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ABSTRACTS

On the extreme risk of cardiovascular diseases

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Extreme risk category in the stratification of cardiovascular complications. Advisory board consensus

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Abstract
The conclusion of the advisory board demonstrates the necessity of introducing a new risk category for cardiovascular complications: the extreme risk category. The article presents the analysis of the studies that were the basis for the introduction of this risk category. The following patients groups may be classified as an extreme risk category: combination of clinically significant atherosclerotic cardiovascular disease with diabetes mellitus type 2; atherosclerotic cardiovascular disease with cardiovascular complications occurred despite adequate lipid lowering therapy and/or achieved LDL cholesterol level ≤ 1.5 mmol/l. Management of extreme risk patients is discussed, that includes not only requirements of achievement of LDL cholesterol, blood pressure and HbA1c target levels, but also using of drugs with proved effectiveness in reducing cardiovascular risk.
Keywords: extreme risk, cardiovascular risk stratification, type 2 diabetes, progression of atherosclerosis.

Aneurysm of abdominal aorta: a view of cardiology and cardiovascular surgeon

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Abstract
Abdominal aortic diseases contribute significantly to a structure of cardiovascular morbidity and mortality. From 1990 to 2010 mortality rate caused by aneurysm and aortic dissection has

increased from 24.9 per million to 27.8 per million, with a predominance of increased mortality in men, therefore it is an important task to identify the aortic aneurysm in its early stage of formation.
This article discusses pathogenetic mechanisms of abdominal aorta development, relevance of timely diagnosis of the pathology and the most significant studies in a subject of abdominal aorta aneurysm screening.
Keywords: abdominal aorta aneurysm, atherosclerosis, screening.

Coronary graft failure

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Abstract
Coronary artery bypass grafting is the most common major surgical procedure in the world. To restore blood flow to the affected myocardium, a vessel from another part of the body is procured to create a bypass around a critically stenosed coronary artery. The internal thoracic artery remains the conduit of "gold standard" due to its superior long-term patency. However, almost all patients require additional grafts to provide a complete revascularization. This necessitates the harvest of other vessels, most commonly the saphenous vein and/or radial artery.
Long-term graft patency and consequently improving the quality and life expectancy of patient is the primary aim of coronary artery bypass surgery. Graft failure is a complex, multifactorial event that occurs in a substantial proportion of conduits. The main factors of both early and late graft failure continue to be studied to this day. This review presents data on biochemical, technical, systemic and local factors associated with graft failure, as well as methods for early detection of predictors of graft failure.
Keywords: CABG, graft failure, graft patency.

The impact of the allelic variant rs2230806 of the ABCA1 gene on phenotypic expression of familial hypercholesterolemia

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Abstract
The aim of this work was to evaluate the influence of allelic variant rs2230806 of the ABCA1 gene on the phenotype of the familial hypercholesterolemia (plasma lipid and apoprotein levels,

the frequency of tendon xanthomas and the risk of coronary heart disease). The study included 92 patients with heterozygous FH according to the British clinical SBR-criteria of the FH. Genotype according to the position rs2230806 of the ABCA1 gene was determined by real- time polymerase chain reaction (PCR) using adjacent samples and melting of reaction products after PCR. The frequency of polymorphism rs2230806 was 57% in our sample of patients with FH. The data obtained by us do not allow us to make a definite conclusion regarding the effect of the studied gene polymorphism on the level of apoA-I- containing plasma lipoproteins. The results of the regression analysis show the protective effect of rs2230806 variant on the development of tendon xanthomas in heterozygous allele carriers (OR 0.16; 95% CI: 0.02–1.0; p=0.035) in the overdominant inheritance model. There was statistically insignificanttrend of reducing the incidence of CHD with increasing number of alleles of the studied polymorphism ABCA1 gene (p=0.37). To confirm this effect it is necessary to conduct studies with inclusion of more patients with FH and coronary artery disease.

Keywords: ATP-binding cassette transporter A1, ABCA1 gene polymorphism, familial hypercholesterolemia, R219K, rs2230806.

Transradial approach for percutaneous coronary interventions in patients older than 80 years with acute coronary syndrome

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Abstract

Aims: transradial approach (TRA) is associated with lower complications rate in vascular access site and improved clinical outcomes compared with transfemoral approach (TFA). However at present data examining transradial access in the very elderly is limited. Therefore this study aims to compare in-hospital 1-year outcomes between TRA and TFA in this group.

Materials and methods: we have done a prospective cohort analysis of long-term outcomes. Our group included patients had under gone percutaneous coronary interventions (PCI) from January 2014 to September 2016. There were 285 patients. We registered clinical and demographic characteristics of patients, procedural complications and all cases of major adverse cardiovascular events (MACE) during hospitalization and follow-up 1 year. These patients were on average 85 year-old, predominantly female (64%) and having the following risk factors: hypertension (81%), diabetes mellitus (32%), chronic renal failure (18%). More than half of the patients (71%) having with ST-Elevation Myocardial Infarction. We divided our group into two, according to the angiographic approach: transradial (n. 89) (TR) or transfemoral (n. 196) (TF).

