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Vážené kolegyně a kolegové,

vítejte na 41. Angiologických dnech v Praze! Časopis Kazuistiky v angiologii si postupně a úspěšně vydobývá své místo mezi informačními zdroji, využívanými při naší práci. Zvláštní vydání časopisu, které právě otvíráte, obsahuje abstrakta přednášek zařazených do programu našeho každoročního sjezdu. Publikované texty, kromě toho, že představují literární odkazy, by měly usnadnit výběr toho, co každý z nás, podle svých zájmů, bude považovat za vhodné navštívit a vyslechnout.



Stejnému účelu pak poslouží i nová mobilní aplikace, která bude na našem sjezdu v letošním roce poprvé použita. Posluchači v sále dokonce budou moci v průběhu přednášek nechat své mobily beztretně zapnuté a prostřednictvím této aplikace klást přednášejícím otázky. Věříme, že tyto technické inovace oceníte a že přispějí k ještě širšímu dopadu a celkovému vyznění odborného programu.

Některé jeho části bych chtěl vyzdvihnout: sekce připravené ve spolupráci se společnostmi pro aterosklerózu, hypertenzi, trombózu a cévní přístup, přednáškové bloky věnované různým aspektům preskripce nových antikoagulancií, stoletému výročí objevu heparinu a současnému postavení tohoto preparátu v klinické praxi, problematice diabetické nohy, dialyzačních shuntů, přímým přenosům endovaskulárních intervencí, moderní léčbě varixů a chronické žilní nedostatečnosti, akutní a kritické končetinové ischemii.

Dovolte, abych poděkoval všem, kteří přihlásili svá sdělení nebo se jakýmkoliv způsobem na přípravě odborného programu podíleli, a současně popřál všem účastníkům, aby naše letošní setkání mělo úspěšný průběh.

*Karel Roztočil
předseda České angiologické společnosti ČLS JEP*



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ERGOTAMINE INDUCED ACUTE LOWER LIMB ISCHEMIA

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Vasospasm related to ergot intoxication has been recognized since the Middle Ages when it occurred due to ingestion of rye contaminated with *Claviceps purpurea*. Today ergotism is a rare cause of peripheral ischemia, most often associated with ergotamine tartrate therapy.

Our study involves a 34-year-old female with a history of migraine since his youth, who was treated with ergotaminic preparations up until the day before admission to hospital. He was admitted because of a 14-day history of symptoms including bilateral and symmetrical anesthesia of the fingers and a general feeling of weakness, associated with intense pain and cyanosis of the legs.

Favorable prognosis of the condition, with complete recovery from the ischemic peripheral circulatory disorders can be obtained by early diagnosis. Precise evaluation of the history, with recognition of treatment of migraine headache with ergot alkaloids, can be determinative in diagnosis. The specific pattern of the angiographic findings, as we saw it in 6 cases within the last 4 years, decisively confirms the diagnosis. We could demonstrate thread-, thorn- and hour glass-like narrowing of the vessels, due to spasm. Total occlusion with the development of collaterals may occur, but we saw no thrombus formation. The stenotic arterial segments had smooth margins. The distribution of the involved arteries was more focal than generalized and more peripheral than central. Ergotaminic agents were withdrawn, prostanoids, heparinization and analgesics was indicated. The symptoms disappeared, the physical examination was normal and results of a control angiography study were also normal. The complete reversal of the circulatory ischemic disorders after therapy (particularly the absolute ban of ergots), were so specific, that other diseases of ischemic nature (emboli, arteriosclerosis, Buerger's disease, fibromuscular hyperplasia) we have excluded.

This report supports the findings of others regarding the toxic effects of ergot preparations upon the arterial system, which may take the form of acute or chronic obstruction. Physicians should be aware of the possible complications arising from prolonged or excessive use of ergot medications.

CONSERVATIVE TREATMENT OF LATE AORTIC GRAFT INFECTION

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Aortic graft infection is one of the most serious complications of aortovascular surgery. Diagnosis is based on clinical and radiologic findings. The management should be individualized. The main goals of management are complete excision of the infected foreign material with debridement of the surrounding tissue and repair of vascular continuity by extra-anatomic bypass or *in situ* venous bypass. The gold standard is surgical treatment. The surgical methods carry a high mortality and re-infection rate.

In certain cases with high risk perioperative mortality a conservative strategy may be an alternative approach. Conservative management is associated with percutaneous drainage and antibiotic therapy. Despite significant progress in surgical, and conservative treatments, the mortality and morbidity for this condition remain high.

We report the case of a 54-year-old man with complicated history of aortic repair surgery. In November 2015 he was presented in the emergency department of hospital in Frýdek-Místek with fever and weakness. CT angiography of aorta and Positron Emission Tomography – Computed Tomography showed an infection of aortic graft. After multidisciplinary conference conclusion the conservative strategy was recommended. He was treated by combination of intravenous antibiotic. The white cell count, C-reactive protein level reduced but remain increased. The patient clinically improved but infection persist. The patient felt better at the most recent follow-up and continues to receive peroral antibiotics. The main goal of this report is provoking a discussion and find optimal strategy of therapy.



KAZUISTIKY V ANGIOLOGII

TRUE ANEURYSM IN AUTOLOGOUS HEMODIALYSIS FISTULAE: DEFINITIONS, CLASSIFICATION AND INDICATIONS FOR TREATMENT

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Introduction: Definition, etiology, classification and indication for treatment of the arteriovenous access (AVA) aneurysm are poorly described in medical literature. The objectives of the paper are to complete this information gap according to the extensive review of the literature.

Methods: A literature search was performed of the articles published between April 1, 1967, and March 1, 2014. The databases searched included Medline and the Cochrane Database of Systematic Reviews. The eligibility criteria in this review studies the need to assess the association of aneurysms and pseudoaneurysms with autologous AVA. Aneurysms and pseudoaneurysms involving prosthetic AVA were not included in this literature review. From a total of 327 papers, 54 non-English papers, 40 case reports and 167 papers which did not meet the eligibility criteria were removed. The remaining 66 papers were reviewed.

Results: Based on the literature the indication for the treatment of an AVA aneurysm is its clinical presentation related to the patient's discomfort, bleeding prevention and inadequate access flow. A new classification system of AVA aneurysm, which divides it into the four types, was also suggested.

Conclusions: AVA aneurysm is characterized by an enlargement of all three vessel layers with a diameter of more than 18 mm and can be presented in four types according to the presence of stenosis and/or thrombosis. The management of an AVA aneurysm depends on several factors including skin condition, clinical symptoms, ease of cannulation and access flow. The diameter of the AVA aneurysm as a solo parameter is not an indication for the treatment.

IS IT WORTHWHILE TO TREAT OCCLUDED VENOUS COLD-STORED ALLOGRAFTS WITH THROMBOLYSIS?

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Introduction: Cold-stored venous allografts can be used when autologous vein is not available. Although a previous study documented poor patency, venous allografts are still effective in preventing major amputations in short-term. Thrombolysis may be used in the case of graft occlusion, but there is lack of data on outcomes.

Aim: To evaluate early outcomes, long-term patency and limb-salvage rates of thrombolysed cold-stored venous allograft bypasses with limb ischemia, and to compare the outcomes with thrombolysis of other bypass grafts.

Material and Methods: Single centre study of consecutive patients who received intra-arterial thrombolytic therapy for occlusion of venous allografts.

Results: One hundred patients with occlusion of infrainguinal bypass of cold-stored venous allograft (n=35), autologous (n=26) and prosthetic bypass (n=39) underwent percutaneous intra-arterial thrombolytic therapy. Mean duration of thrombolysis was 22 hours (IQR 19–23) without difference between the groups (p=0.75). Median follow-up was 15.5 months (IQR 1–67.3). Patency rates of thrombolysed bypass at 6 and 12 months were 54% and 47% in patients with allovenous bypass, 58% and 35% with autologous bypass and 89% and 86% in patients with prosthetic bypass. There were no difference in patency-rate between autologous and allovenous bypass groups. Limb salvage rates at 1, 6 and 12 months after thrombolysis were 83%, 72% and 63% in the allovenous group, 91%, 76% and 65% in the autogenous group and 97%, 91% and 88% in the prosthetic group, respectively. Patients with a prosthetic bypass had significantly better limb salvage than patients with allovenous bypass (p=0.03), while there were no difference in limb salvage between allovenous and autologous bypass (p=0.64).

Conclusion: Long-term results of thrombolysis of prosthetic bypasses were superior to venous bypasses, but there were no differences between autologous and allovenous bypasses. Occluded cold-stored venous allograft could be successfully reopened in most cases.

ENDOSCOPIC HARVEST OF GREAT SAPHEOUS VEIN FOR INFRAINGUINAL ARTERIAL BYPASS – SUMMARY OF OUR INITIAL EXPERIENCE

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Objective: We describe our initial experience and early results of infrainguinal arterial bypasses done using technique of endoscopic vein harvest (EVH).

Methods: All patients who underwent endoscopic great saphenous vein harvest for lower extremity arterial bypass grafting were enrolled in this study. Selection of patients for EVH was based on clinical and duplex ultrasound appearance of a great saphenous vein (GSV). Only patients with adequate GSV were considered for EVH. We collected data regarding patient's demographics, history, clinical findings, operative procedure and postoperative recovery. Patients were followed at 3, 6, 12, 18 and 24 months postoperatively and then yearly thereafter. Patencies were analyzed by Kaplan-Meier method. Statistical analysis was performed using IBM SPSS Statistics 21.0 software (IBM Corp, Armonk, NY).

Results: From April 2012 to December 2015, 17 patients underwent 17 femoropopliteal bypass operations with GSV harvested by endoscopic technique. There were 15 male (88.2%) and 2 female (11.8%) patients, with a mean age of 60 years. Diabetes mellitus was present in 7 patients (41.2%). The indication for intervention was critical limb ischemia in 7 patients (41.2%) and life-limiting claudication in 10 patients (58.8%). One patient underwent conversion to open harvest after endoscopic dissection of the vein. All other GSV harvests were accomplished endoscopically. Harvested GSV was utilized for formation of proximal (11; 64.7%) or distal (6; 35.3%) femoropopliteal bypass. 2 patients (11.8%) developed postoperative surgical site infection Szilagyi gr. II. Mean follow-up was 10.2 months. At 1 and 2 years, primary patency was 82.0% and 82.0%, assisted primary patency was 93.8% and 93.8%, and secondary patency was 100.0% and 100.0%. At 1 and 2 years, amputation-free survival was 100.0% and 100.0%. No patient died within the study period (mortality 0.0%).

Conclusions: Endoscopic harvest of GSV is a minimally invasive alternative of a standard open harvest of GSV. In our early experience, results of EVH femoropopliteal bypasses are comparable to those achieved using traditional open vein harvest technique with the added benefit of decreased incidence of surgical site infections and decreased invasivity of the procedure.

THE DIFFERENTIAL DIAGNOSIS OF LEG ULCERATIONS

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An ulcer is a defect in the skin extending at least into the upper layer of dermis. The etiology of leg ulcers is varied and therefore the estimation of cause of defect is very important. There are two factors for origin of ulcers of the lower extremities.

There are:

- 1) **external factors** (injury, physical, chemical and infectious causes) and
- 2) **internal factors** (vascular, hematological, metabolic, neuropathic etc.).

The healing of ulcers depends on many factors. These are: the age of patients, the state of nutrition, the state of immunity, the use of medicine, abusos of smoking and alcohol and drug consumption.

The differential diagnosis of leg ulcerations is based on the accurate medical history, clinical investigation and instrumental investigation.

MONOCLONAL ANTIBODY IN ANGIOLOGY

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Monoclonal antibodies (mAb) are monospecific antibodies that are produced by one type of immune cells. These antibodies have the unique property of specificity. It is possible to create monoclonal antibodies that specifically bind to a substance and they can then serve to detect and inactivate the target substance.

This review provides an overview of the emergence and use of mAb, of their mechanism of action, delivery, clearance, safety, as well as therapeutics. Key differentiating aspects between mAb and classical small-molecule drugs are also highlighted, along with a brief summary on the use of mAb in the angiology and cardiology field.

It is more than 20 years, since the first chimeric mAb – abciximab – was approved as antiplatelet drug in angiology and cardiology. In last year two fully human mAb – alirocumab and evolocumab – were introduced as hypolipidemic drugs. The last innovation is fragment mAb – idarucizumab – as dabigatran antidote. Nowadays is estimated, that more than 500 different mAb are in various stages of development, some of them will be useful also in vascular patients.

A NEGATIVE D-DIMER TEST CANNOT RELIABLY EXCLUDE THROMBOSIS

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D-dimer is a small protein fragment presented in the blood after a blood clot is degraded by fibrinolysis. It is so named because it contains two crosslinked D fragments of the fibrin protein. D-dimer concentration may be determined by a blood test to help diagnose thrombosis. A positive result can indicate thrombosis, but does not rule out other potential causes. We would like to present a group of patients with acute deep vein thrombosis and a negative D-dimer test, found during a three-month observation.

Conclusion: The ultrasound diagnostics are very needful for all patients with clinical suspicion of deep vein thrombosis.

MULTIPLE THROMBOPHILIA MUTATIONS AS A POSSIBLE CAUSE OF PREMATURE ISCHEMIC HEART DISEASE (A FAMILY CASE REPORT)

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The incidence of atherosclerosis and ischemic disease increases with clustering of predisposing risk factors either modifiable (e.g. smoking, dyslipidemia/hyperlipidemia, obesity, arterial hypertension, diabetes mellitus) or non-modifiable (age, sex, family history). If a positive family history of premature ischemic disease (occurring in relatives under the age of 60) is present without an obvious risk factor for atherosclerosis, the next diagnostic step should be search for other rare factors as anatomic anomalies of coronary arteries, dissection of them in inborn defects of connective tissue, drug abuse and acquired or hereditary thrombophilia as well.

