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ABSTRACTS

Review

Modern possibilities of radionuclide molecular imaging of atherosclerosis

V.B. Sergienko

Russian Cardiology Research Complex, Moscow, Russian Federation

Abstract

The problem of early diagnosis of coronary artery atherosclerosis is a primary task of modern cardiology. Unstable atherosclerotic plaques with inflammatory component play important role in the deterioration of the prognosis of cardiovascular complications. Modern radionuclide methods allow evaluation of various components of atherogenesis, as well as the early changes in myocardial perfusion caused by atherosclerosis. Current review describes modern possibilities of molecular imaging of atherosclerosis using radionuclide methods, with a list of promising radiopharmaceuticals used in this direction.

Keywords: atherosclerosis, molecular imaging, radionuclide diagnosis, myocardial perfusion

Guidelines

Guidelines on the organization of medical care to patients with hereditary atherogenic lipid disorders in the Russian regions

(Joint project of the National Society for the Study of Atherosclerosis, Non-Profit Partnership "The National Council of Experts on Rare Diseases")

Working group on preparation of the text of the Guidelines

A.A. Sokolov¹, O.Yu Alexandrova², V.V. Kashtalap³, O.L. Barbarash³, M.V. Ezhov⁴

¹Military Medical Academy named after S.M. Kirov, St. Petersburg, Russia

²Medical University "First Moscow State Medical University. named after. I.M. Sechenov", Moscow, Russia

³Research Institute of complex problems of cardiovascular disease, Kemerovo, Russia

⁴Russian Cardiology Research and Production Complex, Moscow, Russia

The composition of the expert committee on the development of Guidelines: SA Boytsov (Moscow), SS Bazhan (Novosibirsk), MI Voevoda (Novosibirsk), AS Galyavich (Kazan), VS Gurevich (St. Petersburg), MA Drugova (Perm), DV Duplyakov (Samara), AI Ershova (Moscow), EY Zakharova (Moscow), YuA Karpov (Moscow), NA Koziolova (Perm), GA Konovalov (Moscow), VO Konstantinov (St. Petersburg), VA Korneva (Petrozavodsk), ED Kosmacheva (Krasnodar), VV Kukharchuk (Moscow), SA Makarov (Kemerovo), AN Meshkov (Moscow), SA Naumov (Perm), SN Pokrovsky (Moscow), IV Sergienko (Moscow), OG Smolenskaya (Ekaterinburg), IA Urvantseva (Surgut), II Shaposhnik (Chelyabinsk)

Resume

The Guidelines are designed to demonstrate possible approaches to routing patients with hereditary atherogenic lipid disorders in accordance with existing legal documents. The Guidelines define the

stages of medical care of this group of patients. For each stage the possible types of medical care, conditions of its provision and hospitals, on the basis of which it can be provided, as well as ways of payment are established. Criteria for the detailed examination of patients with suspected hereditary atherogenic lipid metabolism are shown. Recommendations reassigned for health care managers, chief-hospital physicians, cardiologists, internists and other physicians.

Keywords: routing patients, inherited atherogenic lipid disorders, procedures and types of medical care.

Russian Guidelines on Familial Hypercholesterolemia Diagnosis and Treatment.

M.V. Ezhov¹, I.V. Sergienko¹, T.A. Rozhkova¹, V.V. Kuharchuk¹, G.A. Konovalov², A.N. Meshkov³, A.I. Ershova³, V.S. Gurevich⁴, V.O. Konstantinov⁵, A.A. Sokolov⁶, M.Yu. Shcherbakova⁷, I.V. Leontieva⁸, SS Bazhan (Novosibirsk)⁹, M.I. Voevoda⁹, I.I. Shaposhnik¹⁰.

¹ Russian Cardiology Research Complex, Moscow, Russia

² MEDSI Clinic, Moscow, Russia

³ National Research Center for Preventive Medicine, Moscow, Russia

⁴ Saint-Petersburg State University of the Ministry of Healthcare of the Russian Federation, St. Petersburg, Russia

⁵ North-West State Medical University n. a. I.I. Mechnikov of the Ministry of Healthcare of the Russian Federation, St. Petersburg, Russia

⁶ Military Medical Academy named after S.M. Kirov, St. Petersburg, Russia

⁷ "Federal Research Center of Food and Biotechnology", Moscow, Russia

⁸ Research Clinical Institute of Pediatrics n. a. Y.E. Veltischev, Moscow, Russia

⁹ Research Institute of Internal and Preventive Medicine, Novosibirsk, Russia

¹⁰ South Ural State Medical University, Chelyabinsk, Russia

Resume

These Practical Guidelines are developed for general practitioners and cardiologists to demonstrate definition, diagnostic criteria and current approaches to treatment of familial hypercholesterolaemia.

