were added. In the largest TTS registry to date, death rates are estimated to be 5.6% and rate of MACCE 9.9% per patient year, suggesting that TTS is not a benign.

Key words: takotsubo cardiomyopathy, diagnosis, prognosis

CHRONICLE IATROGENIC AORTIC DISSECTION

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P.H.I Medicus Dr Gurev

Introduction: Iatrogenic aortic dissection is a very rare complication in cardiovascular surgary.

The case study are rare and only a few studies were reported in current medical literature. Like a common in all study was surgical approach generally opted for, but with very poor outcome. We reported a case of chronicle Iatrogenic aortic dissection treated with optimal medical therapy and utilization of a multi – modality serial imaging approach.

Case report: A 40 old male with chest pain was presented in our office. The pain started 1 h before examination

On physical exam the tension was L.A 132/85mmHg R.A 135/85 mmHg , laboratory findings Hs troponin 19.23ng/ml, wbc 6,23 PLT 203 Ert 4.12 Hgb 152 Urea 6.56 Creat 96 AST 19 ALT 21

From anamnesis we have information that he have e has intervention of St post Reconstructio Ao Asc sec Tirone-David graft a.aV and is noticed disenchant flap on ascendant aorta. On CT angio on 10.01.2018 was noticed desiccant flap that start at Arcus Aorate at above the extension of truncus brachiocepalicus but without extension on extra aortic vessels, the flap make progression until mid part of thoracic aorta. It was noticed a fenestra at level at a.Subclavia Sinister .We preform ECG with normal sinus reteam ST segment at isoelctrical line without denivelation. At CT Angio Disecant flap was at same position without propagation in dimension, the fenestra was present, so the CT finding was correlating with finding after OP. Was made consultation with cardiac surgeon , that give advice for conservative treatment , the patient and intervention was high risk with more than 90% lethal ends. In patient was administrate high dose of b blocers , Nebivolol a 20 mg mg od , pain killers, and was administrate high dose statin therapy Tbl. Rosuvastatin a 40 mg o.d and, candesartan at high doses 32mg o.d . After six month was performed Ct angio at aorta with finding of descant flap how 96 mm long is and is at same position and with same characteristic like finding on exam at 20.08.2021.

Conclusion: A Chronical aortic dsection is Rare, only few case reports are refereting about patient with chronical dissection who are live more then 5 years. Our case is exactly like that. This case report emphasizes the importance of clinical suspicion of aortic dissection and discusses the important clinical presentations of aortic dissection and its diagnostic methods. Furthermore, recent studies on aortic dissection detection risk scores have been discussed. Clinicians must always be aware of aortic dissection even though the patient presents only with chest pain that might be similar to chest pain of ACS, and thorough history taking and physical examination must be performed.

Key words: aortic aneurism, diagnosis, imaging

PULMONARY THROMBOEMBOLISM

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Background: Risk of pulmonary embolism(PE) is relatively high in patients with advanced chronic diseases, particularly with malignancies. Most patients with cancer have blood coagulation test abnormalities indicative of up-regulation of the coagulation cascade, increased platelet activation and aggregation. Pulmonary thromboembolism is common in patients with any cancer and incidence is increased by surgery, chemotherapy, radiotherapy and disease progression.

Case presentation: A 65-year-old patient was diagnosed with cancer on vesica urinariae. She underwent diagnostic biopsy and urinary bladder surgical. The patient was hospitalized on May 28, 2017 in EKIN due to fast and irregular heartbeat. During the hospitalization, laboratory, D-dimers were examined, which were raised to 9055ng/ml. Echocardiographic finding with right enlarged ventricle and presence of PAH, and neat coronary angiography, hemostasis was with prolonged prothrombin time, activated partial thromboplastin time and thrombin time. To suspicion od pulmonary embolism, we performed (computerized tomography) CT pulmonary angiography with contrast and confirm the diagnosis of acute pulmonary embolism. Due to the confirmed diagnosis, anticoagulant therapy with subcutaneous LMWH dose was started during the hospitalization, where the condition significantly improved, after the patient was released for home treatment, anticoagulant therapy was continued with NOAC at home treatment. The patient was also tested for protein C, protein S that were normal and protein V Leiden where found a genetic mutation.

Conclusion: In the daily practice of medical oncology treatment of patients with a diagnosis of thromboembolism is not rare. Due to the focus on anticancer therapy the possibility of health deterioration or even imminent danger to life caused by thromboembolic disease may be underestimated. Ignorance of the symptoms of life threatening condition makes it impossible to establish the correct diagnosis, resulting in the lack of timely implementation of appropriate treatment. The priority of treatment for cancer might result in overlooking the symptoms that are the real cause of the poor effect of the anticancer therapy.

Key words: PTE: embolic; thrombolytic; hemostasis; cancer-associated thrombosis; NOAC

TRANSTHORACIC ECHOCARDIOGRAPHY IN RAPID DIAGNOSIS OF AORTIC DISSECTION IN A PATIENT WITH CHEST PAIN

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Aortic dissection is a critical and urgent condition that requires prompt and correct diagnosis. Echocardiography, as an easily accessible diagnostic modality, plays an important role in the diagnosis of aortic dissection, especially Stanford type A.