This poster reports on a unique case of a patient and his family developing ischemic heart disease at the age of 48. Eight mutations and polymorphisms in six different genes involved in the pathogenesis of the arterial thrombosis process were identified in this patient. To the best of our knowledge, such a unique case of a premature acute myocardial infarction (AMI) patient with a similar genetic background has not been reported yet.

UNVEILING OF THE CHRISTIAN DOPPLER MEMORIAL PLAQUE IN BANSKÁ ŠTIAVNICA

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Christian Doppler (11.29.1803, Salzburg – 03.17.1853, Venice), physicist of world importance, entails a physical principle which still bears his name during their educational activities in Prague for the first time at a meeting of scientists, the Royal Society of Sciences on May 25, 1842 in the lecture "The colored light binaries" described the relationship frequencies of light and the relative speed of its source.

On October 23, 1847 Doppler was appointed professor of mathematics, physics and mechanics at the Mining and Forestry Academy in Banská Štiavnica, where two-year intensive scientific work in difficult revolutionary period.

Since 2012, Slovak Angiological Society of Slovak Medical Association in cooperation with the Slovak Society of Vascular Surgery of Slovak Medical Association has actively advocated the shoulder plaque Christian Doppler in Banská Štiavnica. Finally, in the 40th anniversary of the use of ultrasound in medical practice, all efforts were successfully completed by the Slovak Society for Ultrasound of Slovak Medical Association by unveiling ceremony on Belházy's house in Banská Štiavnica. We are glad that plaque reminding of stay of world renowned scientist Christian Doppler was unveiled as an expression of our recognition because measuring blood flow based on the Doppler principle we use in modern sonographic diagnosis in our daily practice.



Christian Doppler
(1803–1853)

MULTIPLE VESSEL INVOLVEMENT IN THE ELDERLY – SIGNIFICANT CONTRIBUTION TO POLYMORBIDITY

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The prevalence of most chronic diseases increases with age, so it is not surprising that many older individuals suffer from two or more chronic conditions, a situation named multimorbidity. Prevalence of multimorbidity in older person ranges from 55 to 98%. Multimorbidity is characterized by complex interactions of co-existing diseases. Major consequences of multimorbidity are disability and functional decline, poor quality of life, and high health care costs. Usual medical diagnostic and therapeutic approaches focus on each single disease do not account for disease interactions and may impair health and functional outcomes.

We want to illustrate the complexity of diagnostic and therapeutic procedures in the elderly by case report of 90-year-old female patient. Involvement of several parts of vascular system with atherosclerotic process and paroxysmal atrial fibrillation brought several complications that at some stage in the diagnostic process remained sometimes unnoticed or sometimes stayed undertreated for not quite understandable reasons. The patient developed a critical limb ischemia, which was covered with signs of the recent fracture of the lower limb, considered its complication. Thrombectomy was performed at the department of vascular surgery, but because of poor wound healing, finally resulted in high amputation.

We would like to draw attention to the necessity of close cooperation with specialists in dealing with diseases of polymorbid patients. It turns out that in addition to cardiologist, angiologist is an essential part. Proper assessment of the peripheral circulation, may be a relevant basis for decision-making process of the surgical team in case of injuries in seniors.

VIRCHOW'S LEGACY FOR PREVENTIVE ANGIOLOGY STILL CURRENT

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Rudolf Virchow (1821–1902) studied medicine at the Humboldt University, where he later taught. In the years 1847–1848 investigated at the behest of the Prussian government typhus epidemic in Upper Silesia. The study exceeded medical aims by addressed the economic, social and hygienic factors.

In 1847 he founded journal *Archiv für Anatomie und Physiologie Pathologisch* so far existing. In the years 1880–1893 he was a deputy of the Reichstag. At the time, he led the Pathological Institute in Berlin. Helped formulate health reforms introduced in Germany of Bismarck's administration.

Magnum opus for his work is considered *Cellular pathology* (1858). He proved that the disease must be understood in terms of cellular transformation. From experimental cells as to understand the tumorigenesis and metastasis. Virchow's cellular pathology has become the foundation of modern pathology.

In 1856 he describes the principles of thromboembolic disease in the works *Thrombose und Embolie, Gefässentzündung und septische Infektion*. "The traditional triad consisted of: the phenomenon of interruption of the blood flow, the phenomenon of irritation of the vessel wall and its surroundings, the phenomenon of coagulation currently known as hypercoagulability.

October 13, the birthday of Rudolf Virchow, was elected International Society on Thrombosis and Haemostasis as World Day for thrombosis, such as focusing on the education of lay and professional, the ultimate goal is to reduce the incidence and prevalence of diseases caused by thrombosis. Slovak



Rudolf Virchow
(1821–1902)

Society of Haemostasis and Thrombosis stands at the head of this activity in the Slovak Republic, coordinates the activities and guarantees professionalism. At the head of the Steering Committee is prof. MD. Peter Kubisz, PhD.

World Day of thrombosis brings together expertise in public health activities. Its preventive focus is fully in the spirit of endeavor Rudolf Virchow.

POPLITEAL ARTERY ENTRAPMENT SYNDROME

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Purpose: We analyse two female patients with the popliteal artery entrapment syndrome who were diagnosed and treated by our department in 2015.

Methods: During 2015, two female patients were found to have the popliteal artery entrapment syndrome. Different surgical treatment approaches were used in the patients.

Results: In the first case, the thrombectomy of the popliteal artery and its decompression by myotomy of the medial head of the gastrocnemius muscle was performed. Seven months after the surgery her operated popliteal artery is patent and she is without claudications. The second case underwent decompression by myotomy of the medial head of the gastrocnemius muscle and the replacement of the diseased popliteal artery using a great saphena graft. One month after the surgery the graft is patent and the patient is symptom-free.

Conclusions: The popliteal artery entrapment syndrome is a vascular condition which must be considered in the differential diagnosis above all in younger patients with lower limb ischemia without evidence of atherosclerotic disease. MRA or CTA confirm the diagnosis provided that it is considered as an option. The management is surgical and the approach is usually a dorsal one – Hamming's S-shaped incision. Vessel decompression by myotomy is indicated. Chronic occlusion or aneurysmal degeneration require resection and vein grafting.

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RISK FACTORS AND INDICATIONS FOR MAJOR AMPUTATION AFTER AUTOLOGOUS CELL THERAPY OF ISCHEMIC DIABETIC FOOT

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Diabetic patients with no-option critical limb ischemia (no-CLI) indicated for autologous bone marrow-derived mononuclear cell (aBMMC) therapy are often at high risk of major amputation. Even though we proved a significant improvement of ischemia after aBMMC therapy in our previous studies, amputation is sometimes inevitable. The aim of our current study was to analyze the risk factors and indications for major amputation in diabetic patients treated for no-CLI by aBMMCs. Sixty-four diabetic patients with no-CLI from our foot clinic treated by aBMMC therapy over 7 years were divided into non-amputated group (n=47) and amputated group of patients (n=17). Risk factors for major amputation were assessed before cell therapy and divided to patient-related: e.g. age, sex, duration and treatment of diabetes, HbA_{1c}, co-morbidities, smoking, thrombophilia, and limb-related ones: e.g. Texas classification (up to stage 3C), severity of CLI (Rutherford classification) and infection – classified by PEDIS (up to grade 3) and WIfI (up to grade 2), presence of resistant microbes (MRSA, Pseudomonas, Klebsiella, ESBL), osteomyelitis (confirmed by X-ray), and CRP. The main indications for major amputation included infection in 10/17 (58.9%), progression of ischemia in 5/17 (29.4%), and pain in 2/17 (11.7%) of patients. Significant risk factors for major amputation were moderate clinical signs of infection (OR 8.13; 95% CI 1.93–34.2) and immunosuppressive therapy (OR 5.97; 95% CI 0.8–44.6) in stepwise logistic regression and, also, more frequent presence of resistant microbes (p=0.028) and higher mean CRP (p=0.0033) in univariate analysis. Our study showed that the most frequent risk factors for major amputation in diabetic patients with no-CLI treated by aBMMCs were moderate signs of infection, immunosuppressive therapy, the presence of resistant pathogens and higher mean CRP. An appropriate indication of cell therapy in patients with different stage of infection including suitable therapy remains questionable.

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SECONDARY AORTODUODENAL FISTULA AFTER INFECTION OF DUODENO BILIARY PROSTHESIS

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Secondary aortoduodenal fistula is a complication that occurs months to years after surgical or endovascular abdominal aortic reconstruction. I present a case of a patient, who developed aortoduodenal fistula probably by transition of the infection from biliary tract to the wall of aortic aneurysm one year after endovascular aortal abdominal reconstruction. The computed tomography angiography (CTA) revealed endoleak in aneurysm sac, which wasn't surprisingly detected by perioperative digital subtraction angiography. The diagnosis of inflammatory abdominal aneurysm and aortoduodenal fistula was finally confirmed by laparotomy.



THE PROGRAM OF WTC (WOMEN THROMBOSIS CANCER) IN THE CZECH REPUBLIC

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The aim of our short presentation is the introduction of WTC project in Czech Republic. The target groups are all doctors familiar with the topic of VTE. The main goal is the raise awareness of VTE in females with cancer. The incidence of cancer unfortunately is not going down. More than 17 million of women with cancer live worldwide. Every year is diagnosed 6.7 million of new cases. Generally, the patients with cancer and VTE have shorter survival in comparison with patients without VTE. However, the risk of recurrence of VTE and the risk of bleeding in association with anticoagulation therapy is also increased. Based on different surveys, this awareness is not sufficient enough, mainly among gynecologists and oncologists.

gists. Entire project is under the auspices of the international organization ITAC. Aspen pharma ensure the educational grant until 2019. Czech Society on Thrombosis and Hemostasis guarantee this programme in Czech Republic. Education consists of the series of seminars on different level: national, regional and local. At the end of programme all participants should be able to:

1. Describe the risk of VTE and consequences of thrombosis
2. Transmit international guidelines into the local setting
3. Individual assessment of the risk of VTE
4. Indicate primary thromboprophylaxis of VTE not only in surgical, but also in medical patients
5. Identify the risks of VTE in the case of hormonal therapy and pregnancy
6. Know the strategy of therapy of VTE

Conclusion: We consider this project as useful and therefore we are going to actively participate and work on this program.

PENETRATING SCLEROTIC ULCER OF THE THORACIC AORTA

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The penetrating aortic ulcer (PAU) is a rare, but dangerous manifestation of atherosclerosis. This disease affects mainly hypertensive smokers in advanced age, predominantly develops at the thoracic aorta escorted by number of comorbidities. Initially PAU may remain clinically silent, but can suddenly turn into acute aortic syndrome (AAS) due to intramural hematoma, dissection, expanding false aneurysm formation and rupture with fatal outcome.

In a period of 8.5 years at our department 17 212 patients underwent surgery treating cardiovascular diseases. 764 were operated for aortic aneurysms, 354 at the thoracic part, and 216 for dissections. In this material we have registered 18 patients with PAU at the thoracic aorta, 6 females and 12 males with a mean age of 65.7 years. Ten of them were free of symptoms and were detected incidentally during routine screening chest x-ray or evaluation for other diseases. Eight patients had symptoms, all had chest, 3 back, two upper abdominal pain and three had fecer as well.

Comorbidities were fusiform thoracoabdominal aneurysm and occlusion of the right common iliac artery (1), lung abscess with subacute pancreatitis (1), severe pulmonary hypertension (1), colon carcinoma (1), chronic hepatitis B virus carrier (1).

CTA was the fundamental diagnostic tool during workup of all patients, complementary DSA was also performed in four cases. PAU was localized at the ascending aorta in 2, at the arch in 8, at the descending in 6 and at the thoracoabdominal in 2 cases.

Open replacement was undertaken with CPB and hypothermia at the ascending aorta (2), hybrid procedure at the arch

(7), stentgrafting of the descending aorta (6) plus one at the distal arch, one open graft interposition of the thoracoabdominal aorta including the visceral arteries into oblique distal anastomosis (1) and patch plasty of the same segment (1).

During procedures two minor cerebral embolization occurred introducing stent graft into the arch mobilizing debris from the shaggy aorta. One had TIA and healed completely, the other still has visual deficit of the left eye. We have lost one patient having lung abscess and subacute pancreatitis at the 3rd day following unexpected rupture of the stomach.

17 patients have been followed between 4 and 78 months (mean 34). Control CTA was performed at discharge, at 3, 6, 12 months and yearly thereafter. In one patient we detected Type III endoleak due to frame fracture 16 months after implantation at the arch. Reintervention was offered but the patient refused. 4 months later he presented with a 12 cm false aneurysm which broke out through the neck. Emergency open replacement of the distal hemiarch was necessary with removal of the damaged endograft. The virus carrier female patient had Type II endoleak with expanding aneurysm at the lower descending aorta 24 month after primary procedure. The false aneurysm was opened, 2 leaking intercostal over sewn meanwhile stent graft was left *in situ*. Both reoperated patients and the others are all right.

Conclusion: The very challenging cases of the thoracic PAU utilizing the advantage of the wide range of given treatment options can be managed successfully in most of the patients.

COMPLEX THERAPY OF THE DIABETIC FOOT WITH REGARDS TO THE OFF-LOADING TREATMENT

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Treatment of the diabetic foot (DF), defined as the destruction of soft tissue and bone structures below the ankle, should be always comprehensive and be performed by trained podiatric nurses and a team of specialists including internists – diabetologists and angiologists, general and vascular surgeons, orthopedic surgeons, interventional radiologists, microbiologists and especially prosthetics.

The biomechanical abnormalities are very common in patients with diabetes mellitus, especially with distal sensorimotoric neuropathy. Properly performed diagnosis of biomechanical impairment important for the production of preventative and/or off-loading devices is often neglected.

