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ABSTRACTS

Clinical Significance of Coronary Calcification for the Assessment of Cardiovascular Risk

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Abstract
Ligand formation in phylogenetically early low-density lipoprotein (LDL) and phylogenetically late very low-density lipoprotein (VLDL) occurs when apoB-1900 acquires active conformation in association with essential polyenic fatty acids (FA) as esters with the alcohol cholesterol (CL), palmitic and oleic triglycerides (TG). ApoB-100 domen-ligand forms in LDL, and apoE/B-100 ligand, in VLDL. Cells internalize ligand lipoproteins (LP) by apoE/B-100 and apoB-100 receptor-mediated endocytosis. In E2/E3 phenotype and high blood content of palmitic TG and palmitic VLDL, preligand TG-rich LP are accumulated in the circulation if primary structure of postheparinic liver lipoprotein lipase and apoC-I and apoC-II is impaired. In apoB-100 receptor pathology, postligand LDL with low TG content are accumulated. All ligand-free LP are physiologically denatured by neutrophils and modified by other agents (glycotoxins) in pathology. Preligand LP form soft raised plaques in arterial intima and cause atherothrombosis, a destructive-inflammatory process. Postligand LP form flat plaques and induce atheromatosis. Atherosclerosis can be regarded as a conformation-related disease. According to NMR data, small dense atherogenic LP are palmitic VLDL with hydrated density of LDL. Excessive dietary palmitic saturated FA, E2/E2 phenotype and apoB-100 gene deletion are the causes of arterial intima injury. Ligand-free LP and dying macrophages form destructive and inflammatory processes. Atheromatosis is a result of endoecology, the biological function providing ”purity” of entercellular medium.
Keywords: apoB-100, conformation, fatty acids, atheromatosis and atherothrombosis, modified lipoproteins.

The duration of dual antiplatelet therapy in patients with coronary atherosclerosis after stent implantation.

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Abstract
Optimal longevity of dual antiplatelet therapy is uncertain. After implantation of drug-eluting stent 6–12 months dual antiplatelet therapy (DAPT) is needed. After this, some of patients have risk of thrombotic complications, very late stent thrombosis. From other hand, there is real risk of haemorrhagia. This review discuss results of long-term DAPT in clinical trials and meta-analyses on this theme.

Keywords: CHD. Stent implantation. Dual antiplatelet therapy (DAPT). Longevity of DAPT. Prognosis.

Interrelation of proproteinconvertasesubtilisin/keksin9 type levelwith carotid atherosclerosis severity in patients with hypercholesterinemia

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Abstract

Aim. Rate the level of proprotein convertase subtilisin/keksin type 9 (PCSK9) in patients with familial hypercholesterolemia (FHC), verified on the basis of the Dutch and the British, and the criteria to examine the relationship PCSK9 concentration with the severity of atherosclerosis in the carotid arteries.

Material and Methods. We studied 220 people, including 84 men and 136 women aged 18 to 75 years (53±11 years) with total cholesterol (TC) level ≥7,5mmol/l and/or low density lipoprotein LDL≥4,9mmol/l. In the Dutch and the British criteria were used to verify the diagnosis of familial hypercholesterolemia (FHC). All included patients underwent duplex scanning carotid arteries on the unit PhilipsiU22 linear sensor 3—9MGts and determined PCSK9 levels, LDL, Lp (a) in the serum by enzyme-linked immunoelectrodiffusion essay.

Results. According to the Dutch and the British criteria in a group of the patients with a certain diagnosis of FHC levels of PCSK9 significantly higher (428.8 ng/ml [334.5 ng/ml; 634 ng/ml] and 426.0 ng/ml [372,4 ng/ml; 681,8 ng/ml], respectively) than in the group of the patients with a likely diagnosis (415 ng/ml [280.2 ng/ml; 472.9 ng/ml], p = 0.05 for the Dutch criteria), possible and unlikely diagnosis (343.9 ng/ml [280.2 ng/ml, 411.2 ng/ml], p = 0.0003; 358.8 ng/ml [285,9 ng/ml; 459,3 ng/ml], p = 0.4 respectively). Significant association between PCSK9 and the total percentage of the stenosis of carotid arteries (CA) have been not detected (n=220; r=0,07; p=0,35). When comparing the degree of the stenosis of the CA depending on PCSK9 levels higher levels of PCSK9 was found in the group with stenosis CA 50—100% (428.8 ng/ml [342.3 ng/ml, 523.8 ng/ml]) than in patients with stenosis of 49% (351 ng/ml [282.7 ng/ml, 446.1 ng/ml]) (p=0.02) and without atherosclerotic carotid arteries (349.9 ng/ml [277.6 ng/ml, 417.4 ng/ml]) (p=0.03). We found that PCSK9 levels in women is slightly higher than that of men and the concentration was not different in smokers and non-smokers. This article presents the identified significant association with the level of PCSK9 concentrations of TC, LDL-C and Lp(a).