Keywords: familial hypercholesterolemia, low-density lipoprotein cholesterol, prevention, atherosclerosis, treatment.

Original Articles

The effects of atorvastatin on blood T-cell frequencies in patients with stable angina

G.V. Kuznetsova, A.V. Potekhina, T.I. Arefieva, N.Yu. Ruleva, A.Yu. Filatova, A.M. Schinova, A.K. Osokina, E.A. Noeva, E.A. Zharova, S.I. Provatorov

Russian Cardiology Research Complex, Moscow, Russia

Abstract

Aim: The aim of this study was to evaluate the blood frequencies of lymphocyte and monocyte subpopulations in patients with stable coronary heart disease receiving atorvastatin 20mg (>6 months) or non-receiving statins; and the effect of one week high-intensive treatment with atorvastatin 80mg on these parameters and monocyte chemokine receptor expression.

Materials and methods: 42 patients with stable angina were enrolled, 29 patients had been receiving atorvastatin 20 mg for at least 6 months, and 13 patients hadn't received statins. Blood frequencies of CD3+ T-cells, including CD4+ and CD8+ cells, CD4+CD25highCD127low regulatory T-cells (T-reg), CD19+ B-lymphocytes, CD3-CD(16+56)+ NK-lymphocytes, CD14++CD16- and CD14+CD16+ monocytes were estimated via flow cytometry. In 10 patients the dynamics of lymphocyte and monocyte subpopulations in blood as well as the expression of chemokine receptors (CCR2, CCR5, CX3CR1) were analyzed after 1 week of atorvastatin 80mg per day.

Results: Blood frequencies of Treg were elevated in patients receiving atorvastatin 20 mg. No differences in circulating levels of other cell subpopulations were observed. The increase of atorvastatin from 20 to 80 mg per day lead to a further significant elevation of T-reg levels and to a decrease of the expression of CCR5 receptors by monocytes and lymphocytes on the 7th day of treatment.

Conclusion: Our results demonstrate the immunomodulating properties of atorvastatin, with the dose-dependent elevation of circulating T-reg level, and the decline of CCR5 chemokine receptor expression by monocytes and lymphocytes after a short period of high-intensive treatment.

Keywords: atherosclerosis, inflammation, atorvastatin, regulatory T-lymphocytes, chemokine receptors.

Association of osteopontin level with coronary atherosclerosis and osteoporosis in male patients with stable coronary artery disease

O.L. Barbarash^{1,2}, V.V. Kashtalap^{1,2}, Zykov M.V.¹, A.A. Novitskaya¹, O.N. Hryachkova¹, A.N. Kokov¹, A.V. Voronkina³, I.A. Shibanova¹, T.A. Raskina²

¹ "Research Institute for Complex Issues of Cardiovascular Diseases", Kemerovo, Russia

² "Kemerovo State Medical Academy", Kemerovo, Russia

³ "Clinical hospital # 3 named by M.A. Podgorbunsky", Kemerovo, Russia

Abstract

Objective: To measure plasma levels of osteopontin in patients with stable coronary artery disease depending on the severity of osteoporosis, coronary atherosclerosis and coronary artery calcification.

Material and Methods: 111 male patients with verified stable coronary artery disease undergoing coronary artery bypass grafting were included in the study. The mean age of the patients was 59.8 (55; 70) years. The inclusion criteria were as follows: age <75 years; stable angina I- III functional class. The exclusion criteria were as follows: severe comorbidities, angina IV functional class, severe heart failure, prior coronary revascularization. All patients underwent coronary angiography, multislice computed tomography, densitometry, echocardiography, blood sampling to measure osteopontin levels.

Results: 14.4% of patients had single-vessel coronary artery disease (CAD), 24.3% - two-vessel CAD, 61.3% - three-vessel CAD. Mild coronary artery (CA) lesions quantified by the Syntax score were found in 44.2% of patients, moderate - in 30.6% of patients, and severe - in 25.2% of patients. Minor coronary artery calcification (CAC) was detected in 9.9% of patients, mild CAC- in 7.2% of patients, moderate - in 25.2% of patients, severe - in 57.7% of patients. 52.2% of patients had osteopenia, 27.9% of patients - osteoporosis, and 19.8% of patients had normal bone mineral density. Plasma osteopontin levels were 50% higher in patients with the Syntax score above 22

compared to those patients who had the Syntax score below 22 [7.75 (5.14-8.97) vs 5.14 (4.30-7.96) ng / ml, $p = 0.01$]. Osteopontin levels were two times higher in patients with left ventricular ejection fraction (LVEF) $< 40\%$ compared to patients with higher LVEF [8.5 (7.65-10.32) vs. 4.6 (4.48 - 7.12), $p < 0.001$]. Osteopontin levels were 48% higher in patients > 60 years with the Syntax score of > 22 , than in those with less severe lesions. A direct correlation between osteopontin levels and left ventricular end systolic and diastolic volumes ($r = 0.22$; $p = 0.02$; $r = 0.21$; $p = 0.03$) and interventricular septum and left ventricular posterior wall ($r = 0.24$; $p = 0.02$; $r = 0.31$; $p < 0.001$) thickness has been identified.