Into the preventive devices we included preventative diabetic shoes that must fulfill strict criteria f.e. adequate upper material, special cut, rigid sole, low heel, sufficient space for the

toes. The individual orthopedic shoes with individual insoles are indicated for the risk patients f.e. after toes amputations, with deformities or small lesions. The postoperative off-loading boots (known as "halfshoes") are indicated for the therapy of the DF ulcers. Due to their deficits (high non-physiologically beveled sole, inadequate redistribution of plantar pressure on the foot, low durability and effectiveness) it's recommended to replace them by prefabricated or individually manufactured orthoses or total contact casts (TCCs), which are still considered as the gold standard for the DF off-loading. Unfortunately, TCCs are still rarely used. Recently we started to use new type of off-loading and stabilization devices – TCC splits – to stabilize acute or postoperative findings in patients with the DF. Sometimes it is necessary to use a combination of off-loading devices f.e. wheel chairs with orthoses, TCC or TCC splits, especially in patients with bilateral foot pathology.

In conclusion, the off-loading therapy is an essential part of complex treatment of the DF and together with early diagnosis and treatment of vascular abnormalities and infectious complications is necessary for DF ulcer healing and is able to prevent minor and even major lower limb amputations.

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HAVE THE NUMBERS AND CHARACTERISTICS OF PATIENTS WITH MAJOR AMPUTATIONS INDICATED FOR THE DIABETIC FOOT IN OUR DEPARTMENT IN THE LAST DECADE CHANGED?

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One of the most serious complications of the diabetic foot ulcers (DFU) is major amputation, which is associated with poor patient prognosis. The frequency of major amputations may be influenced by a variety of factors including deep infections caused by resistant pathogens. The aim of our study was to compare the incidence of major amputations in our center and characteristics of amputated patients with the DFU between two times intervals.

Methods: We included into our study all patients hospitalized for the DFU in our center from 9/2004 to 9/2006 (group 1) and from 9/2013 to 9/2015 (group 2). Between the study groups risk factors such as severity of DFU based on Texas classification, duration of antibiotic therapy, the presence and severity of peripheral arterial disease (PAD) according to Graziani classification, the number of revascularizations, renal failure/hemodialysis, osteomyelitis, infectious agents found in swab cultivations performed before amputations and their resistance were compared.

Results: During the first study period (9/2004–9/2006) 373 patients were hospitalized for the DFU, of whom 3.2% underwent major amputation (12/373 – group 1), during the second study period (9/2013–9/2015) 376 patients, of whom 5.1% absolved major amputation (19/376 – group 2). The study groups did not differ significantly in the age, BMI, duration and type of diabetes, duration and severity of the DFU, the presence of renal failure/hemodialysis, osteomyelitis and PAD. Group 2 had milder forms of PAD by Graziani classification (4.4 vs. 5.7; $p=0.012$) and a higher number of revascularizations before major amputations (2.5 vs. 1; $p=0.003$) compared to the group 1. These patients were significantly longer treated by antibiotics (5.4 vs. 2.5 months; $p=0.002$) and underwent more resections and minor amputations (3.1 ± 2.1 vs. 0.9 ± 0.5 ; $p=0.0004$) before the major one in contrast to patients from the group 1. There is a trend in higher incidence of Gram-negative (65.1% vs. 61.5%; NS) with a predominance of *Enterobacteriaceae species* (60.7% vs. 56%; NS) and the trend in an increase of *Pseudomonas* (25% vs. 18.8%; NS) and *Enterococcus sp.* (46.7 vs. 20%; NS) in group 2 than in group 1. As the incidence of MRSA (20% in both groups), multidrug resistant *Pseudomonas sp.* (19% in group 1 vs. 14.3% in group 2; NS), as the general microbial resistance did not differ significantly between the study groups.

Conclusion: The incidence of major amputations of our hospitalized patients with the DFU remains unchanged in the last decade. We have detected visible treatment intensification as of PAD as of severe infections.

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EXAMINATION IN ANGIOLOGY CLINIC, NEMOCNIČNA A.S., MALACKY, IN EMERGENCY MODE – PERCENTAGE OF OCCURRENCE OF PRESUPPOSED ACUTE MEDICAL CASES

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In 2014 (216 working days), 2 936 patients were examined, on average 13,5 patients per day. The examined group consisted of 1 042 men – M (35%) and 1 894 women – W (65%), mean age 62 years (M – 62,6 years, W – 61,6 years).

271 patients of this group were examined in emergency mode, which makes 9,2% of all patients, on average 1,25 patients per day, 111 M (41%), 160 W (59%) – this is significant statistical difference. The patients age range was between 21–92 years, mean age 63 years (men – 64,7 years, women – 62,6 years – this is non-significant statistical difference).

The group of 271 patients consisted of 163 patients sent to our clinic from local outpatient clinics (V) – (60%) and 108 patients who were hospitalized (O) – (40%) – this is significant statistical difference.

The same group of 271 patients consisted further of 84 patients with presupposed acute disease of arterial system (A): 31% and 187 patients with presupposed acute disease of venous system (W): 69%, this difference is statistically significant.

Out of the total of the 271 patients, the diagnosis of acute disease of the vascular system was confirmed in 113 cases, (+) 113x = 42%, the diagnosis was not confirmed in 158 cases, (-) 158x = 58%. Statistically on significance level $\alpha=0,05$ we verified that $W_{0,05}=(t,t<-1,64)$, i.e. the acute condition was in majority of the cases was not confirmed.

In the group of patients with arterial disorders (A=84 patients), the diagnosis was confirmed in 59 cases – (A+) 59x, i.e. 71%. The diagnosis was not confirmed in 25 cases – (A-) 25x, i.e. 29%... $W_{0,05}=(t,t>1,64)$, i.e. the confirmation of the diagnosis was statistically significant.

In the group of patients with venous disorders (\check{Z} =187 patients), the diagnosis of acute diseases of venous system was confirmed in 53 cases – ($\check{Z}+$) 53x = 28%, the diagnosis was not confirmed in 134 cases – ($\check{Z}-$) 134x = 72%... $W_{0,05}=(t,t<-1,64)$ the higher number of absente cases has been confirmed, thus ($\check{Z}+$) is more statistically significant than ($\check{Z}-$).

From a subset of ambulatory patients V=163, the diagnosis (V+) has been confirmed in 63 cases which makes 39%, unconfirmed (V-) 100x, 61%... $W_{0,05}=(t,t<-1,64)$ absence of the diagnosis is statistically significant.

In the subset of patients of the hospital (O) = 108 patients were confirmed with the diagnosis (O+) 50x = 46%, unconfirmed (O-) 100x = 54%... $W_{0,05}=(t,t<-1,96)$, the difference is statistically non-significant.

In a subset of men (M) = 111 patients, the diagnosis was confirmed (M+) 56x = 50.5%, was not confirmed (M-) 55x = 49.5%, the difference is statistically not significant.

In the subset of women (W) = 160 patients the diagnosis was confirmed (W+) 57x = 36%, not confirmed (W-) 103x = 64%... $W_{0,05}=(t,t<-1,64)$ in most patients the acute condition was not confirmed.

A subset of patients with a confirmed diagnosis (+) 113 consisted of 59 (A+) patients and 54 (F+) patients, the difference is not statistically significant. Subset of patients with not confirmed diagnosis (-) 158 consisted of 54 (A-) and 103 ($\check{Z}-$), the difference was statistically significant.

The average age of patients with confirmed diagnosis (+) 113 insubset (A+) 68.5 years, in the subset ($\check{Z}+$) 60.6 years. Where, $W_{0,05}=(t,t<-1,64)$ – therefore, the average age in the group (A+) is statistically more significant.

In the subset with unconfirmed diagnoses (-) of 158 patients, average age of (A-) is 64 years, ($\check{Z}-$) 61 years, the difference is statistically not significant.

In conclusion:

1. In most of the cases was the presupposed diagnosis not confirmed (nevertheless is the number of 113 cases, i.e. 42%, alarmingly high);

2. There were more confirmed diagnoses of acute disorders of arterial system (71%) than unconfirmed; this number is of statistical significance.
3. There were more unconfirmed diagnoses of acute disorders of venous system (72%) than confirmed, this number is of statistical significance.
4. The average age of patients with acute disorders of arterial system (A+) of 68,6 is statistically significantly higher than in cases of patients with acute disorders of venous system ($\check{Z}+$) 62.8 years.

CHANGES IN THE RECOMMENDATIONS ON ANTITHROMBOTIC THERAPY FOR VENOUS THROMBOEMBOLISM – WHAT IS NEW IN THE UPCOMING CHEST 2016 GUIDELINES?

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American College of Chest Physicians (ACCP) Evidence-Based Clinical Practice Guidelines are one of the most valuable international recommendations on antithrombotic therapy. Since the last issue (9th edition in 2012), a substantial amount of new evidence on the therapy of venous thromboembolism (VTE) has been published, resulting in some changes in the upcoming new edition (already available in the e-pub form).

In patients with deep vein thrombosis (DVT) or pulmonary embolism (PE) and no cancer the authors suggest the NOACs (non-vitamin K antagonist oral anticoagulants) – dabigatran, rivaroxaban, apixaban or edoxaban – over vitamin K antagonists (VKA) for at least first 3 months. In patients with cancer-associated VTE low molecular weight heparin (LMWH) should be preferred to VKA or NOACs. If extended anticoagulation for VTE after the first 3 months is indicated, there is no need to change the choice of anticoagulant.

Regarding the duration of anticoagulation, the authors suggest 3 months if VTE event was provoked by a transient risk factor. The patients with unprovoked proximal DVT or PE and with low or moderate bleeding risk should continue anticoagulant therapy with periodic reassessment of benefit/risk.

In patients with an unprovoked proximal DVT or PE who are stopping anticoagulation, aspirin is suggested for secondary VTE prevention.

For isolated distal DVT the authors suggest anticoagulation only in the presence of severe symptoms or risk factors for extension, otherwise they suggest serial ultrasound imaging for 2 weeks and starting anticoagulation only if the thrombus extends. Similarly, in patients with subsegmental PE and low risk of recurrent VTE they suggest clinical surveillance over anticoagulation.

In patients with low-risk PE home treatment or early discharge is suggested.

The authors recommend against the use of inferior vena cava (IVC) filter in anticoagulated patients with VTE. They

also suggest not using compression stockings routinely to prevent postthrombotic syndrome.

Finally, in the case of VTE recurrent while on VKA or NOACs, switching to LMWH for at least one month is advisable. If the recurrence occurs on long-term LMWH, increasing LMWH dose is suggested.

The authors stress the need for further research of VTE treatment and to continually update the guidelines.

IS IT ALWAYS NECESSARY TO TREAT THE INCOMPETENT VARICOSE TRIBUTARIES AND THE STEM PRIME SOURCE OF REFLUX SIMULTANEOUSLY?

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Introduction: NICE guidelines recommend the treatment of varicose tributaries at the same time as the reflux from the stem veins. But the American Society of Vascular Surgery recommends to treat them during the same procedure or at the later stage.

Material and Method: There were 203 outpatients treated between January 2011 and March 2014 in the Centre of Venous Disorders, Angiocor Ltd., Zlín and in the Centre of Aesthetic Phlebology Ltd., Brno. In all of them, the RFITT of the prime source of the reflux in local tumescent anesthesia was accomplished. The intervention was carried out on 291 veins on 273 legs. Besides typical VSM or VSP, the reflux was eliminated from VSAA, cranial extension of VSP and perforating veins, too. No epifascial varicose veins were extracted or sclerotized during the main session and their elimination was accomplished 6 months after the first intervention if it was necessary. The sources of the reflux were diagnosed before the intervention by using the ultrasound mapping.

Results: The success rate of RFITT obliteration was 95,19%. 14 veins on 12 legs recanalyzed during the first year. These legs were eliminated from the general file for the next evaluation. In 11, 11%, epifascial varicose veins disappeared completely in the period of 6 months. In the next 17, 62% and the same follow up, the varicose veins were reduced and the patients were satisfied with the result and did not want to treat them anymore. A reduction of the maximal diameter of the varicose tributaries was observed in patients examined in standing position on the next 166 legs during 6 months. These varicose veins were treated using the foam sclerotherapy.

The fail of the method – varicose tributaries without changes were observed on 20 legs.

Conclusions: The elimination of all sources of the reflux leads significantly to reduction of incompetent varicose tributaries. According to our results, it was not necessary to treat varicose tributaries in 28, 73% of all cases. The intervention in two steps is associated with a lower load on the patient.

PATHOLOGY OF THE VENOUS RETURN

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Introduction: The calf muscle pump and lesser extent the thigh and foot pumps have a crucial role in the blood returning from the lower extremities. Abnormalities in the valves or lumen of the superficial, deep or communicating veins can impede the function of these pumps. The calf pump is the most important of the three venous peripheral pumps, because it contains the largest venous capacitance and it generates the highest pressures during the muscular contraction.

Aim: The aim of this advice is to describe the processes during the venous functional failure.

Methodology: In literary sources find the modern and up-to date knowledge about the etiology and pathophysiology of chronic venous disorder, especially about pathological venous return.

Results: It is necessary to divide the level of the origin of the reflux. The first and most common is incompetence of the superficial veins. The most probable origin is a weakness of the vein wall, producing the venous dilatation that causes secondary valvular incompetence. These processes are associated with numerous biochemical abnormalities, including elevated level of collagenase, elastases, acid phosphatase and lactic dehydrogenase, as well as collagen defects and lysosomal abnormalities. The valvular ring and its leaflets have greater tensile strength than the vein wall itself. It is presented with the first dilatation of the vein below rather than above the valve. However is possible to find the papers, which describe the descending valvular incompetence theory.