Conclusion. The level of PCSK9 significantly higher in patients with a definite diagnosis of FHC and in patients with stenotic lesions of the carotid arteries.

Keywords: proprotein convertase subtilisin/keksin 9, hypercholesterolemia, familial hypercholesterolemia.

Asymptomatic microembolic signals at the patients with carotid atherosclerosis as the predictors of acute ischemic cerebrovascular complications

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Abstract
Despite the subclinical character, asymptomatic carotid stenosis accounts for a substantial cerebral stroke burden. Transracial Doppler monitoring adjust to detect the signs of microembolisation from plaque surface — microembolic signals (MES). We aimed to evaluate MES as an independent marker of subsequent ischemic stroke and in combination with other anamnestic and clinical features.
Material and methods. One hundred and sixty patients with 50% and more (by NASCET) carotid stenosis, assessed by ultrasound, with no sources of cardiogenic embolism were recruited. TCD recordings have been taken from the ipsilateral middle cerebral artery all the patients during an hour at baseline, in 10 days, 6 months and 12 months.
Results. Cerebral microembolism appear to be significant independent predictor of primary ischemic cerebral vascular events. MES in clinical asymptomatic patients in conjunction with the age older 60 years, contralateral carotid stenosis, ultrasound plaque characteristic and the absence of antithrombotic therapy are factors determine the repeat development artery-to-artery embolism from the carotid plaque.
Conclusions. The multivariate analysis and discriminant inequality reveal the patients group with high risk of subsequent ischemic cerebral events. This technique might be a useful risk predictor for identifying those patients who might benefit from intervention with carotid endarterectomy.
Keywords: carotid atherosclerosis; transcranial Doppler; cerebral embolism; cerebral microemboli; cerebral ischemic vascular complications.

Pathological ABI at patients with acute ischemic stroke: prevalence and factors associated with its presence

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Abstract
Aim. Examine the frequency of detection of abnormal ankle-brachial index (ABI) in patients with acute stroke (CVA) and assessed the factors associated with its presence in this group of patients. At patients evaluated the presence of cardiovascular disease, prior vascular events, type and subtype of stroke.
Methods and Materials. The following studies were conducted: color duplex scanning of lower extremity arteries, brachiocephalic arteries, echocardiogram, electrocardiogram, as well as laboratory studies (lipidogrmma).
Results. The study found that patients with abnormal levels of ABI often have concomitant cardiovascular disease (angina, chronic heart failure, arrhythmias). In patients with abnormal ABI often identified ischemic stroke. It was found that the stenosis of extracranial arteries, thickened complex intima-media (IMT), stenosis of the arteries of the lower extremities are most common in patients with abnormal ABI (P=0.02). When evaluating lipidogram, total cholesterol was also higher in patients with abnormal ABI (p=0.08).

Conclusion. The assessment of the ABI is suitable for ischemic stroke to identify patients with peripheral atherosclerosis and of their targeted prevention activities.
Keywords: ankle-brachial index (ABI), stroke, risk factors for atherosclerosis.

