ABSTRACTS

Clinical Significance of Coronary Calcification for the Assessment of Cardiovascular Risk: A Systematic Literature Review

V.V. Kashtalap[1,2], O.N. Hryachkova[1], O.L. Barbarash[1,2]

[1] Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russia
[2] Kemerovo State Medical Academy, the Ministry of Health of the Russian Federation, Kemerovo, Russia

Abstract
The article presents a systematic review of recent understandings of coronary artery calcification and existing controversy in the mechanisms of its formation and progression, clinical and prognostic significance in patients with cardiovascular risk factors and various types of coronary artery disease. Recent approaches to the optimal choice of diagnostic method for the detection of coronary calcification from the perspective of modern clinical guidelines are presented. Advanced insights into the role of lipid-lowering therapy in the stabilization of atherosclerotic plaques in active calcification process are presented. The review article summarizes available materials from foreign medical databases including MEDLINE and PubMed.
Keywords: coronary calcification, calcium scoring, coronary artery disease, acute coronary syndrome, risk assessment, statins

The treatment and management of patients with coronary heart disease after myocardial revascularization

V.P. Lupanov

Russian Cardiology Research Complex, Moscow, Russia

Abstract
This review present management and treatment of patients with coronary heart disease after percutaneous coronary intervention and coronary artery bypass grafting. Describes the main groups of drugs (antiplatelet agents, statins, beta-blockers, ACE inhibitors). Indicate the dates of the functional methods of research in the outpatient setting.
Keywords: ischemic heart disease, percutaneous coronary intervention, coronary artery bypass surgery, revascularization

Modern diagnostics abilities of familial hypercholesterolemia before clinical features of atherosclerosis appearance

V.A. Korneva[1], T.Yu. Kuznetsova[1], T.Yu. Bogoslovskaya[2], R.Z. Murtazina[2,3], A.V. Didio[2,3], M.P. Serebrenitskaya[4], V.O. Konstantinov[4], M.Yu. Mandelshtam[2,3], V.B. Vasilyev[2,3]

[1]Petrozavodsk State University, Petrozavodsk, Russia
[2]Institute for Experimental Medicine, St.Petersburg, Russia
[3]St.Petersburg State University, St.Petersburg, Russia
[4]North-West State Medical University named after I.I. Metchnikov, St.Petersburg, Russia

Abstract
Aim: to analyze phenotypic characteristic of familial hypercholesterolemia (FH) without clinical and instrumental signs of atherosclerosis.
Materials and methods: 277 patients with familial hypercholesterolemia (94 with certain FH) were examined. For diagnosing FH we had used The Dutch Lipid Clinic Network. For all patients lipid spectrum, glucose level, ECG, Holter monitor, echocardiography, brachiocephalic arteries ultrasound examination were performed. We had studied the frequency of "classical" cardiovascular risk factors occurrence (obesity, arterial hypertension, smoking), types of the low density lipoproteins (LDL) receptors mutations in patients with ischemic heart disease (IHD) and FH, and compared them with FH patients without clinical manifestations of atherosclerosis. In 81 patients with certain FH we had analyzed the level of Lp(a). Genetic analyze was performed in 51 patients (54,3%). In 21 patients mutations of LDL receptor were found.
Results. All group was divided into two subgroups: in the first were 53 FH patients (56,4%) with an established diagnosis of IHD; the second group consisted of 41 people (43.6 percent) without IHD and other clinical and instrumental signs of atherosclerosis. Patients with a certain FH without clinical manifestations of atherosclerosis had the following characteristics: the average age was 40.3 years, predominantly women (63%), the lipid spectrum was characterized as a significant increase of cholesterol (average level 10,58 mmol/l) and LDL cholesterol (average of 7.83 mmol/l), high level of HDL (1.62 mmol/l), in comparison with FH and IHD group the frequency of such factors, as smoking and body weight was the same, but lower frequency of hypertension (48% and 81% respectively). Patients with certain FH had no differences in the type of mutations of LDL receptor gene in subgroups in the presence of IHD and without it.
Conclusion. Detection of severe dyslipidemia requires the exclusion of FH, even in the absence of clinical manifestations of atherosclerosis, especially in the presence in the family history on cardiovascular disease.
Keywords: familial hypercholesterolemia, ischemic heart disease.

The role of markers of lipoproteins oxidative metabolism in determining the long-term prognosis in patients with acute coronary syndrome without ST segment elevation

SA Berns, EA Schmidt, TA Khomyakov, OA Nagirnyak, OV Chuvichkina, OE Avramenko, OL Barbarash.