The similar process affects the perforating veins too. But there are three situations with enlarged, insufficient perforators. The first one is in the calf, where are the communicating veins dilated due to overload from proximal insufficient superficial veins. These perforating veins act as the re-entry veins. The next situation is during the occlusion of the deep veins. Perforators under this circumstance have the function as "safety valves" allowing the blood under high pressure in the calf pump to escape. The third problem is perforating vein as the prime source of the reflux.

The specific reflux developments are the changes after the deep venous thrombosis. The extent of the obstruction and the collateral pathways developed the severity of hemodynamic changes. Deep valvular incompetence without coexisting obstruction can be compensated for by presence of the calf pump and perforating veins. When the perforating veins became incompetent, the calf pump can no longer compensate and the superficial pressure rises up.

Conclusion: It is necessary to know all possibilities of the etiology of the disease to be able to choose the therapeutic modality.

POLYMYALGIA RHEUMATICA – ALSO AN ANGIOLOGICAL ISSUE

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The aim is to draw attention to angiological problems with *polymyalgia rheumatica* (PMR).

PMR is the second most common autoimmune rheumatic disorder. The annual incidence rates of PMR were estimated to be 50–58 per 100,000 people aged ≥50 years.

About 15% of people with *polymyalgia rheumatica* also have temporal arteritis (TA) and about half of people with temporal arteritis also have *polymyalgia rheumatica*. Visual loss is the most feared complication in TA.

Angiological interdisciplinary overview can significantly contribute to early diagnosis and treatment of diseases. Imaging techniques such as ultrasonography may be helpful in the diagnosis and evaluation of the extent of vascular involvement in these diseases. Examination only temporal arteries, but also arteries aortic arch and ophthalmic arteries. Likewise, angiological pharmacotherapy (including fibrinolysis and immunosuppression) and interventional procedures may help patients with vasculitis present.

Lecture documents and analyzes major complicated cases of PMR (5, 2013–2015).

Discussion focuses on the neglected but necessary angiology assertion in the multidisciplinary care of patients with PMR.

Conclusion offers the possibility of early involvement of Angiology in the care of patients with PMR.

INTRACEREBRAL BLEEDING DUE TO HYPERPERFUSION SYNDROME AFTER PERCUTANEOUS TRANSLUMINAL ANGIOPLASTY OF BRACHIOCEPHALIC TRUNK IN 60-YEAR-OLD WOMAN

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The hyperperfusion syndrome is a rare, but severe complication of interventional procedures on magistral cerebral arteries with prevalence 2–3% in patients after endarterectomy or endovascular treatment. Clinical presentation is variable including headache, epileptic seizures or focal symptoms within intracerebral bleeding. The main pathophysiological mechanism is the impairment of autoregulation resulting in sudden increase in perfusion of the vasculature distal to stenosis. The following hyperemia of the affected brain tissue manifests as a brain edema or brain hemorrhage.

We refer a case-report of severe intracerebral bleeding in 60-year-old woman with chronic total occlusion of the left internal carotid artery after the angioplasty of the brachiocephalic trunk. The subsequent development of cefalea, nausea, vomiting, with progression to somnolence and meningeal syndrome was observed. The acute intraparenchymal hemorrhage in right fronto-parietal region with frontal subarachnoidal communication was described on CT scan. Conservative medical treatment was indicated according to the general condition of the patient and high risk of bleeding due to the dual antiplatelet therapy. Despite of the extensive CT finding the patient was discharged with minimal neurological deficiency after the intensive care and rehabilitation.

To prevent this potential lethal complication, precise blood pressure correction, periprocedurally and afterwards, is essential as well as clinical state monitoring, especially in patients with development of typical symptoms.

CARRIERS OF THE LDL RECEPTOR MUTATIONS WITHIN THE EXON 12 IN GENERAL POPULATION

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Introduction: Familial hypercholesterolemia (FH) is a serious disease, leading (if not treated) to premature myocardial infarction. FH is caused predominantly by mutations within



the LDL receptor gene. However, knowledge about the prevalence of FH mutations in general population is scarce.

Methods: The presence of the LDL receptor mutation p.(Gly592 Glu); c.1775G>A (common in Czech FH patients) was screened by the PCR-RFLP in general population of 2,559 adults; positive findings were confirmed by direct sequencing.

Results: We have detected three heterozygous carriers of the LDL receptor mutation p.(Gly592Glu). All were females without history of cardiovascular disease, aged 57, 42 and 65 years at the time of the examination. Their total cholesterol levels at the time of examination have been 6.5 mmol/L (untreated); 7.7 mmol/L (treated) and 3.6 mmol/L (treated). All have plasma TG below 1.9 mmol/L and HDL cholesterol over 1.2 mmol/L.

Conclusion: The results of our study pointed out the presence of the undetected FH patients with confirmed LDL receptor mutations in general population.

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V.A.C. THERAPY OF VASCULAR PROSTHESIS INFECTION: A SEVEN-YEAR EXPERIENCE

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Introduction: Treatment of infection of synthetic vascular prosthesis with Vacuum Assisted Closure (V.A.C.TM) therapy is subject of controversy. Life-threatening complications are feared in such cases.

Objective: Retrospective evaluation of efficacy and safety of V.A.C.TM as primary treatment of deep peri-prosthetic infection.

Methods: Seventeen patients were treated using V.A.C.TM for peri-prosthetic infection between 1/2009 – 12/2015. Exposed anastomosis was observed in 59.0% of patients. Wounds with biological grafts were excluded.

Results: Mean hospital stay was 19±11 days (9–52 days), mean duration of V.A.C.TM therapy was 10±7 days (3–31 days) and mean follow-up was 422 days (3 days–5.3 years). Complete healing was achieved after 29±23 days (11–107 days). Recurrence of infection was observed in 5 wounds (29.4%) and non-fatal bleeding occurred in 1 patient (5.6%). No limb amputation was needed ≤30 days. No patient died. Success rate was 65.0%.

Conclusion: Treatment of infection of prosthetic graft with V.A.C.TM is feasible and relatively safe method in selected group of patients. Our outcomes are comparable to published series.

EVALUATION OF VASCULAR ACCESS CREATION IN DIABETIC PATIENTS

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Autogenous arteriovenous fistulas (AVFs) are the preferred access for chronic hemodialysis in end-stage renal disease patients. Radiocephalic AVFs are favored. Diabetes is associated with worse AVF maturation and access failure, especially in radiocephalic AVFs. The creation of an AVF in the upper arm (brachiocephalic, brachio basilic) leads to a better outcome in diabetic patients.

Methods: We performed a retrospective analysis of the results of AVF creation in diabetic patients, who underwent operations at the 2nd Dept. of Surgery, University Hospital Olomouc.

Results: Between 1/2010 and 6/2015 684 AVFs were performed. There were 196 AVFs (28,36%) in diabetic patients. The median age of the diabetic patients was 68.75 (range 31–90). The majority, 184 (93,9%), had type II. diabetes. During the study period, 55 radiocephalic AVFs, 105 AVFs in the upper arm were primarily performed. In 14 patients, a tunneled central venous catheter was primarily inserted, in 16 patients AVF creation was impossible.

The mean patency of a radiocephalic AVF in diabetic patients was 6.15 months (range 1–36 months). In 23 patients (41.81%), the AVF failed because of either failure to mature or thrombosis, in these patients, an AVF in the upper arm was created and primary patency of these AVFs at 12 months was 82%. Mean patency of an AVF in the upper arm before creation of a radiocephalic AVF was 14.16 months (range 1–68 months). The mean number of revisions was 1.89. Steal syndrome with subsequent radiocephalic AVF ligation developed in 2 patients; in 11 patients arteriovenous grafts were performed. No correlation between the type of diabetes and age to radiocephalic AVF patency was found.

Conclusion: We confirmed that radiocephalic AVFs are associated with worse long-term patency in diabetic patients. AVFs created in the upper arm after radiocephalic failure had good long term results. The strategy of primary AVF creation in the upper arm in a select group of diabetic patients leads to a decreased number of reoperations.

DIABETIC FOOT DISEASE, INTRODUCTION TO THE PROBLEM

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Last year we saw the publication of a new edition of the International Consensus on the Diabetic Foot as an update of an International Working Group for the Diabetic Foot guidance

document (<http://iwgdf.org>). These recommendations had to be adapted to local conditions and provide the basis for developing national guidelines consistent with our recommended procedures on the Czech Diabetes Society website (www.diab.cz). Diabetic foot disease remains one of the most serious complications of diabetes, with healing achieved in only 2/3 of patients, and 28% ending up with some form of amputation. The Consensus defines the diabetic foot as "the infection, ulceration, or destruction of the tissues of the foot associated with neuropathy and/or peripheral arterial disease in individuals with diabetes (most frequent ulceration, but also gangrene, osteomyelitis, cellulitis, neuropathic Charcot osteoarthropathy, leg after amputations, etc.)". According to the Consensus, critical issues include identification of at-risk patients and their follow-up in foot clinics and specialized podiatric workplaces, podiatric education of patients and their families and, also, education of healthcare professionals in podiatry, routine use of appropriate footwear, and treatment of pre-ulcerative lesions. Anyone interested in foot care knows how difficult it is to care for the individual patient and how many factors can lead to amputation. Ischemia is one of the factors playing a decisive role in the healing of ulcerations and indication for amputation. However, these are by far not the only factors. Amputation rate is also affected by the infection, in particular persistent osteomyelitis, appropriate off-loading, local treatment and, last but not least, the psychosocial situation of the patient. One could conclude that the new edition of the International Consensus shows us the best current practice in the care of the diabetic foot patient and in organizing a team of experts to use modern methods of treatment while not forgetting about careful treatment of wounds and correct identification of the causes of the defect including psychosocial factors. In our view, the biggest challenge currently facing us is effective treatment of diabetic foot infection, especially osteomyelitis with resistant microorganisms.

EARLY ENDOVENOUS ABLATION OF VENOUS REFLUX IS THE BEST CHOICE IN PATIENTS WITH ULCUS CRURIS VENOSUM

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Aim: The authors in presentation point out early surgical approach in patients with *ulcus cruris venosum* caused by insufficient superficial venous system. Unfortunately, in many patients with *ulcus cruris venosum* the ablation of venous reflux is recommended very late. It is accompanied worse quality of life and increase cost of health service.

Methods: Retrospective analysis of operated patients with *ulcus cruris venosum* in Palas Athena. First of all, we analyzed the time from diagnosis to surgical intervention.

Results: From 2010 to 2015 we performed 105 interventions in insufficient superficial venous system in patients with *ulcus cruris*. At the beginning we did only high ligation without stripping (16x), later we performed endovenous laser ablation (89) of stem veins with 1 470 nm diode laser by Biolitec. The average time from diagnosis to operation were 37 months. We noticed 2 months as the shortest time and 123 months the further time from diagnosis to operation. A total of 105 patients only 13 patients had *ulcus cruris* less than 1 year. We did not record any complications such as infection of incision, deep vein thrombosis and pulmonary embolism.

Discussion: New guidelines of Society of Vascular Surgery and American Venous Forum (2011) clearly showed that ablation of the incompetent superficial veins is recommended in addition to compression therapy than only compression therapy (Grade 1A). But current praxis is different from this statement and only compression therapy is used for treatment of *ulcus cruris* in many patients.

Conclusions: We found out that there was a long time from diagnosis to ablation of venous reflux in patients with *ulcus cruris venosum*. The average time was 37 months.

ANATOMY OF VENOUS RETURN

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Venous return is a complex process concerning the flow of blood into the heart from the peripheral vessels. It is done and influenced by blood volume and heart activity (arterial pressure and effect of systolic ventricular suction), gravity, muscle contraction (muscle pump), decreased venous compliance, arterial pulse within the common vascular fibrous sheathes, respiration (decreased intrathoracic and increased abdominal pressure). The muscle pump consists of several subunits: plantar, ankle, calf, popliteal, thigh and groin pumps. The plantar one relies on the perforating veins connecting the venous plantar arch and plantar veins with the veins of the dorsum of foot. These veins are usually five and unique due to absence of the venous valves. The majority of the force comes from the calf pump mediated by the triceps surae muscle. The other pumps operate more on the suction mechanisms. The deep venous system of the foot consists of the medial and lateral plantar veins interconnected by the venous plantar arch and dorsalis pedis veins draining into the posterior and anterior tibial veins, respectively. The superficial one consists of the superficial dorsal venous arch and network draining via the medial and lateral marginal veins into the great and small saphenous vein, respectively.

ARTERIA BRACHIORADIALIS

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Variations of the main arteries of the upper limb should be considered during catheterization approaches via the *arteria radialis et ulnaris*. They comprise tortuosities, loops, hypoplasia, absence and variations in the branching patterns and courses. The *arteria brachioradialis* is the most common variation, being reported in approximately 14% of cases. By definition, it is the *arteria radialis* with a "high origin", located proximally to the *fossa cubitalis*. Its typical courses more ventrally and laterally to the proper *arteria brachialis* and crosses ventrally the *nervus medianus*. It can be classified either as the proper *arteria brachioradialis* (showing typical course of the *arteria radialis* in the forearm) or as the *arteria brachioradialis superficialis* (crossing over the flexor tendons). According to its origin, it can be classified into four types: most commonly branching in the proximal third of the arm from the *arteria brachialis* (66%) but not exceptionally in the *fossa axillaris* from the *arteria axillaris*. The anatomical knowledge of the *arteria brachioradialis* is principal and useful for radiodiagnostic, interventional, surgical and traumatologic procedures.