Investigation of endothelial shear rate in patients with atherosclerosis of the carotid arteries

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Abstract
Aim. : To study the endothelial shear rate among the patients with atherosclerosis of carotids at the area of common carotid artery and the distant vascular region which brachial artery is.
Material and methods. In research took part 71 patient aged from 40 to 75 years. They were devoted into two groups depending on the availability of verified atherosclerosis carotid arteries. All patients were examined lipid metabolism, glycated hemoglobin, C-reactive protein, antithrombin activity and von Willebrand factor. Also duplex scanning of carotid arteries and reactive hyperemia in DS Celermajer followed by calculation of shear rate endothelium was held.
Results. In the group of patients with carotid atherosclerosis endothelial shear rate values were significantly lower — 413 ± 122 s^{-1} and 518 ± 106 s^{-1}, in the first and second groups accordingly ($p = 0.007$). In the area of the brachial artery shear rate was significantly lower in the initial state ($p = 0.006$), and 180 second period of reactive hyperemia, reflecting local blood flow recovery period after undergoing compression and return parameters to the original ($p=0.014$). The low shear rate in the carotid artery associated with high total carotid stenosis ($r = 0,435$; $p<0,01$), the sum of the areas of all atherosclerotic plaques in the carotid arteries ($r = 0,399$; $p <0,05$) and Plaque Score ($r=0,342$; $p<0,05$), but apart from that – with elevated hsCRP ($r = 0,372$; $p <0,01$) and low HDL-cholesterol values ($r = 0,485$; $p<0,01$).
Conclusions. Patients with atherosclerotic carotid arteries had significantly lower values of endothelial shear rate as at the intact section of the carotid artery, and the brachial artery segment at rest, as well as the period of 180 seconds of reactive hyperemia. The low values of the shear rate in the brachial artery correlated with indicators of the severity of the atherosclerotic lesions of the carotid arteries as total carotid stenosis and the sum of the areas of all atherosclerotic plaques in the carotid arteries.
Keywords: endothelial shear rate, carotid atherosclerosis, shear stress, reactive hyperemia, endothelial dysfunction.

Pregnancy-associated plasma protein a, as instability analyzer atherosclerotic plaques in acute coronary syndromes

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Abstract
Aim. To analyze the levels of pregnancy-associated plasma protein A in blood plasma in patients with acute coronary syndrome. Comparative analysis of a pregnancy-associated plasma protein-

A with markers of necrosis and acute phase of inflammation in acute coronary syndrome. Clinical and prognostic value of a pregnancy-associated plasma protein A in acute coronary syndrome.
Material and methods. Determining the concentration of pregnancy associated plasma protein A in 44 patients with acute myocardial infarction, 27 patients with unstable angina, as well as in the comparison group and control. In 71 patients of the study group of markers of necrosis and acute inflammation phase, blood lipids.
Results. Concentrations of pregnancy-associated plasma protein A was significantly higher in the acute coronary disease compared with healthy individuals, patients with hypertension, coronary heart disease. Comparative analysis of a pregnancy-associated plasma protein A and markers of necrosis, acute phase showed that the levels of pregnancyassociated plasma protein A positively correlated with troponin have similar curves of restenosis in the beginning of the second day of the disease. Daily mortality accompanied by high levels of pregnancy associated plasma protein A, massive vascular inflammation. Relatively favorable factors «daily mortality» in the study were the high levels of pregnancy-associated plasma protein-A, necrosis markers troponin and lactate dehydrogenase fraction 1 as outcome measures in myocardial infarction, but with preservation of organ function of the heart.
Conclusions. Pregnancy-associated plasma protein A— a new highly sensitive biochemical marker of intravascular atherosclerotic plaque damage. The present study shows that the levels of pregnancy-associated plasma protein A in correlation with markers of necrosis and acute phase should be applied in patients with acute coronary disease and have a clinical — prognostic value in the first hours of clinical attacks.
Keywords: Unstable angina, myocardial infarction, acute coronary syndrome, atherosclerosis, pregnancy-associated plasma protein A.

Stent deformation due to spiral right coronary artery dissection

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Abstract
Iatrogenic coronary artery dissection (ICAD) is a rare (<3%) but severe complication of percutaneous coronary intervention (PCI). Coronary artery dissection results from a tear of the tunica intima or media, which leads to arterial wall hematoma formation and true coronary lumen compression. The etiology of ICAD is mainly linked to inappropriate use of the guiding catheter or subintimal passage of the guidewire. Also ICAD may occur during balloon angioplasty and stenting. We describe a case of iatrogenic coronary artery dissection which lead to proximal stent struts deformation.
Keywords: iatrogenic coronary artery dissection, spiral right coronary artery dissection, stent deformation.