Case report: A 47-year-old man with an episode of loss of consciousness and severe chest pain that propagates towards the back and abdomen presented to our clinic. The patient had no history of cardiovascular diseases, and no chronic therapy. Even though he had electrocardiogram with mild ST segment elevation in the antero-septal leads, his Troponin essay was negative, and transthoracic echocardiography was made which showed dilated ascending aorta with Stanford type A, DeBakey I dissection starting above sinuses of valsalva, propagating through all the segments of the aortic arch, with visualization of the intimal flap in the abdominal aorta. CT angiography finding was consistent with Stanford A aortic dissection along its entire length, downwards to the proximal segment of the left a. iliaca communis.The patient underwent emergency surgery and had the aorta ascendens replaced with aortic valve suspension (Tyrone David surgery) and the complete aortic arch replaced with a vascular prosthesis. Recognition of aortic dissection and its differentiation from pulmonary thromboembolism and acute coronary syndrome is vital. In patients with Stanford A dissection, in-hospital mortality is 20%, and this percentage increases by 3-5% with each passing hour. Echocardiography is an easily accessible, inexpensive, and non-invasive method that can quickly establish high-suspicion or confirmation of aortic dissection. This diagnostic approach shortens the time from onset of symptomatology to surgical treatment, and thus a direct reduction in morbidity and mortality in these patients.

Conclusion: Transthoracic echocardiography is rapidly feasible and has high sensitivity and specificity as a method in the diagnosis of aortic dissection, but it cannot exclude this diagnosis.

Keywords: aortic dissection, echocardiography, chest pain.

SPONTANEOUS DISSECTION OF INTERNAL CAROTID ARTERY-THE ROLE OF DUPLEX ULTRASOUND

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PHO Kalina Strumica

Introduction: Dissection of internal carotid artery (ICA) is the most common cause of strokes in younger patients . Extracranial ICA is more frequently affected then intracranial ICA. The pathogenesis of a spontaneous dissection is unknown but these patients may represent a "vascular " phenotype of an underlying connective tissue disorder. The most common sites of ICA dissection in contrast with atherosclerotic lesions, are at the midcervical regions or near the base of the scalp, therefore direct morphologic signs can rarely be detected with duplex ultrasound (DUS).

Case Presentation: 40 years old woman was consulting because of variation of blood pressure (BP). One week before she has had rise in BP up to 150/90 mmHg accompanied by headache and left side neck pain. No comorbidities or additional vascular risk factors. Physical examination, ECG, BP, echocardiography as well as routine laboratory test were normal. B –mode ultrasound of extracranial arteries did not showed atherosclerosis or other structural vessel abnormalities. Colour doppler of the left ICA demonstrated a discrete tapering lumen distal to bifurcation. Doppler spectrum analysis revealed reduction of flow velocity . Transcranial DUS demonstrate a poststenotic flow pattern in left MCA suggestive of high- grade ICA stenosis (>80%). CT angiography showed high-grade hypoechoic eccentric segmental narrowing of left ICA at level of C2 vertebra suggestive of dissection. Consultations with neurologist and interventional cardiologist were made and she was treated with antithrombotic therapy with suggested follow up.

Conclusion: DUS of the brain supplying arteries plays an important part in the inicial investigation as well as follow up of patient with ICA dissection revealing abnormalities in more 90%, mostly of hemodynamic character. A combination of extra and transcranial DUS provides greatest diagnostic yield.

CARDIAC RESYNCHRONIZATION THERAPY FOR HEART FAILURE DUE TO DILATED LEFT VENTRICULAR NON-COMPACTION CARDIOMYOPATHY IN A 55-YEAR-OLD MALE PATIENT

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Cardiac resynchronization therapy (CRT) is a treatment option for patients with heart failure with reduced ejection fraction (HFrEF) and left bundle branch block (LBBB), who are symptomatic despite optimal medical therapy (OMT). Isolated left ventricular non-compaction (LVNC) is most commonly found in association with a dilated cardiomyopathy (DCM). Here, we report a case of a successful cardiac resynchronisation treatment for a patient with heart failure with reduced ejection fraction (HFrEF) due to dilatated left ventricular non-compaction (LVNC) cardiomyopathy in addition to ECG, echocardiography and CMR findings. In this patient, despite left ventricular non-compacted myocardium CRT-P treatment resulted in the improvement in the LV function (from 23% to 53% EF), reduction in left ventricular internal diameter from 90mm to 64mm, reduction of left ventricular end systolic volume (LVESV) from 319ml to 98ml and improvement in clinal symptoms and HYHA classification to (from NYHA II/III to NYHA I). Implantation of a cardiac-resynchronization device like CRT-P improves symptoms and left ventricular function in HFrEF patients with dilated and left ventricular non-compaction cardiomyopathy. Cardiac resynchronisation therapy is a safe and successful method of treatment for patients with HFrEF due to dilated left ventricle with non-compacted myocardium.