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VENA RENALIS SINISTRA RETROAORTICA

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The embryological development of the retroperitoneal venous system is a complex process and the anatomy of the *vena cava inferior* and *venae renales* shows extensive variability. Our collection shows the retroaortic course of the *vena renalis sinistra*, hence the variation can be termed as the *vena renalis sinistra retroaortica*. Moreover, it may be complicated by the pre- and retroaortic bifurcation or by a persistence of the embryonic renal venous collar. The incidence of the retroaortic

renal vein based on a detailed literature survey is 2.1% (with span from 1.2 to 4.7%) and it is similar when compared to our own study performed in 451 CTs and 27 specimens, showing the common incidence to be 2.4%. Such variation can appear during an abnormal development of the anastomosis supra-cardinalis-postcardinalis and its vicinity during the embryonal period. Its clinical relevance consists in the possible confusion during the radiodiagnostic evaluation as well as in the possible danger of bleeding during the interventional and surgical procedures.

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SECONDARY PREVENTION OF VTE: CHOOSING APPROPRIATE ANTICOAGULANT DRUG AND TREATMENT DURATION

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VTE is a fairly common disease (annual incidence rate 100–180 per 100 000 persons) that recurs frequently (around 20–30% of patient experience recurrence within 10 years) and is associated with reduced survival and substantial health-care costs. Patients with provoked venous thromboembolism caused by transient risk factors can generally stop anticoagulation after 3 months of treatment. For patients with unprovoked venous thromboembolism or substantial risk profile for recurrency of VTE has to be considered a longer course of therapy. However, deciding how to balance the risks and benefits of extended anticoagulation is difficult. We summarize the results of all main trials with warfarin, new oral anticoagulants, acetylsalicylic acid and sulodexide and try to describe the group of patients in whom the prolonged (or even indefinite) anticoagulant therapy would be beneficial.

SPECIFIC PROBLEMS OF THERMAL ABLATION OF THE SMALL SAPHENOUS VEIN

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Endovenous thermal ablation (mainly laser or radiofrequency) of great saphenous vein (GSV) represents well established technique of radical therapy of varicose veins of lower extremities with excellent long-term results. However, the ablation of small saphenous vein (SSV) remains infrequent in everyday surgical practice.

The radical therapy of incompetent SSV has been for decades the open surgery. Nowadays, several different tech-

niques are used for this diagnosis apart of traditional surgery – foam sclerotherapy under ultrasound guidance, over-heated steam, glue, laser or radiofrequency.

According to international guidelines, thermal ablation is considered today to be "the gold standard" even if serious randomized controlled studies are still lacking. However, ultrasound mapping before procedure is very important not even for the choice of the therapeutic method but also for the prevention of per-procedural complications.

Concerning SSV, the most important risk of radical treatment is injury of adjacent nerves mainly in the popliteal fossa and distal part of the lower leg. Meticulous tumescent local anesthesia under ultrasound can help to some extent to prevent these complications.

Even technically more difficult and delicate, endovenous laser therapy of SSV can be performed safely and finally with excellent results comparable to well established ablation of GSV.

ACUTE MESENTERIAL ISCHEMIA IN OUR PATIENTS GROUP

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Acute mesenterial ischemia is an acute abdominal syndrome, of course with high mortality rate. The superior mesenteric artery is in 85% affected. It's occurred about 1/100 of hospitalizations and predominantly in the polymorbid patients in advanced age, with cardiac morbidity and in the patients whose have an atherosclerosis.

The signs of acute mesenterial ischemia are non specific, so therefore is very important urgent and specific diagnosis and treatment. It requires correct and direct anamnesis, from the laboratory tests of D-dimers and lactate, next Doppler ultrasound of SMA, but the most exact examination is multidetector CT with using contrast medium. The mortality is about 60–80%. These acute causes need surgical treatment, it's necessary to repair the perfusion in mesenterial circulation.

Peroperative, the revascularization is the first, then we consider the vitality of the intestine, if it's necessary, we have to resect the affected parts of the intestine. Second look laparotomy or laparoscopy is needful in case of obscurity.

Authors refer their own experiences with an occlusion of visceral branches of the aorta. In the last 10 years, overall more than 30 patients were operated with this type of acute abdomen. The average age was over 76 years, more men were affected than women, and the youngest patient was 43 years old. For the purpose of revascularization, authors performed over 10 embolectomy SMA, 4 times bypass operation, 3 times endarterectomy of SMA, and once they performed peroperative PTA and stenting of the SMA.

Despite the early detection of this disease, a mortality is still high because of the fact that these patients are polymorbid with a number of associated diagnoses and depletion of the organ reserves.

PATIENT AFTER INTERVENTION ON ABDOMINAL AORTA

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Introduction: Abdominal aortic aneurysm (AAA) is the most often pathology of the abdominal aorta, ischemic disease of lower extremities caused by atherosclerosis is mainly responsible for the affliction of the aortoiliac segment. Invasive approach is either surgical (– resection of an aneurysm and its replacement or bypass of involved vessel) or endovascular with the exclusion of AAA by a stent graft. Doppler ultrasound sonography is a convenient method for observation after these procedures (after implantations of stent grafts it reduces the amount of repeated CT examinations).

Patients and Methods: In our presentation we assess patients, who underwent ultrasound examination in our hospital from January 2014 to November 2015 after these interventions. 49 ultrasound examination were performed on 22 patients (age 53–85). We present the diagnosed pathological findings, their severity and their analysis.

We present a case report of a patient, who was operated on for ruptured subrenal AAA in 2001, with recurrence of juxtarenal AAA in 2008 solved by implantation of a fenestrated stent graft, complicated by an occlusion of the left renal artery, currently with an extension of a sack of an aneurysm due to an endoleak from the fenestration for the left renal artery in 2015. An occluder has been implanted in reaction to this complication.

Conclusion: Patients after interventions on abdominal aorta have to be dispensarized and besides conservative treatment it is necessary to perform repeated examination to exclude further complications. The aim of this presentation is to draw the attention to possible complications after these interventions and the improvement in the care of these patients in our hospital.



**KAZUISTIKY
V ANGIOLOGII**

INCIDENCE OF SMALL ABDOMINAL AORTIC ANEURYSM RUPTURES AND RUPTURE RISK PREDICTION BASED ON WALL STRESS ASSESSMENT

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Aim: Abdominal aortic aneurysm rupture (AAA) is an urgent condition with high mortality rate. If a diameter of asymptomatic AAA is less than 55 mm the patient is dispensarized, if it's more a repair is indicated. According literal sources 10–24% of ruptured AAA are less than 55 mm in diameter, thus a portion of dispensarized patients is threatened by a rupture. The objective of our study was to determine a portion of small ruptured AAA repaired in our center and try to identify potential risk factor. Modern trend in AAA diagnostics is finding a method of rupture risk prediction, one of these methods is rupture risk prediction based on wall stress assessment. We cooperate with engineers from University of Technology Brno to create such a model.

Population and Methods: In the set period we dealt with 41 ruptured AAA, CT findings were used to measure diameter and possible risk factors were recorded. The data were statistically evaluated to reveal possible connections with small AAA rupture. In a process of computer model creation, the samples of AAA wall are harvested during an open repair and then mechanically tested. Data from these tests are compared with wall stress values computed from 3D model of AAA created from CT findings. This comparison leads to correction of original model.

Results: Out 41 patients a 7 ruptured AAA were less than 55 mm in diameter, which is 17.1%. Patients with a COPD had AAA diameter significantly bigger ($p=0.047$), majority of patients had hypertension ($n=38$) and no difference in AAA diameter between males and females was found ($p=0.487$), female AAA ruptured in later life ($p=0.04$). Up to 50 samples from AAA repairs were used in AAA modeling project which led to significant model improvement.

Conclusion: Aim of the project is to create a functional model capable of finding AAA with high wall stress just from CT findings. Thus we would be able to indicate intervention even in case of small AAA but with a high risk of rupture.

IMPORTANCE OF PROPHYLAXIS OF VENOUS THROMBOEMBOLISM (VTE) IN SURGICAL PATIENTS WITH TUMORS

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The risk of VTE for surgical patients is usually determined according to the Caprini risk assessment model. Routine pharmacologic prophylaxis of VTE in general surgery is recommended only for moderate and high risk patients. In patients with very low and low risk of VTE only early mobilization and/or mechanical prophylaxis of VTE (elastic compression stockings) is recommended. There is no recommendation in the 9th ACCP guidelines regarding the duration of VTE prophylaxis in surgery for benign diseases and no definite consensus exists because of the absence of sufficient numbers of valid data. Postoperative prophylaxis in duration of 7–10 days or VTE prophylaxis until full mobilization of the patient is recommended most frequently in low risk surgery. Some authors demonstrate the feasibility of short postoperative VTE prophylaxis without higher rates of postoperative VTE and the necessity of individualized duration of VTE prophylaxis administration based on stratification of the VTE risk in concrete patients. Hypercoagulable status with elevated hypercoagulability markers and also with early fibrinolysis activation in patients after elective laparoscopic as well as open surgery has been well-documented in numerous publications. However, most of the previous studies have monitored coagulation status and systemic inflammatory response only in the early postoperative period, most often within 72 hours after surgery. The postoperative risk of VTE can be increased even by hereditary thrombophilia predisposition. FVL and Factor II 20210G>A belong among the most frequent hereditary thrombophilia predispositions with a moderate risk of VTE. VTE prophylaxis is in most of these patients administered only in hospital. Extended prophylaxis (4 weeks) after major laparotomy may be indicated in patients with cancer who have a high risk of VTE and low risk of bleeding, as risk of VTE extends beyond hospital discharge. There is no definite recommendation concerning the length of administration of pharmacologic VTE prophylaxis in patients operated on for benign diseases. We focused on assessment of the systemic inflammatory response and coagulation status in these surgical patients after hospital discharge.

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THE PLATELET POLYMORPHISMS ASSOCIATED WITH ATHEROSCLEROTIC CARDIOVASCULAR DISEASE IN PATIENTS WITH VENOUS THROMBOEMBOLISM

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At present, atherosclerotic cardiovascular disease (CVD) and the vein thromboembolism (VTE) are considered to have many common risk factors.

The aim of our study was to determine the frequencies of 10 platelet gene polymorphisms associated with atherosclerotic cardiovascular disease (CVD) in subjects (n=2 369) with venous thromboembolism (VTE) in comparison with their frequencies in a control group (n=1 460) of healthy persons. The polymorphisms of platelet receptors P2Y12 (rs2046934, rs6785930), GPIa (rs1126643), GP IIIa (rs5918), GP VI (rs1613662) and PAR-1(rs168753) and the variations in the genes coding for cyclooxygenase 1 (COX-1; rs10306114) and platelet endothelial aggregation receptor 1 (PEAR1; rs41299597, rs11264579, rs2768759) were determined using PCR, followed by melting analysis with specific fluorescent hybridization probes. The examinations did not show any significant differences between the polymorphism frequencies in subjects with VTE in comparison to the results obtained in control group of healthy persons. Only in the subgroup of VTE patients (n=732) with a family history of myocardial infarct and/or stroke were weakly significant increases in the "risk" genotype frequencies in GP Ia (rs1126643) and in PEAR1 (rs11264579) (both p=0.04) observed, but no significant differences were noted in the allele frequencies.

We suggest that the observed platelet gene polymorphisms associated with higher platelets aggregability or in genes with published connections to atherosclerotic CVD play no significant role as independent hereditary risk factors in the pathogenesis of VTE.

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**KAZUISTIKY
V ANGIOLOGII**

ANGIODYSPLASIA ASSOCIATED WITH VARICES BY THE KLIPPEL-TRÉNAUNAY SYNDROME AND THE WEBER SYNDROME

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It is important from the angiosurgical view to define those angiodysplasias which we can treat and at least partially affect and improve the life quality of involved patients. Primarily those venous malformations with the dominance of chronic venous insufficiency (CHVI) and with the artery-venous fistula (A-VF) symptoms have to be considered. Varices associated with Klippel-Trénaunay syndrome (KTS) and A-VF associated with Weber syndrome belong among them.

Klippel and Trénaunay in 1900 had described the clinical syndrome with three marks located on lower extremities:

1. Lower extremities varices
2. Nevus flammeus
3. Lower extremities hypertrophy and elongation

Klippel-Trénaunay syndrome is a sort of silent dysplasia, eminently venous regarding its character and manners. The vascular polyvalence associated with KTS can be divided into four types:

1. Absence of the profound venous system anomalies and the A-VF
2. Anomalies of profound veins (atresia, valvular anomalies, strangulated fibrous bands)
3. Intact A-VF
4. Presence of lymphatic participation (hyperplasia, hypoplasia, lympho-venous fistulas, lymphangioma)

Basically the treatment of the Klippel-Trénaunay syndrome is conservative and the surgical operation is focused on the removal of varices and of insufficient perforators. The clinical appearance of KTS by the most of patients is benign and slow. The adequate surgical therapy, careful observation and proper controls allow more the less patient's normal activity.

F. P. Weber in 1918 had described "hemangioma hypertrophy" which included all lower extremities hypertrophies associated not only with varices due to KTS but with the congenital A-VF, too.

Consequently, the Weber syndrome and the Klippel-Trénaunay syndrome are two different symptom combinations. The differences are as follows:

1. Weber syndrome: Gigantism of lower extremities and the active A-VF;
2. Klippel-Trénaunay syndrome: Gigantism of lower extremities, nevus flammeus and varices without active A-VF.

The active artery-venous fistula with subsequent hemodynamic changes is considered as the primary Weber syndrome lesion. Elongation and dilatation develop in the efferent veins. The varices are huge and arterialized with the evident vortex.

Early withdrawal of artery-venous fistula associated with Weber syndrome can cause development deceleration of the extremity hypertrophy, therefore a surgical intervention has the priority. It is necessary to realize arteriography, phlebography and ultrasonography before each operation and the performance of lymphography, plethysmography and isotope examination is convenient, too.

Authors present their own clinical experiences and the surgical treatment results of Klippel-Trénaunay syndrome and Weber syndrome.