Results: patients in both groups were not statistically different from baseline characteristics. MACE illness rates during hospitalization (5% vs 12%, $p < 0.05$) and at 1-year obse. Complication instances of both hematoma (2% vs 9%, $p < 0.05$) and major bleeding (1% vs 6%, $p < 0.05$) were higher in the TFA group.

Conclusion: transradial approach significantly reduces vascular complications reducing in-hospital 1-year major adverse cardio-vascular events. Therefore transradial approach should be considered as the preferred vascular access method with the elderly.

Keywords: acute coronary syndrome, myocardial infarction, octogenarian, very elderly, percutaneous coronary intervention, transradial approach.

Influence of various sizes phospholipid particles for phospholipids and apoprotein A1 levels in high density lipoproteins subfractions after incubation with blood plasma in vitro

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Abstract

Objective. The ability of high density lipoproteids (HDL) for cell cholesterol efflux was shown in recent years to depend not only from their concentration, but also from their properties, that are often disturbed in atherosclerosis by as yet unclear mechanisms. One of the ways of HDL cholesterol accepting increase is thought their enrichment by phospholipids (PL). Here the influence of plasma incubation with earlier elaborated emulsion of PL particles with diameter 30 nm for HDL subfractions was studied, with comparison of effects of larger liposomes.

Methods. PL particles emulsion, prepared by earlier elaborated procedure from soy been phosphatidylcholine, and liposomes 100–150 nm were incubated with human plasma. HDL3 and remaining delipoproteidized plasma were isolated by ultracentrifugation and their PL and apoprotein A1 (apo A1) levels were determined.

Results. All HDL subfractions appeared to be phospholipidated, with more pronounced after incubation with ultrasmall, 30 nm PL nanoparticles. Maximal changes of both PL and apo A1 were in HDL2 – middle 3–6 fold increase. Changes in HDL3 and remaining plasma were in the range 30–50%. In contrast with PL, apo A1 level decreased, proportional with concentration of added PL nanoparticles. It was first shown the opposite character of apo A1 level as compared with other fractions after PL influence. Such redistribution of protein may be explained by decrease of particles densities with their sizes increase, thatwas supportedbyplasma agarose gel electrophoresis. Ratio PL/apo A1, that is considered to be important for cholesterol accepting activity, increased in all HDL sufractions, particularly after ultrasmall nanoparticles – two fold.

Conclusion. Incubation of plasma with PL particles less 30 nm results in high degree of phospholipidation of HDL2, HDL3 and remaining plasma, that have, as it was shown in a number of works, to stimulate cell cholesterol accepting activity. The results testify on prospectivity of such nanosystems usage in complex therapy of heart vessels diseases – for the goal of elevation of HDL activity and reverse cholesterol transport and for inhibition of atherosclerosis progression.

Keywords: phospholipid nanoparticles, HDL2, HDL3, apoproteid A1, phospholipidation.

Penetration and substantial support (PASS) technique in patients with complex coronary anatomy

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Abstract

Objective: the objective of this study is to present of our own experience in application penetration and substantial support (PASS) technique. We also depict effectiveness and safety of this technique.

Materials and methods: the study included 388 patients (71% of men) aged 71.6 ± 16.2 years with complex coronary anatomy.
Results: PASS technique was successful in 372 (95.9%) cases. In 7 (1.8%) cases telescopic teqnique was used. Rotational atherectomy was used in 9 (2.3%) patients. There were no perforation of coronary arteries, hemopericardium and intramyocardial hematomas in the perioperative period.
Conclusion: PASS technique is highly effective method for the complex coronary anatomy with low risk of peri- and postoperative complications.
Keywords: percutaneous coronary.

Evaluating the impact of different diagnostic criteria of metabolic syndrome on the prognosis of patients with ST segment elevation myocardial infarction

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Abstract
Metabolic syndrome increases the risk of cardiovascular complications in patients with acute coronary syndrome and is associated with a worse course and prognosis in such patients. In Russian population metabolic syndrome is diagnosed according to the Russian society of cardiology criteria of diagnosis which differs from the Joint Interim Societies (JIS) definition of the metabolic syndrome. In turn these differences may lead to differences in the frequency of diagnosis of metabolic syndrome and in assessing its effect on future prognosis. Accordingly, this study was planned.
Objectives: the purpose of this study was to compare the prevalence of metabolic syndrome diagnosed using both definitions in patients with ST segment elevation myocardial infarction and to determine their impact on the future prognosis in this group of patients.
Results: the study included 112 patients with ST segment elevation myocardial infarction. According to the criteria used for diagnosis of MS, patients were divided in two groups, and differences in the rate of diagnosis MS and its effect on the prognosis were evaluated. MS was more often diagnosed using JIS criteria. Patients with Metabolic syndrome according to the Russian society of cardiology criteria of diagnosis was associated with a significantly higher relative risk of cardiovascular complications and mortality, in comparison to patients with metabolic syndrome according to the JIS criteria.
Conclusion: to assess the results of study MS it is necessary to take into account the possibility of decreasing the frequency of diagnosis of MS with the use of Russian society of cardiology criteria, while patients selected according to these criteria have a worse prognosis compared to patients selected according to JIS criteria.
Keywords: metabolic syndrome, acute ST-segment elevation myocardial infarction.

On the 90th anniversary of academician Andrei Ivanovich Vorobyev