Key Words: dilated cardiomyopathy, left ventricular non-compaction cardiomyopathy, cardiac resynchronization therapy, heart failure

SUBACUTE ANTEROAPICAL INTRACORONARY MYOCARDIAL INFARCTION IN CARDIOGENIC SHOCK 1-1000 SURVIVAL

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Introducton: Acute myocardial infarction is a common cause of heart failure.

Purpose: Prompt recognition of acute myocardial infarction symptoms and timely care-seeking behavior are critical to reduce the risk of developing HF and of dying after an MI.

Materials and methods: A 60 year old man was admitted to the hospital due to dyspnea, swollen ankles. He did not consult a doctor for 5 days. He was an active smoker and had comorbidities of DM type 2. His ecg showed sinus rhythm, hr-130 bpm and ST segment elevation in precordial leads with q wave. He was loaded with therapy protocol for MI and was referred to KB Shtip for coronarography. His condition got worse during the transport, and the patient was hospitalized in cardiogenic shock. TTE was performed with a finding of anteroapical hypokinesia with EF-20%. Coronarography was performed with finding of - LMN : b.o. TIMI 3, LAD: prox 100% TIMI 0, Cx b.o. TIMI 3, RCA: prox 95%, TIMI 3 and three stents were implanted to LMN and LAD. The next day his condition deteriorates with agonal breathing, fall in blood pressure, saturation and anuria. Oxygen therapy and inotropic stimulation were set and also pleural evacuation bilateral of 2200ml serous liquid was performed. The patient was transported to a private heart surgery clinic. IABP was inserted and veno-venous hemofiltration was performed. After 5 days recoronarography was performed and three stents were implanted to RCA.

Results: After 27 days patient was discharged with EF-35% and proper cardiological therapy.

Conclusion: Development of HF after MI is associated with adverse events, impaired quality of life, and lower survival.

Key words: heart failure, MI

INFERIOR WALL MYOCARDIAL INFARCTION AND MYOCARDIAL BRIDGING OF LEFT ANTERIOR DESCENDING CORONARY ARTERY IN A YOUNG PATIENT

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Introduction: Myocardial bridging is considered a relatively benign condition, but serious complications such as angina pectoris, myocardial infarction, stress cardiomyopathy, ventricular arrhythmia, and sudden cardiac death can still occur. In rare cases, acute myocardial infarction and myocardial bridging may occur as a distinct feature in one patient. We describe a young man with acute myocardial infarction on inferior wall associated with myocardial bridging of the left anterior descending coronary artery, who was diagnosed and evaluated by electrocardiography, echocardiography, and coronary angiography.

Case report: A 40-year-old man called the emergency room for chest pain, pain in the left upper arm, with difficulty breathing and malaise, for the last three days. His vital signs were: arterial blood pressure TA=140/90mmHg, heart rate SF=98/min, respiratory rate of 18 breaths/min and oxygen saturation 98%. Diagnostic tests included CK=641 (29-200 U/L), CK-MB=84.99 U/L (normal < 25 U/L), and hs troponin=4987.4 ng/mL (0-34.2 ng/mL). ECG: ST-segment elevation in inferior leads. Echocardiography: Normal dimensions of the left ventricle (LVDd=55mm, LVDs=39mm) with proper systolic function and diastolic function with normal kinetics and EF 60%. Hypokinesia of the inferior wall and base of the interventricular septum. Normal dimensions of right ventricle = 24mm, left atrium = 37mm, ascending aorta = 38mm. Mild mitral and tricuspid regurgitation. Coronarography: TRA(r). RD2. LMN: b.o. TIMI 3 LAD: mid massive muscle bridge TIMI 3 Cx: b.o.TIMI3 RCA: mid/dist 100% thrombus, TIMI 3 Intervention (G.C. JR 4.0, 6F; FloppyMS): Thromboaspiration: Elliminate catheter 6F, NoII POBA to RCA mid/dist: balloon 2,5x20mm,12atm, NoI. RESULT: RCA mid/dist 100% →50% TIMI 3.

Conclusion: Diagnosis and appropriate treatment of this pathology are important. The patient was referred to a cardiac surgery facility where coronary artery bypass ACBPx1 (LRA-PDA) was performed, as well as LAD surgical myotomy.

Key words: acute myocardial infarction, myocardial bridging, young patient, coronary artery bypass, surgical myotomy

LDL HYPERCHOLESTEROLEMIA - A RISK FACTOR FOR DEVELOPMENT OF ASYMPTOMATIC CAROTID ATHEROMATOSIS

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Objective: Evaluation of the incidence of pathological changes of the the extracranial carotid arteries in adults based on LDL cholesterolemia as a single risk factor depending on gender and age.