SURGICAL TREATMENT OF CRITICAL LIMB ISCHEMIA

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Introduction: In the past 10 years, there has been a dramatic increase in the total number of procedures for critical limb ischemia (CLI). It belongs with mortality over 20% per year and 25–40% of necessity of major amputation within 6 months to very serious conditions. Quickly and precisely made diagnosis of the extension of lesion with high-quality, multidisciplinary treatment is able to divert up to 80% of major amputations.

Surgical possibilities: A surgical local treatment (debridement, low amputations, necrectomy, control of the infection, vacuum-assisted closure system), pressure relief, hyperbaric oxygen therapy and modification of atherosclerotic risk factors have irreplaceable place in the treatment of CLI. From the surgical view are disputable other possibilities such as lumbar sympathectomy or venous arterializations. Crucial and the most effective is revascularization. The TASC II recommends revascularization as the optimal treatment for patient with CLI. The choice of procedure remains unclear. In patient with life expectancy more than 2 years, bypass surgery with vein graft is a reasonable initial treatment (BASIL trial). Whenever possible, autologous vein should be used as conduit for infrainguinal bypass. New type of prosthesis (heparin-bonded, carbon-impregnated, precuffed) have to decrease graft thrombogenicity and intimal hyperplasia. Results are especially promising. The basic aim of the treatment is limb salvage and it does not correspond to patency of revascularization (which is 20% lower). Hybrid procedures allow simultaneous endovascular intervention and surgical reconstruction for patients with multilevel arterial disease.

Conclusion: Open surgery for treating CLI remains an integral part of therapy. The autologous vein continues to be the best treatment option. Hybrid interventions have become a well-accepted strategy for revascularization in patient with CLI due to multilevel arterial occlusive disease.

OUR EXPERIENCE WITH TYPE II ENDOLEAKS: NOVEL TECHNIQUES IN DIAGNOSTICS AND THERAPY

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Introduction: Endoleak is defined as a continuous perfusion of an excluded aneurysm sac after endovascular exclusion of an aneurysm by a stentgraft implantation. It is the most common complication after endovascular treatment of an aortic aneurysm (EVAR). Endoleak prevalence ranges from 10% to 30%. Type II endoleak arises from retrograde flow from the aortic branches, usually lumbar arteries and the inferior mesenteric artery. Because the type II endoleak is the most common type of endoleak after EVAR, it is generally considered to be benign. Recent studies have revealed a high incidence of secondary interventions (20%), aneurysm sac constant growth (37.9%), and the need for explanation of the graft (8.4%) in patients with Type II endoleak. Eurostar study showed that patients with type II endoleak more frequently require secondary interventions. The risk of rupture of an aneurysm sac after EVAR in patients with type II endoleak ranges between 0.5–2.4%.

Our experience: In 2015 we had performed a surgical revision of an abdominal aneurysm sac after EVAR in 6 patients. The source of aneurysm perfusion was a lumbar artery in all 6 (100%) patients. In 2 (33%) patients the source of aneurysm sac perfusion was caused by multiple lumbar arteries. All patients underwent surgical resection of the arteries causing the aneurysm sac perfusion with Prolen 6-0. During the follow-up period of 12 months, all patients showed no signs of Type II endoleak.

Conclusion: Although the Type II endoleak is currently being thoroughly investigated, there are still many unresolved issues such as: the optimal timing of intervention, the most effective modality for diagnosis and treatment. One of the main disadvantages of EVAR techniques is a long-term patients monitoring for a relatively high risk of Type II endoleak.

CAN DRUG ELUTING STENTS IN INFRAPOPLITEAL LESIONS IMPROVE THE PROGNOSIS OF PATIENTS WITH CRITICAL LIMB ISCHEMIA?

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Introduction: The most common cause of rest pain and non-healing defects in patient with CLI is infrapopliteal artery occlusion. The priority after intervention is to maintain their long-term patency.

Objective: The aim of this study was to evaluate potential of drug-coated stents in infrapopliteal lesions with an assessment of their impact on the prevention of limb amputation in patients with critical limb ischemia.

Methods: Retrospective analysis of 29 consecutive patients from one intervention center two years after implantation of 31 DES (CRE8) in P3 segment of popliteal artery and below the popliteal artery. The primary end point of the analysis was the limb salvage (healing of defects), respectively the need for high amputation and survival of patients in the period 180 ± 30 days after stent implantation.

Results: The primary success of interventions was achieved in 96.7% of cases. Limb salvage was documented in 92.8% of patients. Only two patients (7.2%) needed high amputation of the leg. 5 patients died during studied period from cardiovascular causes, which was 17.2%. Pain rest and healing of the of a defect we have achieved in 66.6% of patients. Reintervention after implantation of DES was needed in 16.1% of cases compared with 26.7% after the implantation of a conventional metallic stent.

Conclusion: Our results confirm the crucial role of endovascular therapy in focal lesions using drug-eluted stents in the treatment of critical limb ischemia with their tendency to better results compared with the short balloon expandable BM stents.

LYMPHEDEMA AND LIPEDEMA IN ULTRASOUND IMAGING

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Ultrasound imaging is, after patient's history, inspection and palpation, together with lymphoscintigraphy the most common imaging technique for diagnosis of the degree and extent of lymphedema and lipedema. For the investigation we use B-mode sonography with 8–13 MHz linear probe. In transversal section, the thickness and structure of cutis and subcutis is described. The method enables at the same time the investigation of the superficial and deep vein system that is important in differential diagnosis. Characteristic signs for chronic lymphedema are thicker cutis, enlargement of subcutis with echolucent spaces with free fluid and fibrosis that all causes the noncompressibility of subcutaneous tissue. In lipedema the subcutis is enlarged as well, symmetrically on both sides, but the structure is fine with echogenic webs, and it is compressible.

Nevertheless, the ultrasound imaging of swollen leg doesn't answer the question of etiology. The image of echolucent

spaces is found f.e. in congestive heart failure, renal or hepatal insufficiency. On the contrary, in latent or well treated lymphedema the image is negative (lymphoscintigraphy is positive). Apart from its low significance in differential diagnosis, ultrasound imaging is an important and objective parameter in individual monitoring of the clinical course.

THE IMPORTANCE OF PERFORATORS IN THE TREATMENT OF PRIMARY CHRONIC VENOUS DISEASE

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Perforators are veins that perforate the muscular fascia to connect superficial veins with deep veins. They are numerous and very variable in arrangement, connection, size, and distribution.

What is the role of perforators in the pathogenesis of primary chronic venous disease (pCVD)? Is surgical interruption of perforators necessary in any case?

The hemodynamic disorder in pCVD is caused mainly by saphenous reflux (primary reflux site in saphenofemoral and saphenopopliteal junction). Reflux is an outward, diastolic, centrifugal, pathological inducing ambulatory venous hypertension in the superficial veins of the lower leg and foot. The increased hydrostatic pressure and dilating process that affect saphenous system can affect the perforators of the medial calf (Cockett's veins). Reflux within the calf perforators is an inward, systolic, centripetal. Perforators act as "re-entry" veins allowing blood refluxing down the incompetent saphenous system to flow back into the deep veins. They are secondary insufficient perforators. Selective interruption of the calf perforators does not influence the hemodynamic disorder. On the other hand, selective surgical interruption of saphenous reflux removes the hemodynamic disorder and restores physiological venous pressure.

In some cases, the hemodynamic disorder in pCVD is caused by reflux in perforators (primary reflux site), especially in the thigh and popliteal fossa. Reflux in this primary insufficient perforators is an outward, diastolic, centrifugal, pathological inducing ambulatory vein hypertension in the superficial veins. Surgical interruption of primary insufficient perforators restores physiological venous pressure.

Perforators in pCVD must be assessed and treated individually. We have to search for primary reflux sites (see above) that in majority of patients are located in saphenofemoral and/or saphenopopliteal junction. In this cases saphenous and calf perforator incompetence co-exist. Postoperative duplex reexamination shows that perforator valve competence is restored after the saphenous system has been ablated. Only the primary insufficient perforators must be interrupted as a primary reflux site.

THE RELATIONSHIP BETWEEN ENDOTHELIAL ABD ERECTILE DYSFUNCTION, LEVELS OF TESTOSTERONE AND CARDIOVASCULAR EVENTS IN THE FOLLOW-UP

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Background: Clinical and experimental evidence suggest that testosterone levels play a role in cardiac and vascular pathology. A long history of observational studies investigating serum testosterone level and cardiovascular risks, specifically mortality, reveals important associations between low testosterone and mortality, while higher serum testosterone level appear to be protective in the majority of studies. On the other hand, it is well documented and accepted that endothelial dysfunction is expression of preclinical atherosclerosis and it is associated with an increased amount of CV events in the follow-up. Erectile dysfunction is also an early manifestation of arteriosclerosis associated with endothelial damage/dysfunction. Endothelial function plays a very important role in the process of erection. Moreover, erectile dysfunction and coronary artery disease (CAD) overlap in risk factors, etiology and clinical outcomes. Endothelial dysfunction is considered to be their shared etiological factor. There is growing evidence that patients presenting with erectile dysfunction should be investigated for CAD, even if with no symptoms of the problem. Earlier diagnosis of erectile dysfunction can facilitate prompt intervention, reduce long-term complications, especially the risk of CAD, and provide effective treatment for erectile dysfunction.

Objectives: We aimed to assess whether baseline testosterone levels may be predictors of future CV events in a cohort of patients at intermediate cardiovascular risk.

Methods: Our cohort included 802 adult subjects, males from 40 to 80 years (mean age of the whole population was 57.52 ± 13.85 years old). They were at intermediate cardiovascular risk, according to the Framingham risk score and all referred between 2009 and 2014. Patients were excluded if they had a past history of peripheral artery disease, coronary revascularization, angina pectoris, myocardial infarction, carotid surgery or cerebrovascular event. The study of the endothelial function was performed by using the method of flow mediated vasodilatation. Moreover, it was administered a standard questionnaire for the evaluation of the erectile function and the dosage of the plasma testosterone was carried out. The median follow-up time for major CV events was 5.1 years.

Results: Patients with lower serum testosterone levels (n=332) had higher prevalence of traditional CV risk factors, such as hypertension (p=0.009), diabetes (p=0.03), dyslipidemia (p<0.0001), obesity (p=0.002), endothelial function score (p<0.0001). There were no significant differences in age and in the presence of smoking or family history of CV. Logistic regression analysis showed that testosterone levels, erectile dysfunction and endothelial dysfunction were independent predictor for major adverse cardiac events (MACE) in the follow-up period (p<0.0001). This association was independent of age and CV risk factors (p<0.0001).

Conclusions: Lower serum testosterone levels define a group of patients with endothelial dysfunction at higher risk of events during the follow-up, while normal values do not significantly influence the distribution of events. Our results confirm also those of Sharma R. et al.² in a very large cohort of patients in whom the normalization of testosterone levels, after replacement therapy, significantly reduced all causes of mortality, myocardial infarction and stroke.

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JUXTARENAL MODULAR AORTIC STENT GRAFT INFECTION CAUSED BY STAPHYLOCOCCUS AUREUS

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Introduction: We are presenting a case report of an infected modular abdominal stent graft caused by *Staphylococcus aureus*.

Case Presentation: High risk 67-year-old male patient three years after Cook's modular abdominal aortic aneurysm (AAA) graft implantation for juxtarenal AAA, followed by an implantation of a stent extension into the right common iliac artery for type Ib endoleak. The patient was admitted into our center in severe condition with sepsis and suspected retroperitoneal bleeding. A computed tomography angiography (CTAG) was performed, confirming retroperitoneal bleeding in the region of the right common iliac artery. An urgent surgical revision was indicated, with the discovery of a destructed arterial wall around the stent extension in the right common iliac artery. Due to the severe state of health of the patient and the perioperative finding, a resection of the infected stent and affected

arterial wall was performed, followed by an iliac-femoral crossover bypass. The patient was transported to the intensive care unit with hepatic and renal failure, with maximal catecholamine support. Combined antibiotic treatment was started. The patient died five hours after the procedure. The cause of death was multi-organ failure caused by sepsis. Hemocultures and peri-operative microbiological cultures showed the infection agent to be *Staphylococcus aureus*.

Conclusion: Stent graft infection is a rare complication. Treatment is associated with high mortality and morbidity. The main principles of infected stent graft treatment are comparable to those of an infected prosthetic vascular graft. Due to the rarity of stent graft infections, no therapeutic algorithm had been yet established.

CONTROVERSIES IN VASCULAR MALFORMATION TREATMENT

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Aim: Presentation of our experience in endovascular treatment of various types of vascular malformations.

Materials: In the years 2004–2016 in our department, 23 patients (aged 14,2–59,9 years; 6 males, 17 females) were treated due to vascular malformations. Four persons previously underwent surgery with attempted ligation of the supplying arteries, which did not contribute any reduction of the lesions.

Methods: Patients were examined before, during and after treatment. Each of them had Duplex-Doppler and angio-CT scan of vascular tree as well as MRI in a few cases. As many of the lesions are viewed as disfiguring, patients were also evaluated and offered assistance by a psychologist. General and mental condition were evaluated specially in young women. Follow-up included all of the patients and lasted from 1 to 134 months.

Results: Immediate good morphological and hemodynamic results were obtained in all 23 (100%) cases, clinical success (which is very difficult in assessment) was achieved in 22 (95,7%). We noticed complications in two patients – peroneal and tibial nerve palsy in one of them and hand phlegmon in other. 21 patients (91,3%) remained symptom-free (or with significantly reduced symptoms) at the last visit.

Conclusions: 1. Therapy of the vascular malformations still remains a challenge for the therapists. 2. Surgery should not be the first line of treatment. 3. Embolization with alcohol is now a treatment of choice in patients with low-flow malformations.