FGBI "Research Institute of complex problems of cardiovascular disease", Kemerovo, Russia

Abstract
Aim: to examine the relationship of oxidative metabolism of lipoproteins markers with the development of adverse outcomes in non–ST-Elevation Acute Coronary Syndromes (NSTE-ACS) during one year of follow-up.
Materials and Methods: a total of 159 patients with NSTE-ACS have been included in the study. The average age of patients was 61,0±9,19 years. Among the patients studied was 61% of men and 39% women. Determination of oxidized low-density lipoprotein (ox-LDL) and antibodies to ox-LDL serum in all patients was fulfilled by the 10th day of hospitalization. Follow-up was 12±4 months for the study group. All patients were divided into two groups: with a favorable (n = 123) and unfavorable (n = 35) outcomes [death from cardiovascular causes, unstable angina (UA), myocardial infarction (MI)].

Results: the ox-LDL level in serum was significantly higher in patients with unfavorable outcome. It was found that increased levels of ox-LDL more than 2.4 mkg/ ml increases the risk of an unfavorable outcome for the year in patients with NSTE-ACS more than 10 times (OR=10.4, 95% CI: 2,38-45,7; p<0,0001). The differences in the levels of antibodies to ox-LDL in the groups were not found.
Conclusion: the elevated levels of ox-LDL more than 2.4 mkg/ml in hospital period can be laboratory markers of adverse prognosis in patients with NSTE-ACS.
Keywords: non–ST-Elevation Acute Coronary Syndromes, oxidized low-density lipoprotein, antibodies to oxidized low-density lipoprotein, prognosis.

The efficacy and mechanisms of action of the peptide Lys-Glu-Trp model hyperlipidemia caused by administration of Tween-80

S.V. Khodko[1], M.N. Makarova[1], A.I. Selezneva[1], S.A. Savelyev[1], V.G. Makarov[1], V.V. Malinin[2]

[1]"Saint-Petersburg Institute of Pharmacy", Leningradskiy region, Russia
[2] The Medical-Biological Research-Industrial Complex «CYTOMED», St. Petersburg, Russia

Abstract
Aim. The aim of the study was to determine the dose-dependent effects of peptide Lys-Glu-Trp on the model of experimental hyperlipidemia caused by the introduction of Tween-80.
Materials and methods. For the formation of the pathology on the 6th day of the study the animals were injected intraperitoneally with Tween-80 at a dose of 200mg/100g. The test drugs were administered intraperitoneally for 6 days before induction of disease. The study included groups: intact (without treatment, without pathology), control (pathology, placebo 0.9% sodium chloride), study groups treated with peptide lysyl-glutamyl-tryptophan (Lys-Glu-Trp) at doses 0.2 and 2 mg/kg and the group treated with the reference drug atorvastatin dose of 5.6 mg/kg. Each group consist of 10 male Wistar rats. On the 7th day of the experiment the blood was collected. The blood plasma was investigated on the parameters: total cholesterol (TC); high density lipoproteins; low density lipoproteins; triglycerides; blood glucose; bilirubin; lecithin-cholesterol acyltransferase (LCAT).
Results. The study found marked lipid-lowering effect of the peptide Lys-Glu-Trp, realized mainly due to lower levels of atherogenic LDL. Investigated tripeptide efficiency test in small doses, and no differences in its efficacy at doses of 0.2 and 2 mg/kg can be the basis for further studies of its efficacy and safety as a means for the treatment and prevention of atherosclerosis.
Conclusions The mechanism of action of the test peptide Lys-Glu-Trp may be associated with the influence on the system proteins that regulate metabolism and transportation of TC, in particular the activity of LCAT. As a result, this study established the ability to reduce the severity of the fall of the tripeptide concentration of LCAT in the background experimental hyperlipidemia by 49 - 55%.
Keywords: hyperlipidemia, peptide, atorvastatin, cholesterol.

Cerebral embolism and related vascular complications during carotid endarterectomy and carotid angioplasty with stenting

N.V. Rybalko, N.V. Bolomatov, V.A. Batrashov, O.I. Vinogradov, A.N.Kuznetsov

National Pirogov Centre of Therapy and Surgery, Moscow, Russia

Abstract

Aim. Cerebral microembolic signals (MES) detected by transcranial Doppler are frequent during carotid angioplasty with stenting (CAS) and carotid endarterectomy (CEA). Their potential harmful effects on the brain are, however, unclear. The aim of this study was to relate the frequency and type of per-procedural microembolic signals to procedure-related ipsilateral ischemic strokes.

Methods. Forty-one patients with internal carotid stenosis ≥70%, who were prospectively treated with CEA (26) or CAS (15) were monitored during the procedures using transcranial Doppler with embolus detection and differentiation.

Results. CAS is associated with a significantly higher rate of cerebral embolization than CEA, but the number of solid MES dominated in CEA group. Solid MES were independently associated with procedure-related ipsilateral ischemic events.

Keywords: carotid atherosclerosis, carotid endarterectomy, carotid angioplasty with stenting, cerebral embolism, cerebral ischemic vascular complications.

Non-occlusive coronary artery lesions in the diagnosis of coronary artery disease: prevalence and verification tools

A.N. Sumin, E.V. Korok, L.S. Barbarash

Research Institute of Complex Problems of Cardiovascular Diseases, Kemerovo, Russia

Abstract

Aim. To assess the prevalence and factors of no obstructive coronary artery disease identified with routine coronary angiography (CAG).