Material and methods: A total of 60 subjects were studied, divided into two groups: 30 subjects without any known cardiovascular risk factor (GroupA) with normal LDL cholesterol values and 30 patients (GroupB) with elevated LDL cholesterol.The respondents were evaluated in 3 age subgroups(Sg): 25-40 years (Sg1), 41-61 years (Sg2) and 62-81 years (Sg3). None of the patients with LDL hypercholesterolemia received statin therapy. Angiodinography (color doppler ultrasonography) of the extracranial carotid arteries was performed in each of the subjects from both groups on a SAMSUNG HS40 ultrasound device using a linear probe L5-12/50. Measurements was performed in a longitudinal section and localization 1-1.5cm before the bulb of a.carotis communis. Bearing in mind the fact that different studies define different upper reference values of carotid IMT (intima-media thickness) based on gender and age, in our work we were guided by a simplified practical assessment, that values of IMT above 0.99 (≥1) were considered pathological.

Results: A total of 9 pathological cases (7 men and 2 women) were diagnosed in GroupA, namely: In Sg1 only 1 pathological result was diagnosed, in Sg2: 3 pathological results, in Sg3: 5 pathological results. In GroupB, a total of 23 pathological cases (15 men and 8 women) were diagnosed, namely: Sg1: 6 pathological results, in Sg2: 8 pathological results, in Sg3: 9 pathological results, i.e. 30% pathological values of IMT in the group with normo LDL cholesterolemia and 76.6% pathological IMT values in the group with hyper LDL cholesterolemia.

Conclusion: Unregulated LDL hypercholesterolemia correlates with an increased incidence of intimal thickening (pathological changes) of extracranial carotid arteries. Determination of LDL cholesterol level and carotid IMT are simple feasible and cost-effective methods for assessing atherosclerotic cardiovascular risk in adults.

CARDIOGENIC SHOCK DUE TO ACUTE RIGHT VENTRICULAR FAILURE COMPLICATING ACUTE MYOCARDIAL INFARCTION

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Introduction: Despite major improvements in the treatment of acute myocardial infarction and consequently overall improved outcome, patients who deteriorate to cardiogenic shock still have a grave prognosis with short-term mortality rates around 50%. Acute myocardial infarction is the most common aetiology of cardiogenic shock and whether caused by left-, right-, or biventricular, mortality is associated with the magnitude of myocardial injury thus the infarct size.

Objectives: Early revascularization, temporary pacemaker implantation, volume replacement, mechanical support (IABP), inotrops and vasopressors are effective for treatment of cardiogenic shock due to acute right ventricular failure complicating acute myocardial infarction.

Matherials and methods: 50 – years old pacient was admited in our hospital with inferior wall, right ventricular MI (RVMI) and atrioventricular block. Early revascularization and implantation of temporary PM were first step of our treatment. After hemodynamic destabilization, RV preload menagement (volume replacement), intubation with mechanical ventilation, short term mechanical support with IABP and inotrops (dobutamin after that levosimedan) and vasopressors (norepinefrin) were administered.

Results: The use of early revascularization and maintenance of optimal heart rate and AV synchrony is key step of management of this pacients. When conventional treatment is not enough, mechanical, respiratory and hemodynamic support might be considered.

Conclusions: The importance of early identification and management of cardiogenic shock complicating MI, early revascularization, rhythm optimization and short-term mechanical support devices, can assist with hemodynamic support until recovery. The prognosis of cardiogenic shock associated with RVMI is worse in short-term, compared with non RVMI but those patients who survive hospitalization have a relatively good long-term prognosis.

Key words: Cardiogenic shock, Acute myocardial infarction , Right ventricular failure, Acute heart failure

INFLUENCE OF NON-HDL-C LEVELS ON CAROTID INTIMA-MEDIA THICKNESS IN HEALTHY INDIVIDUALS AND PATIENTS WITH CO-MORBIDITIES

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Introduction: Measurement of the Carotid Intima-Media Thickness (cIMT) is a suitable non-invasive method to monitor the early stages of the atherosclerotic process. Non-HDL-C is used as an input in the Systemic Coronary Risk Estimation 2 (SCORE2) risk algorithms.

Aim: To assess the influence of lipoproteins particularly non-HDL-C levels on cIMT in healthy individuals and patients with co-morbidities.

Material and methods: Lipid parameters of 72 patients, divided into two groups were analyzed. The first group included healthy individuals who come for regular check-up without any previous pharmacologic treatment including statins. And, in the second group were patients with co-morbidities diagnosed and treated in our hospital in the last month, all previously and currently treated with statins. Ultrasound examination on the carotid arteries was performed in all patients.

Results: Statistically significant differences between the groups were in the following variables: age, sex, systolic and diastolic blood pressure, cIMT, carotid stenosis, total cholesterol, triglicerides, HDL, and non-HDL-C. In the healthy group non-HDL-C have statistically significant positive correlation with age and cIMT ($r= 0.442$ and $r=0.755$, $p<0.01$, respectively), and in the co-morbidity group with diastolic blood pressure and carotid stenosis ($r=0.403$, $p=0.015$, and $r= 0.332$, $p=0.048$, respectively). Only in the co-morbidity group, age, systolic blood pressure, total cholesterol, non-HDL, and triglicerides have an independent effect on carotid intima media thickness, and systolic and diastolic blood pressure have an independent effect on the carotid stenosis.
Conclusion: Positive correlation of non-HDL with cIMT in the healthy group, and it's independent effect on the cIMT in patients with multiple co-morbidities highlights the importance of this parameter. Lowering non-HDL even in the healthy people, may attenuate the atherosclerotic process.