CAN PROSTANOID TREATMENT HELP FOR NO-INTERVENTIONAL OPTION CLI PATIENTS? (ILOCRITERIA STUDY)

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Chronic critical leg ischemia (CLI) is a serious condition with a high amputation rate. If interventional radiology procedure or reconstructive surgery is not possible, the prostanoid treatment is the only possibility to save the leg. This treatment is expensive and takes long time (weeks) hospitalization without knowing the possible effect of the treatment. To give a better sort and also long-term prediction of this treatment – what is not really available at the moment according to the literature – we have designed a non-interventional study (NIS) for the patients who are not suitable for any other vascular procedure just for amputation – using TcPO₂ functional and kinetic tests – to determine the best tool among them for a more effective prediction what is important either in ethical or financial viewpoint.

We are treating the patients 3 weeks according to the manual of the ilomedin medication using 6 hour infusion based on the weight and the tolerance of the patients. In the meantime tissue oxygenation of the leg in supine, elevation, and dependency position, after oxygen inhalation and during the first hour of the ilomedin infusion are measured. In the same visit ABI, pain scale, SF36 questioner are performed. The patients are controlled baseline, one week, before discharged from the hospital, 3, 6, 12 month with the same fashion. Our study 130 patients were enrolled in our study in 10 Hungarian centers. The final analysis still ongoing, but some of our main conclusions will be presented in this lecture.

THE ROLE OF LUMBAR SYMPATHECTOMY IN THE TREATMENT OF CRITICAL LIMB ISCHEMIA

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Introduction: Lumbar sympathectomy (LS) represents the interruption of the sympathetic trunk and the relevant ganglia in the range from L1 to L5. It results in arterial vasodilatation, particularly in vasodilatation of small peripheral arteries of the lower extremities due to alpha adrenergic receptors blockade. The importance of LS is gradually lowering with the development of vascular and endovascular interventions. However, its indications are broadly discussed nowadays.

Methods: The pilot study including patients with critical limb ischemia (n=10). Inclusion criteria include chronic limb

defects with an area under 30 cm², without severe infection, non-revascularable. LS was performed either surgically or chemically and previous invasive testing using spinal block (measuring of changes in the blood flow) was performed. The defect's healing and limb salvage was monitored.

Conclusion: Preliminary results show 70% limb salvage in the half year follow-up period.

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A RARE CASE OF MOBILE ATHEROSCLEROTIC PLAQUE WITH A HIGH EMBOLIC POTENTIAL IN THE PERIPHERAL ARTERIES OF THE LOWER LIMBS

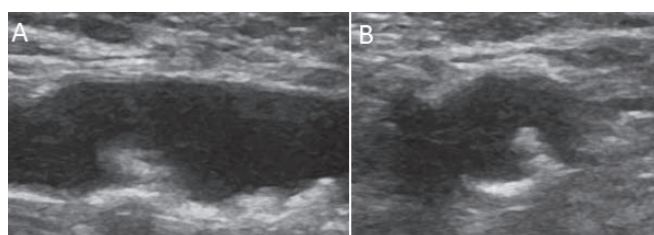
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Atherosclerosis is a diffuse disease which may lead to the development of unstable atherosclerotic plaque. Its rupture can result in acute ischemic event. The atherosclerotic plaques with a mobile component are typical presentations of such instability and patients with these plaques are at high risk of acute ischemic events. In the current literature, substantial data regarding the mobile atherosclerotic plaques in carotid arteries and thoracic aorta is published. However, there are almost no data concerning the mobile plaques in the peripheral arteries of the lower limbs. We present a rare case of a 67-year-old man with a history of stable coronary artery disease in whom routine physical examination revealed a murmur over the left femoral artery. Indicated ultrasonography displayed an asymptomatic mobile atherosclerotic plaque with a high embolic risk in the left common femoral artery (Figure 1). This plaque was successfully removed by femoral endarterectomy. This case report demonstrates the key role of ultrasonography in detecting and estimating the risk of mobile unstable plaques. The choice of optimal therapy depends on several factors and the

Figure 1: Duplex ultrasound of the left common femoral artery revealed mobile plaque with a high embolic potential.



final decision should be made by a multidisciplinary vascular team. Finally, this case demonstrates that atherosclerosis has to be perceived as a diffuse systemic disease which may frequently affect more than one vascular territory.

THE PLACE OF CIRCAID JUXTA-CURES IN SELF-MANAGEMENT OF LEG ULCERS BY MEANS OF COMPRESSION THERAPY: CASE REPORT

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A short case report depicts treatment of leg ulcer with CircAid Juxta-CURES. Pitfalls of compression therapy in low compliance patients as well as advantages of this adjustable velcro compression device are discussed.

HEART SCORE, CAROTID ARTERY EXAMINATION, ABI AND PULSAE WAVE VELOCITY (CAVI): IMPROVING CARDIOVASCULAR RISK STRATIFICATION?

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Background: Heart SCORE is a basic tool for assessing cardiovascular risk (CVR). However, we have other markers of CVR, which are intima-media thickness of common carotid artery (IMT), pulse wave velocity (CAVI) and ankle brachial index (ABI).

Methods: This study involves 100 patients (59 men, 41 women) aged between 21 and 68 years (mean 55.6 years), without organ damage of atherosclerosis. CVR was estimated by SCORE tables, IMT ACC was assessed by ultrasonography and CAVI and ABI by Va Sera 1 500 examination.

Results: Mean heart SCORE was 6.7, high score (≥ 5) was in 53% of patients. Abnormal findings on carotid artery (IMT ≥ 0.9 and/or plaque) was found in 73% of examined persons. In 12% of patients there was only one abnormal finding. ABI below 1 was found in 11% of patients and below 0.9 only in 1 patient. Average CAVI was 7.8. Abnormal values were in 18% of patients. But only 4% of patients had only one abnormal finding. We found correlation between age and IMT ACC, age and CAVI, IMT ACC and CAVI and CAVI and ABI.

Conclusion: Pulse wave velocity, expressed as CAVI and ABI, has small value for CVR stratification in clinical practice.

PERIPHERAL BYPASS SURGERY FOR CRITICAL LIMB ISCHEMIA

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Objective: Evaluation of the results of a retrospective study involving 184 patients with chronic critical lower limb ischemia (CLI), in whom previous endovascular and conservative treatment had failed, who underwent distal arterial reconstruction using pedal bypass grafting. Data on long-term graft patency together with the factors which affect it were statistically analyzed.

Patients and Methods: Relevant data on 184 patients were retrospectively reviewed. Included were 149 (81%) men and 35 (19%) women with an average age of 64.9 ± 10.3 years (range, 21 to 88 years); of them, 135 (73.4%) patients had diabetes mellitus. In the whole group, 164 (89.1%) patients showed chronic critical leg ischemia with tissue loss (SVS/ISCVS clinical category 5); 14 (7.6%) reported rest pain (SVS/ISCVS category 4); and six (3.3%) had acute ischemia. An autologous reverse or an in-situ great saphenous vein was used as a venous graft in the majority of patients; a composite graft was implanted in 18 (9.8%) patients. The grafts regarded as "long" had proximal anastomosis to the common or the superficial femoral artery (78 patients; 42.4%), the "short" grafts had proximal anastomosis to the popliteal artery (106 patients; 57.6%). The target artery was the dorsal pedal artery (95 patients; 51.6%) or the common plantar artery (89 patients; 48.4%).

Results: Graft occlusion was recorded in 30 (16.3%) patients during follow-up (mean \pm SD, 2.9 ± 2.7 years; range, 0.1–11.6 years). In 11 of them, graft patency was restored by early intervention using embolectomy/thrombectomy or thrombolysis. There was no intra-operative death and the 30-day mortality rate was 2.0%. High amputation (above or below the knee) was necessary in 19 (10.3%) patients. The 5-year cumulative primary and secondary graft patency rates and cumulative limb-salvage rate (Kaplan-Meier survival analysis) were 71.6%, 74.0% and 81.8%, respectively. The results of statistical evaluation (Long Rank test) of factors affecting long-term graft patency will be shown during paper presentation.

Conclusion: Pedal bypass surgery is associated with low risk for the patient and has good long-term outcomes. It is frequently the only option of limb salvage in CLI patients.

FOLLOW-UP AFTER ROTAREX THROMBECTOMY OF ACUTE AND SUBACUTE OCCLUSIONS OF PERIPHERAL ARTERIES AND BYPASSES

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Background: The goal was to evaluate long-term outcomes of percutaneous mechanical thrombectomy using the Rotarex catheter in the treatment of acute and subacute occlusions of peripheral arteries and bypasses.

Patients and methods: Patients with acute (duration of symptoms <14 days) or subacute (duration of symptoms >14 days and <3 months) occlusions of peripheral arteries and bypasses were selected consecutively for treatment. The cohort consisted of 127 patients, aged 18–92 years (median 72 years). In all, 149 procedures were performed.

Medical check-ups took place one month after the procedure and then at six month intervals after the intervention. Duplex criterion for significant restenosis (>50%) was the peak systolic velocity ratio greater than 2.4. Patency rates were assessed using the life-table analysis.

Results: Angiographic success was obtained in 141 interventions (95%). Primary cumulative patency rates were 76% after one month, 69% after six months, 38% after 12 months, 33% after 18 months and 30% after 24 months. Secondary patency rates did not differ from the primary ones substantially. Major amputation occurred 14 times out of 149 procedures, thus the amputation rate was 9%. The reasons for amputation were as follows: angiographically unsuccessful intervention in three patients, early reocclusion in five patients, sepsis caused by diabetic gangrene in five patients, and primarily poor distal runoff in one patient.

Conclusions: Rotarex thrombectomy has a high angiographic success rate. However, long-term results should be assessed from several points of view that comprise not only cumulative patency rates but also amputation rates (salvage of limbs) and a possibility to perform any secondary intervention averting an amputation. All these items will be discussed.

MICROALBUMINURIA IN APPARENTLY HEALTHY PEOPLE IN MIDDLE AGED POPULATION OF EASTERN SLOVAKIA

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Background: Albuminuria is a strong predictor of cardiovascular and renal diseases in diabetic and non-diabetic subjects and may predict new-onset diabetes and hypertension.

Assessment of microalbuminuria (MAU) is recommended as a risk stratification strategy not only in diabetic subjects, but also in the management of hypertensive patients.

The aim of our study was to assess MAU in middle-aged, apparently healthy population of Eastern Slovakia, and to evaluate the clinical significance of MAU on subclinical atherosclerosis.

Material and Methods: 198 apparently healthy subjects were enrolled in the study (79 males and 119 females, 45±5 years of age). Traditional risk factors for atherosclerosis (AS) and basic biochemistry (glycaemia, HbA_{1c}, plasma lipids, Lp(a), hsCRP, uric acid, creatinine, GFR/MDRD, microalbuminuria, fibrinogen) as well as instrumental markers of subclinical atherosclerosis – AS (carotid artery intima-media thickness, AS plaques, ankle-brachial index – ABI, aortic pulse-wave velocity – PWV and brachial artery augmentation index – Aix, flow-mediated vasodilation – FMD) were documented.

Results: The mean value of MAU in the study group was 7,75±19,74 mg/l. Only 4% (8 non-diabetic and non-hypertensive subjects) of study group revealed MAU. Except for one subject, all had documented subclinical AS (no morphological, but functional changes of the arterial wall: FMD, Aix, high ABI).

Conclusion: Our results indicate a low prevalence of MAU in apparently healthy middle-aged population in Eastern Slovakia. Microalbuminuria seems to reflect a state of (patho)physiologic vascular dysfunction that makes an individual susceptible to organ damage. Intervention strategies aimed at repairing this vascular function could be very useful not only in secondary but also in primary prevention.

RESULTS OF ENDOVASCULAR TREATMENT OF ANASTOMOTIC STENOSIS IN TRANSPLANTED KIDNEYS

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Aim: To present results of endovascular treatment of renal artery stenosis at the vascular anastomosis site in transplanted kidney

Material: Between 2011–2015 in our department in long term follow-up after kidney transplantation, in 62 patients 75 different intravascular proceedings were performed due to multilevel arterial stenosis or occlusions.

In 35 patients 41 intervention was done due to symptomatic stenosis of renal artery at the anastomosis site and malperfusion in transplanted kidney.

In 35 cases PTA or PTA and stent was done. 6 arteriography was performed: in one patient catheter was inserted for fibrinolytic therapy in thrombosed artery, in three cases arteriography was diagnostic with no indications for further treatment but in one patient no blood flow through transplant was detected and kidney was rejected.

Results: In 36 cases good early result was obtained. Only in 5 cases complications were observed (fracture of stent, stent migration and stent thrombosis) but this was solved also endovascular.

Conclusion: Due to good results intravascular procedures of anastomotic stenosis in transplanted kidneys is a treatment of choice. Complication can be treated also endovascular.

FACTORS ELEVATING RISK OF STROKE IN PATIENTS AFTER ENDOVASCULAR TREATMENT OF THORACIC AORTA DISEASES

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Aim: The aim of this study is to present different factors influence on stroke rate in the different group of patients treated with different stent-graft due to different thoracic aorta pathologies.

Material: In our department within last 14 years 379 patients were operated due to thoracic aorta diseases. Majority (154) were patients with true aneurysm, 148 with dissection, 70 patients after trauma, 7 with PAU. In 103 of them the over-stenting of the subclavian artery was necessary to get proper sealing of stent graft in aortic arch.

Results: The overall stroke rate was 1,8%. In overstented group was 3,9%. The stroke rate in patient with stent graft deployed below subclavian artery was 1%. Data collected of stroke rate in different thoracic aorta pathologies revealed that the highest rate 10,7% (3/28) was among patient with true aneurysm, 1% (1/28) in patients with chronic dissection type Stanford B. Any neurological deficit was observed between patients with post-traumatic acute as well as chronic aneurysm and patients with penetrating aortic ulcer.