Material and Methods. 457 medical records of patients undergoing routine coronary angiography at the Kemerovo Cardiology Center during the period from April 1 to May 31, 2014 were retrospectively reviewed. All the patients were assigned to two groups: Group 1 – patients with suspected coronary artery disease (CAD) (n=248), Group 2 – patients with a history of myocardial infarction (MI) (n=209).

Results: According to the CAG findings, the absence of occlusive and stenotic lesions as well as non-significant coronary artery disease (stenosis <60%) were commonly found in patients with suspected CAD (42.7% and 17.3%), compared to Group 2 with a history of MI (12.9% and 8.1%), respectively (p<0.001 and p=0.004). Thus, significant coronary artery lesions (stenosis≥70%) were more often found in patients with a history of MI (76.6% vs. 36.3%, respectively, p<0.001). Typical signs and symptoms of angina pectoris were commonly found in both groups –59.3% and 54.6%, respectively (p=0.309). Atypical signs and symptoms of angina and cardialgia were more often found in patients with suspected CAD (p=0.002 vs. p<0.001). The pretest probability of the presence of CAD was 68% vs. 77% (p=0.007). Bicycle ergometry was performed in 11.1% vs. 7.9% (p=0.038), and 24-hour ECG monitoring –in 28.1% vs. 19.9% (p=0.02). Increased probability of normal coronary arteries detecting was associated with the presence of atypical angina and cardialgia, increased left ventricular ejection fraction, female gender, whereas decreased probability–with the presence of diabetes, symptoms of congestive heart failure, advanced age and statin therapy.

Conclusion.42.7% of patients with suspected CAD and 12.9% of patients with a history of MI demonstrated the absence of coronary artery lesions according to the CAG results. Clinical symptoms and manifestations should be carefully evaluated in patients in order to reduce the detection rate of normal coronary arteries. Other options (an accurate method of calculating the pretest probability, adequate protocols of functional tests, diagnostic use of multislice computed tomography) require further investigation.

Keywords: coronary angiography, coronary artery disease, normal coronary arteries.

Impact of metabolic syndrome and its components on long-term prognosis in patients with acute ST-segment elevation myocardial infarction

A.M. Abdellatif[1], Yu.A.Shuvalova[2], A.A. Slivkina[2], A.I.Kaminnyi[2]

[1]Ryazan State Medical University Russian I.P Pavlov, Russia
[2]FSI Cardiological Scientific Complex Russian Federation Ministry of Health, Russia

Abstract
Study Objective: To assess the effects of metabolic syndrome and its components on long-term prognosis in patients with acute ST-segment elevation myocardial infarction (STEMI).
Materials and Methods: The study included 112 patients, 76 of whom had metabolic syndrome. The duration of the study follow-up period was 36 months. The study endpoints were death from any cause and major adverse cardiovascular events (MACE): death, recurrent myocardial infarction, and re-hospitalization for worsening of the patient's condition.
Study Results: The rates of MACE and death in patients with metabolic syndrome, were higher than that in the control group: 74.0% vs. 30.0%, p = 0.027 and 34.5% vs. 8.3%, p = 0.031, respectively. Metabolic syndrome and all its components significantly increased the risk of MACE. Metabolic syndrome and only two of its components — obesity and impaired glucose tolerance — were associated with increased risk of death. In patients with acute myocardial infarction, metabolic syndrome was an independent predictor of both death and MACE. Obesity, impaired glucose tolerance and increased low-density lipoprotein cholesterol (LDL-C) and triglycerides (TG) levels were independent predictors of MACE. Obesity and impaired glucose tolerance were also independent predictors of death.
Conclusion: Metabolic syndrome, obesity and impaired glucose tolerance are
independent risk factors for MACE and death in patients with metabolic syndrome and acute STEMI. Although elevated LDL-C and TG levels don't affect the death rates, they act as independent risk factors for MACE in this group of patients.
Keywords: metabolic syndrome, acute ST-segment elevation myocardial infarction.

The use of statins in the systemic scleroderma treatment.

O.M. Drapkina[1], M.V. Fadeeva[2], E.V. Zyatenkova[2]

[1]Nacional Research Center for Preventive Medicine, Moscow, Russia
[2]Clinic of propaedeutics of internal medicine, gastroenterology and hepatology, Medical Academy, Moscow, Russia

Abstract
 Systemic sclerosis is a clinically heterogeneous, systemic disease with microvascular disorders, immune imbalance and enhanced collagen synthesis in tissues. This review focuses on statins' effects on various stages of systemic scleroderma pathogenesis. The presented clinical case illustrates the use of statins in treatment of the systemic scleroderma patient with the anamnesis of myocardial infarction and percutaneous coronary intervention.
Key words: statins, pleiotropic effects, systemic scleroderma.