TWIDDLER SYNDROME

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Twiddler syndrome is an uncommon condition caused by the patient, during conscious or unconscious manipulation and rotation of the pulse generator in the device pocket. This evolves twisting of the pacemaker lead which may result in lead damage, such as a lead fracture or insulation leakage.

Case report: We describe a case of an 81year old patient admitted because of the elective replacement of a dual chamber pacemaker device with a past medical history of total AV block, cardiomyopathy, diabetes mellitus, and atrial fibrillation. The Electrocardiogram showed the rhythm of a pacemaker with normal ventricular capture. His lab findings were in the referent range. The patient hasn't reported symptoms. However, a Chest X-Ray revealed dislodgment and twisting of the lead around the generator. This has resulted in a fracture of the atrial lead. Afterward, we decided to make lead extraction and implantation of a new device. Using the axillar approach, atrial and ventricular leads with active fixation, were implanted. The parameters were checked as normal. To decrease the risk of future dislodgment the tip of the pacemaker was fixed with non-absorbable silk. The patient was discharged in stable medical condition and recommended subsequent follow-ups.

Conclusion: Pacemaker Twiddler's syndrome seems to be a very rare complication with a reported incidence of 0.07-7%. It might be an extremely dangerous condition and even fatal as a consequence of the failure of the device to detect and send therapy. The best and simplest way to diagnose is using an electrocardiogram and X-ray. In addition, preventing morbidity and mortality is extremely important to follow up the patient and diagnose as well as intervene early. Education and proper information are extremely important for long-term management.

INCIDENTAL DIAGNOSIS OF CHRONIC ASCENDING AORTIC DISSECTION DURING DIAGNOSTIC CORONARY ANGIOGRAPHY: RARE BUT LIFE- SAVING

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Stanford Type A aortic dissection is a progressing disease process in which a tear in the intimal lining of the aorta allows passage of blood into the aortic media and creates a false lumen. Possible complications include acute aortic regurgitation, aortic rupture, myocardial or cerebral ischemia and pericardial tamponade. A small percentage of patients with Type A dissections are undiagnosed in the acute phase and are found incidentally or with delayed presentation of symptoms.

Case report: We present a case of a 78-year-old woman with a hystory of hypertension and permanently implanted pacemaker, who underwent an elective diagnostic coronary angiography due to fatigue and dyspnea. During the intervention, a double lumen of the aorta was visualized after catheter placement in a false lumen. The patient was immediately admitted to the intensive care unit for further monitoring. She had a strong chest pain, divergent high blood pressure and rhythm of pacemaker on ECG. Auscultation of the heart revealed systolic murmur in the second right parasternal space. Urgent transthoracic echocardiography (TTE) was performed and showed aortic root dilatation, 45mm dilatation of ascending aorta, moderate aortic insufficiency and reduced ejection fraction. Computer aortic contrast angiography (CT) was performed and evidenced chronic dissection of the ascending aorta from the coronary sinus and arcus to the infradiaphragmatic abdominal aorta. The patient was transferred to the cardiac surgery department and underwent a repair of the ascending aorta with Dacron interposition graft. The postoperative course was complicated by pericardial effusion and acute pericardial tamponade, successfully treated with a second operation. After several weeks the patient was discharged in a hemodynamically stable condition, with recommendation for medical treatment.

Conclusion: Patients with de novo chronic aortic dissection are usually asymptomatic at the time of diagnosis, discovered incidentally upon echocardiographic and computer angiographic imaging, or rarely during percutaneous coronary intervention. Recognition and prompt operative intervention are crucial for patient survival.

Key words: Chronic aortic dissection, echocardiography, computer angiography

SGLT2I IN PATIENT WITH CABG, METABOLIC SYNDROME AND T2DM

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Introduction: SGLT2i are associated with a reduction in adverse major cardiac and cerebrovascular events especially in patients with heart failure and T2DM. Effect and safety in treatment using this new drugs results in a greater reduction in HBA1C, TT, FPG, PPG, SBP, BMI, LDL and is recommended in a patient with poor glicoregulation after a previously performed aorto-coronary bypass and metabolic syndrome (obesity, hypertension, diabetes, hypertriglyceridemia).

Aim: The high potencial of mechanism of SGLT2i in patient with heart failure,T2DM and many comorbidities reduce the risk for hospitalization and cardiovascular mortality.

Material and methods: Male patient 53, with T2DM more than 3 years, CABGX5 before 4 months on a therapy with Insulin Humulin N 26+12, HBA1C=15%, poor glicoregulation, FPG=16,6...trig=3,6, creatinin=96, TT=110, GFR=81, urine=normal,TA 150/100,HR/112,EF=44% with fatigue,ringing in the ears and dizziness came at internal department. The therapy was changed with:Tbl. Siofor 2x1000, Insulin Ryzodeg 24ie+22ie s.c.Tbl. Jardiance+statin,beta blocker,antihypertensive and antiagregation drugs.It was recommended to take more care of hygiene of the genitourinary tract and diet.