Conclusion: Occlusion of left subclavian artery – the best-recognized factor of stroke during endovascular operation of thoracic aorta pathologies is not the only one.

The risk of stroke was statistically higher among older patients with true aneurysm and in higher ASA scale, what might be connected with age, comorbid pathologies and atherosclerotic changes in other arteries.

ENDOVENOUS LASER ABLATION (EVLA) OF SAPHENOUS VEIN IN THE TREATMENT OF SYMPTOMATIC VENOUS REFLUX IS FLEXIBLE, SAFE, EFFECTIVE AND REPRODUCIBLE METHOD

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Objective: Catheter-based endovenous thermal ablation (EVLA) of varicose veins is becoming a state of art method in the treatment of venous reflux. The aim of our study was to prove that EVLA is a reproducible method not limited by vein diameter and can be used in more segments in one procedure.

Material and Methods: From February 2010 to December 2015 EVLA was performed in 1 088 venous segments in 1 000 patients. with venous reflux. There were 68% of women, mean diameter of ablated segments was 9.3 mm (range 5–25 mm). In 35 patients we operated on both limbs. In another 42 patients we ablated more segments in one limb. We perform the procedures together with miniflebectomy in tumescent anesthesia on an out-patient basis. Intraoperative sonographic guidance is mandatory.

Results: Early closure was successful for great saphenous vein (GSV) and small saphenous vein (SSV) in 97% and 98%, respectively. Treatment of all large tributaries of GSV and SSV is always attempted in one procedure. Long term closure rate was 98% (follow-up 3–44 months). The causes of incomplete closure were mainly of technical character due to learning period – low energy, non-closure of proximal tributaries, incomplete emptying with Trendelenburg positioning during laser procedure. Non closure was not related to a greater diameter of the vein. In all these cases we concluded successfully early re-EVLA. Only one n. saphenous paresis was encountered. In 6 patients the prolapse of thrombus into the lumen of deep femoral vein was noted. The thrombus resolved after one-week treatment with LMWH (according to the literature spontaneous resolution is frequently possible). Low-risk pulmonary embolism was observed in one patient, who resumed strenuous sports activity early after the procedure despite our recommendation. The technical aspects and surgical method are shown on the poster.

Conclusion: EVLA of the GSV, SSV and large tributaries in the treatment of symptomatic reflux is a flexible, safe, effective and reproducible method. The closure of venous segments was performed without limitation by venous diameter or amount of segments.

THE INTERMITTENT PNEUMATIC COMPRESSION AS A SUPPORTIVE METHOD IN PATIENTS WITH CHRONIC VENOUS INSUFFICIENCY – OUR EXPERIENCES

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Chronic venous insufficiency in various degrees of severity affects almost 50% of the adult population. It is caused by failure of mechanism venous return with subsequent venous hypertension. The cause of it are insufficient venous valves or obstruction of the venous system in postthrombotic states. Clinical manifestations include varicose veins, swelling, skin changes or varicose ulcer, the patients often report pain. Treatment goal in patients with chronic venous insufficiency is the reduction of swelling, elimination of pain and inflammatory changes, heal ulcers and prevent recurrence. We achieve it by reducing venous hypertension. The gold standard in the treatment of venous insufficiency is compression therapy (in the form of compression stockings or bandages), often complete with the administration venotonics. Sclerosing therapy and surgical methods remain reserved primarily for patients with varicose veins. Correctly and consistently implemented compression therapy can vastly improve stabilization of the disease and reduces its progression. Unfortunately, many patients have a low adherence to the compression treatment due to various reasons. In this case, the intermittent pneumatic compression can partially help. In view of the fact that we use it in our department as supportive treatment in selected patients, we decided to chart its effect on patients' subjective complaints and objective findings. The group consisted of 33 patients (29 females, 4 male) with an average age of 50 years. Primary venous insufficiency had 29 patients, postthrombotic syndrome had 12 patients, varicose veins 20 patients and lymphedema 4 patients. In the first check up the sonographic examination of veins of legs and the plethysmographic examination of the venous muscle pump (D-PPG) were performed. After the procedure in addition to the clinical examination the D-PPG was repeated. In both checks subjective and objective findings were observed. After the evaluation findings retreat pain (in 70% of all cases), and reduce swelling (in 55–60% cases) were founded of the majority of the patients. This improvement persisted in 41 days (0–120 days) in average, and allowed at least temporarily discontinue venotonics (57% patients). Intermittent pneumatic compression seems appropriate supportive method to alleviate mostly subjective symptoms and can be repeated.

THE TWO FACES OF HYPERTENSION

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Introduction: Chronic venous disease (CVD) and arterial hypertension (AH) belong to the most common diseases in industrialized countries. Venous hypertension is one of the most important factors contributing to the development of CVD. Damage of the microcirculation is present in patients with CVD as well as in patients with AH. Is this fact a random coincidence or a causative relation?

Methods: Consecutive patients with subjective symptoms of CVD were investigated. Altogether 5 382 patients were enrolled for this study (mean age 57 years, 71% were women). General practitioners fulfilled a simple questionnaire concerning the duration of individual symptoms of CVD and in case of arterial hypertension the duration of high blood pressure. Investigators had to measure the blood pressure and to examine patients' lower limbs and to assign them a class according to the C of the CEAP classification.

Results: The diagnosis of CVD was confirmed in 81% (C0 2%, C1 16%, C2 38%, C3 32%, C4 10%, C5 2%, C6 1%) of investigated persons. 57% of the patients had arterial hypertension. 82% of patients with arterial hypertension had CVD. There was a significant correlation between duration of arterial hypertension and duration of CVD. In patients with longer duration of arterial hypertension (more than 10 years) more serious clinical stages of CVD were found. On the other hand, in patients with higher clinical classes of CVD (C3–C6) there was significantly higher occurrence of arterial hypertension.

Conclusion: Damage of the capillary wall together with chronic inflammation in the microcirculation play an important role in the development of CVD. Some preliminary reports confirmed the protective effect of micronized purified flavonoid fraction against the morphologic changes occurring in the capillaries and an ability to prevent capillary leaks in patients with CVD. Could early treatment of CVD influence also the values of arterial blood pressure? Could treatment of arterial hypertension slow down progression of CVD? Further studies are needed to elucidate these questions.



**KAZUISTIKY
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LONG-TERM DEVELOPMENT OF BLOOD FLOW IN ARTERIOVENOUS FISTULA

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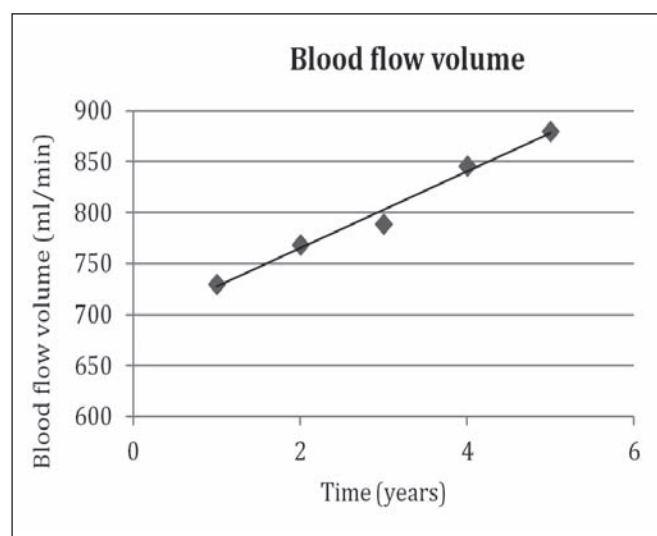
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Background: The blood flow volume in native dialysis fistulas increases fast after its creation. This maturation process lasts 6 weeks. However, the wall shear stress in the feeding artery normalizes after more than 2 years. Therefore, further changes of the flow volume can be expected and this information could be important for the routine fistula flow measurement as a part of surveillance program. The aim of this study was to describe the "natural" development of blood flow in accesses with no intervention performed during their use for hemodialysis.

Methods: We conducted a retrospective study using the database of hemodialysed patients from Hemodialysis Centre of Internal Department Strahov, General University Hospital in Prague. We analyzed the access flow for 1 800 days in patients, who did not have any intervention since access creation. The blood flow volume was measured using the ultrasound dilution or ionic dialysance.

Results: We included 40 patients: 14 men and 26 women. The average blood flow during the first year after AVF creation was 730 ml/min and 880 ml/min during the fifth year after creation.

Conclusions: The average blood flow volume in native fistulas without intervention further increases after their maturation.



SURGICAL REVASCULARIZATION IN THE LOWER EXTREMITIES LYMPHEDEMA THERAPY: FICTION OR REALITY?

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The lymphatic vessels disorder – lymphedema – is a disease treated mainly in a conservative way. With the development of the microsurgical techniques, forming of lymphaticovenous anastomoses enabling to derivate the lymphatic flow into the vein system may be considered a method of choice in suitable patients. The basic pre-condition for a successful result of the surgery is the accurate diagnostics before the surgery, an early stage of the illness and a consistent and complex post-surgery care.

Preoperative evaluation is based on lymphoscintigraphy and Doppler sonography of both of the profound, and the superficial venous system of the lower extremity. Exclusion criterion of the surgery is noncompliance of the patient and serious comorbidities. The authors describe the surgical technique of the creation of the lymphaticovenous connections which is based on the presence of the good quality lymphatic vessel. Nowadays is used microsurgical inclusive end to end anastomosis or end to side anastomosis. The intent is to create minimally 3 connections between lymphatic and venous system.

In the end of the presentation there are presented the results of 25 surgeries with the aim of restoring the lymphatic flow in the lower extremity through lymphaticovenous anastomosis. The objective finding improvement on the lower extremity corresponds with the subjective improvement of the patients' status in five patients.

LASER TREATMENT OF VARICOSE VEINS

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Endovenous laser ablation of varicose veins (EVLA) is a commonly used and very effective minimally invasive therapy to manage leg varicosities, and, in some countries, it has more or less replaced the traditional stripping method. It has its limitations, advantages as well as disadvantages. The lecture will review the treatment possibilities of lower extremity varicose veins with respect to the author's own experience on the field of endovenous procedures. EVLA is safe and effective, and represents suitable solution for patients seeking for alternative and miniinvasive approach.

INDICATION AND TIMING OF SURGERY IN CHRONIC LYMPHATIC INSUFFICIENCY OF THE LOWER EXTREMITIES

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The decisive factors for timing the surgical treatment of chronic lymphatic insufficiency and its complications (lymphoedema, lipohypertrophy, recurring attacks of erysipelas) are the time period from the occurrence of the first symptoms, the clinical finding, the results of lymphoscintigraphy and the condition of the venous system.

It is fundamental to consider whether the increase of volume is caused only by the retention of lymph in epifascial soft tissues (pitting lymphoedema) or only by lipohypertrophy (non-pitting lymphoedema), a significant fibrotic remodeling of the epifascial area, or their combination.

In case of pitting lymphoedema without significant lipohypertrophy, an early performance of lympho-venous anastomosis or other microsurgery may be considered. The necessary conditions are a lymphoscintigraphically visible functional collector below the groin and a sufficient superficial venous system, i.e. without venous hypertension and reflux in the sapheno-femoral junction.

If the patient is in the stage of non-pitting lipohypertrophy (no matter if this state was preceded by the stage of lymph retention in soft tissues or not), liposuction is indicated.

If the patient comes in the stage of pitting lipohypertrophy, possibly with fibrosis of soft tissues, and lymphoscintigraphy proves at least minimal drainage into lymph nodes (in other words a functional lymph collector), it is possible to indicate lympho-venous anastomosis, followed by liposuction after the decrease of the epifascial lymph retention.

If the lymphoscintigraphy does not show any functional collector and conversely a significant accumulation of lymph in the epifascial area with lymph reflux from collectors into soft tissues (dermal backflow) is present, intensive complex decongestive therapy including pharmacotherapy with the aim of achieving non-pitting lipohypertrophy must continue. In case of successful conservative therapy, liposuction or surgical resection may follow.

Representative clinical, lymphoscintigraphic and surgical findings will be presented in the lecture.

CONTRIBUTION OF MICROCIRCULATION EXAMINATION PROCEDURES TO DIFFERENTIAL DIAGNOSES OF LEG ULCERS

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Objective: Our contribution demonstrates usefulness of microcirculation examination to differential diagnostics of leg ulcers.

Group of Patients: This paper is based on the top ten most often diseases causing peripheral ulcers, and comparison of their findings in microcirculation area. We put emphasis on the methods and findings having a key role for diagnostics and implies some generalization.

Methods: There were used the following methods: Intravital capillaroscopy (IC), Laser Doppler Flowmetry (LDF), photoplethysmography (PPG), Duplex Ultrasonography (DUS). We have examined using the above mentioned methods our patients with the confirmed following diseases causing defects on the acral extremities: Chronic venous insufficiency, Peripheral occlusive arterial disease, Martorell ulcer, Neurotrophic diabetic ulcer, Vascular ulcer of Rheumatoid arthritis, Systemic scleroderma, Pyoderma gangrenosum, Antifosfolipid syndrome, Calciphylaxis, Polycythemia vera.

Conclusion: The common denominator for most of these lesions is rarefying of capillaries (ischemic, venous, Martorell hypertensive ulcers and scleroderma). Mere minority of defects is caused by other factors, for instance decreasing of capillary permeability, in other cases the immunological component prevails. Often the causes are multifactorial and they accumulate until the threshold of dermal healing capacity is overstepped.

Discussion: Venous ulcers represent 75% of all cases, peripheral arterial disease gives 15% of the cases, further 10% are of rare origin caused by one of the diagnoses mentioned above. Our method based on microcirculation examination can substantially contribute especially for these diagnoses we listed above.



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