Results: After 1 month patient didn't show up on control, after 6 months was done another echocardiography EF=47%, fpg=8,8, trig=1,9, creatinin=90, hba1c=11,37%, tt=106, TA 135/90, subjectively feels better and has no new hospitalizations.

Conclusion: SGLT2i improved endothelial function,glicoregulation,contractil ity,reduction of blood pressure,cardiac metabolism,reduction of albuminuria ,glomerular pressure and renal protection.All these characteristrics place it highly in the treatment of patients with HF,T2DM and many comorbidities.

Key words: Empagliflozine, heart failure, diabetes mellitus type 2

CASE REPORT OF A PATIENT WITH AN INTRACARDIAC MASSES

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INTRODUCTION Intracardiac masses are often diagnosed by transthoracic echocardiography. Masses in the heart are most commonly due to thrombi in the presence of left ventricular systolic dysfunction or atrial fibrillation, or to valvular vegetations in setting of endocarditis.

CASE REPORT We present a case of 79y.o. female, admitted for first time at our Clinic with symptoms of chest pain and headache 6 hours before admission. From medical history the patient was with transient atrial fibrillation, hypertension and bilateral salpingo-oophorectomy due to endometrial adenocarcinoma. The patient was on anticoagulation therapy (acenocoumarol with TTR<50%). ECG sinus rhytm, without abnormalities. From laboratory exams notable were: elevated: HsTroponin I=1667ng/l, platelets=811 10*9/L., D-Dimers=3142ng/ml. Because of suspicion for aortic dissection, CT angiography of aorta was performed and there were not signs for dissection, but notable was defect in filling of the left atrium(LA). Urgent echocardiography shown 2 oval non-homogenous formations with dimensions 1.0x1.2cm and 0.8x1.5cm localized subvalvular under the posterior mitral valve, with a thin thread attached to the lateral wall of LA. One of them was very mobile and was prolapsing transmitrally during diastole, thus compromises the function of the valve. The coronary arteries were without significant lesions on coronary angiography. Therapy with Enoxaparine(therapeutic dose) was started and the patient was transferred to Clinic for cardiosurgery for surgical treatment. The histopathological evaluatuion confirmed thrombus.

CONCLUSION The unspecific symptoms made it difficult to make diagnose and appropriate treatment. Awareness of unspecific presentations is necessary for proper diagnosis and treatment while delayed diagnosis may worsen the prognosis. Echocardiography is non-invasive procedure and it is helpful in differential diagnosis, treatment and follow-up of this cardiac masses.

Keywords: intracardiac masses, echocardiography

DIAGNOSIS AND TREATMENT OF TWO CARDIOVASCULAR DISEASES IN ONE HOSPITALIZATION

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Introduction: Acute coronary syndrome has been described as the primary cause for cardiovascular death worldwide. Symptoms like chest and back pain can sometimes overlap with other syndromes such as acute aortic syndrome which also brings a high mortality risk.

Aim: Managing of diseases which are not directly related to the reason for admission

Case report : This case report is about a patient presenting with symptoms of acute chest pain,at first described and treated as acute coronary syndrome, with coronary angiography made and stenting of the LAD performed. Since patient was still complaining to pain which was radiating to the lumbal region, along with ecg with a fast heart rate and RBBB morphology , ddimers were examined and they came in around 9000ng/ml. At the 3th day of hospitalization the patient fell down after getting up from his bed with a complete loss of motor function not being able to feel his left leg. We performed CT angiography of the chest and an other acute cardiovascular pathology was diagnosed – Stanford B dissection with an involvment of the left illiac artery). The patient was transferred to the department for cardiac surgery and he was operated with femoro- femoral (crossover) bypass.

Conclusion: We must believe the patients with the symptomatology they are presenting and use all the available diagnostic tools in order to provide the right diagnosis.

Key words: acute coronary syndrome, aortic dissection, diagnosis, treatment

THROMBUS IN LEFT VENTRICLE AS A COMPLICATION OF ACUTE MYOCARDIAL INFARCTION

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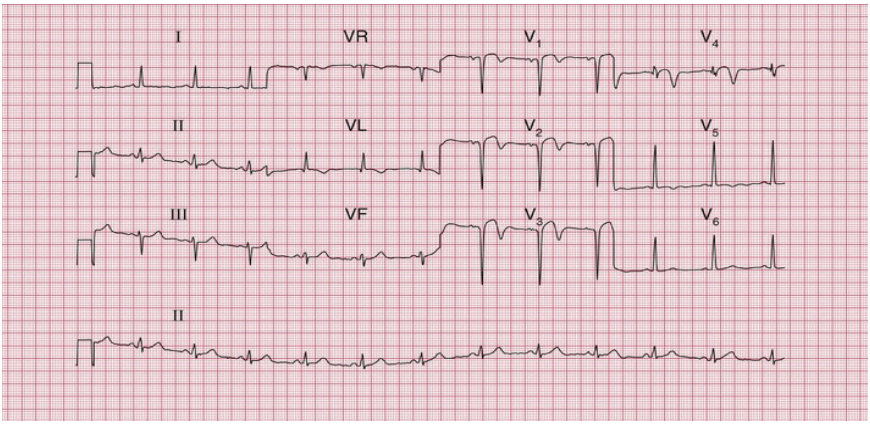
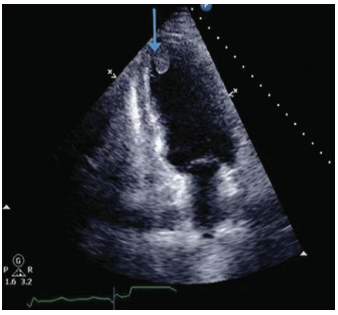
Acute myocardial infarction with ST segment elevation (STEMI) occurs as a result of complete obstruction of coronary artery flow, with subsequent myocardial ischemia. The development of left ventricular thrombus is an important complication of myocardial infarction and is most seen in patients with ST segment elevation myocardial infarction in anterposeptal and anterolateral parts. The incidence of LV thrombus formation after STEMI appears to have dropped from approximately 20% to 5% with more aggressive use of antithrombotic strategies, but variation in imaging techniques will influence detection. Endocardial inflammation and the relative stasis of blood during the acute phase of infarction probably provide a thrombogenic surface for clots to form in the left ventricle. Prospective studies have suggested that patients in whom a mural thrombus develops early (within 48 to 72 hours of infarction) have an extremely poor early prognosis, with a high rate of mortality from the complications of a large infarction (shock, reinfarction, rupture, and ventricular tachyarrhythmia), rather than emboli from the LV thrombus. Even though a mural thrombus adheres to the endocardium overlying the infarcted myocardium, superficial portions can become detached and embolize systemically. Although estimates vary because of patient selection, approximately 10% of mural thrombi result in systemic embolization. Echocardiographic risk factors for thrombus embolization include increased mobility and protrusion into the ventricular chamber, visualization on multiple views, and contiguous zones of akinesis and hyperkinesis. CMR techniques can also characterize LV

thrombi and assist in prediction of the risk for embolism.

Case report: A 53-year-old patient presents for examination due to chest pain radiating to the shoulder and lower jaw, with elevated troponin, was admitted to the Emergency room at University Clinic of Cardiology. He had slightly elevated blood pressure (BP 160/95mmHg), on pulmonary auscultation he had small wet crunches basal bilateraly. On the EKG, he had ST segment elevation and QS form from V1-V4. The laboratory tests taken showed elevated troponin. The patient was taken to an intervention room for coronary angiography. The intervention has been finised with LAD stent implantation.



After the intervention, echocardiography was performed with a finding for hypo / akinesia of the apical segment of the interventricular septum, part of anterior and lateral wall of the left ventricle, and a thrombotic mass presented in the apex of the left ventricle.



The patient was treated with unfractionated heparin for 5 days, then transferred to oral anticoagulant therapy (OAK) and additional dual antiplatelet therapy (DAPT), ACE inhibitors, high doses of statin therapy and b-blocker. On control echocardiography after 9 days, the thrombus was not seen, but the recommendation for OAK remained for the next 3 months.

Conclusion: A thrombus in the apex of the left ventricle is a frequent complication in patients with anterior STEMI, even in the absence of apical aneurysm. However, the use of early reperfusion therapy, including percutaneous coronary interventions, has significantly reduced the risk. For patient with mural thrombi, once diagnosed, oral anticoagulant therapy should be considered for up to 6 months, guided by repeated echocardiography and with consideration of bleeding risk and need for concomitant antiplatelet therapy. Patients with STEMI and anterior apical akinesis or severe dyskinesis may also merit a limited course of anticoagulant therapy. The clinical experience with direct-acting oral anticoagulants in this setting is limited.

THROMBUS ASPIRATION WITH PERCUTANEOUS CORONARY INTERVENTION (PCI) IN ST SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI) – WHEN?

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Introduction: Rapid reperfusion with primary Percutaneous Coronary Intervention (PCI) is considered as optimal treatment in patients with ST Segment Elevation Myocardial Infarction (STEMI). Due to it's limitations as is risk of distal thrombus embolization and microvascular occlusion, that leads to no reflow phenomena, manual thromboaspiration before stent deployment or balloon pre dilatation, appears like a simple strategy, but with its own risks besides benefits.

Aim of presentation is to describe a scenario in which this method is preferred.

Case report: A 71 - year - old woman presented to the emergency department, with symptoms of chest pain and discomfort in the jaw and back, onset 8 hours ago. She reported medical history of paroxysmal atrial fibrilation, hypertension and hypothireosis, denied bad habits and allergies.

Blood pressure was 130/100 mm Hg. Initial ECG showed atrial fibrilation, ventricular rate 78 bpm, ST elevation in precordial leads. En route to hospital she was given 300 mg aspirin, 600 mg clopidogrel and 8000 IE unfractionated heparin bolus, by ambulance crew.

According to clinical presentation and ECG changes, immediate PCI with trans radial approach was performed. It detected occlusion of left anterior descending artery (LAD) it's proximal segment, TIMI (Thrombolysis in Myocardial Infarction) thrombus grade 5, TIMI flow 0, and plaque on right coronary artery (RCA). Our revascularization strategy was manual aspiration thrombectomy, with an aspiration catheter (Export) - and large size thrombotic material was extracted. Then we deployed drug eluting stent (DES) 3.5x48 mm, 13 atm, achieving optimal final angiographic result.

After the procedure, the patient was stable, monitored in Intensive Care Unit. Echocardiographic assessment described ejection fraction 46%, left ventricular systolic and diastolic dysfunction, with segmental kinetic changes. Three days after admission the patient was hospital discharged in good condition, laboratory with decreased troponin value and therapy recommendation (dual antiplatelet one month, then clopidogrel only, oral anticoagulant therapy, maximal dose of statin, ace inhibitor and beta blocker).

Conclusion is correlated with subgroup analyzed results from 3 eligible trials (TASTE, TAPAS and TOTAL) which findings were in favor of thrombus

aspiration versus PCI alone in those with TIMI thrombus grade ≥ 3.

In addition, although routine manual thrombus aspiration during PCI in patients with STEMI, does not improve clinical outcomes, there are potential benefits in those patients with high thrombus burden.

Keywords: Thrombus aspiration, Percutaneous Coronary Intervention, ST Segment Elevation Myocardial Infarction (STEMI)

BENEFIT OF USING BILATERAL TRANS-RADIAL APPROACH FOR COMPLEX CTO

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Aim: To show the benefit of using bilateral trans-radial approach for complex CTO

Definition: Chronic coronary occlusion (CTO) is defined as a complete or almost complete obstruction of an coronary vessel with TIMI 0 or 1 flow,with an estimated occlusion duration of> 3 months

CTO revascularization constitutes the most complex procedural setting for interventional cardiologist because the are associated with with a lower success rate,longer procedure duration,higher volume of contrast media,spe cificcomplications,increased x-ray exposure for both the patient and operator.

Methods and results: 55 years old patient with minimal effort angina was sheddulled for PCI.The patient had prior percutaneous coronary intervention with drug eluting stent on LAD and one failed PCI on the Circumflex artery(CTO). We used for our intervention bilateral radial approach and various dedicated CTO wires and microcatheter(Conquest Pro ASAHI;Finecross,Terumo).Using the microcatheter is essential fot this type of intervention because it gives us support to the guide wire,we can exchange and reshape the GW when needed. For this intervention we used anterograde technique for openining the occluded artery under contralateral angiographic guidance.Afterpredillatation with with several compliant balloons(Mini Trek 1.5/20mm,Trek 3.0/20 mm),drug eluting stent 3.5/38mm was successfully implanted with excelent angiographic result.The patient was discharged without any complications the next day.

Conclusion: Dual coronary angiography via trans radial approach and in-depth and structured review of the angiogram are key for planning and safely performing CTO-PCI. The TRA reducespost-procedural bleeding and vascular complicationsand facilitates same day discharge even in the presence of aggressive anti-thrombotic treatment.

INFECTIVE ENDOCARDITIS ON BIOLOGICAL MITRAL PROTHESIS - CASE REPORT

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Introduction: Infective endocarditis(IE) is diagnostic challenge. Often,the first manifestation of the disease,besides temperature, happen because of unrecognized septic emboli.

Case report: We present a 71 years old patent with biological mitral prosthesis implanted in 2018 and by pass surgery at the same time. With thoroughly anamnesis, we got the information that in april 2022, while playing with street cat, he had skin tearon the hand. The symptoms start in april-may 2022 with temperature, but he didn't visit a doctor. He had pain in lumbal spine which started to increase, because of what he couldn't walk any more. The high febricity showed again two times in may 2022.From May, 2022 year he started to have confusion, delay speaking, and losing weight (10-15kg). On June he had high temperature, pain in abdomen under right rib arch, he underwent CT of the abdomen which showed oval clearly localized with hiperdensity change in the right liver lobus. He had hemianopsia of the right eye, also in June the same year.

After several days in June, the right side of extremities musculature weakened, he became immobile, he showed confusion, dizartria, conscious and fever. He was hospitalized in Clinic of Neurology. Thee CT showed massive ischemiain left on the ocipito-parietal part of the brain. Laboratory: elevated SE, anemia, leukocytosis, high CRP 170..147.., hypoalbuminemia, elevated D-dimers. Hemocultureon admission: Enterococcus fecalis, next two: negative. On the echocardiography was found mobile shadows on mitral bioprothesis, mitral regurgitation, in favor of prosthesis dehiscence. After neurology, he was additionally laboratoricaly and clinicaly (hemoculture-negativ) stabilized in Clinic of cardiology and transfer to Cardiosurgery department. The patient was successfully re-operated with replasman of the infected prothesis, without any consequence from CVI, hemianopsia, liver change and lumbal pain.

Conclusion: It is necessary to consider IE,always in the setting of temperature and embolic event, especially if the patient has valvular prosthesis implanted.

Key words:prosthetic endocarditis, septic embolysation.

AUTHOR INDEX