Conclusion: Osteopontin levels in patients with coronary artery disease correlate with the severity of coronary atherosclerosis, particularly in patients over 60 years, as well as with the parameters of left ventricular remodeling.

Keywords: osteopontin, coronary atherosclerosis, coronary artery disease, calcification, osteopenic syndrome, myocardial remodeling.

Integrated assessment of arterial stiffness in patients with atherosclerosis of peripheral arteries

V.V. Genkel, A.O. Salashenko, O.A. Alekseeva, I.I. Shaposhnik

South Ural State Medical University, Chelyabinsk, Russia

Abstract

Aim: Evaluate the indicators of vascular stiffness on the local and regional levels in patients with atherosclerotic peripheral artery disease, and to identify the relationship of estimated parameters with some markers of remodeling of the cardiovascular system.

Materials and methods. The study included 87 patients, 47 men and 40 women. They were devoted into two groups depending on the availability of verified atherosclerosis carotid arteries. The first group included 57 people, 33 men and 24 women, mean age 56.8 ± 9.48 years. The second group included 30 people with intact carotid arteries, 14 men and 16 women, mean age – 51.9 ± 11.9 years. All patients were examined lipid metabolism, glycated hemoglobin, C-reactive protein. All patients underwent duplex ultrasound scanning of the carotid arteries with measurement of the local carotid stiffness. Regional arterial stiffness was measured using carotid-femoral (cfPWV) and carotid-radial (crPWV) pulse wave velocity.

Results. CfPWV was significantly higher in patients with atherosclerosis – 13.2 ± 4.39 m/s and 11.3 ± 3.31 m/s in the first and second groups, respectively ($p = 0.013$). CrPWV was not significantly different between the groups. In patients with carotid atherosclerosis revealed significantly higher values of Peterson's elastic modulus and stiffness index β , in the absence of significant differences in the values of the deformation of the carotid artery and the Young's modulus. Also, there was a significant decline in the carotid distensibility and compliance. Arterial stiffness was associated with ultrasonographic markers of degree of carotid atherosclerosis.

Conclusion. Patients with carotid atherosclerosis had a significantly higher cfPWV compared to patients with intact carotid arteries, with no significant between-group differences in crPWV. Patients with carotid atherosclerosis had significantly higher values of such indicators as the local carotid stiffness Peterson's elastic modulus, stiffness index β , distensibility and compliance of the vascular wall.

Keywords: carotid atherosclerosis, aortic stiffness, local arterial stiffness, pulse wave velocity, intima-media thickness.

Short-term results of stenting external iliac vein during extravasal mechanical compression

R.S. Goloshchapov-Aksenov^{1,2}, R.N. Komarov³, K.Yu. Lakunin¹, S.A. Kurdo¹, V.A. Ivanyugin¹, J.M. Mirzachamdamov¹, R. I. Turaeva¹

¹Central city clinical hospital of Reutov, Moscow Reg., Russia

²Peoples' Friendship University of Russia, Moscow, Moscow, Russia

³I.M. Sechenov First Moscow state medical university, Moscow, Russia

Abstract

This article describes a clinical case of stent implantation in external iliac vein and evaluated 3-month results of treatment.

Female patient, 44 years old, underwent surgery operation - sacrospinal hysteropexy "CYRENE", cervical plastic, front kolporrafy, kolpopereneorrafy" because of "C" prolapse 3 st., cystocele 2 st., cervical hypertrophy. During the first day after surgery the patient developed intense swelling of the left lower limb. Dopplerography diagnosed non occlusive thrombosis of the left external iliac vein and common femoral vein, so, anticoagulation therapy was prescribed. Conservative therapy of after-following post-operative complications was uneffective during 2,5 months, intensive swelling of the left lower limb still remained. Pelvic ultrasound and dopplerography of left leg veins primarily diagnosed "subtotal stenosis of the left external iliac vein". It was decided to make angiography of left lower limb veins. Puncture and catheterization by Seldinger of the left popliteal vein was made. The venography revealed subtotal local stenosis of the left external iliac vein. Balloon angioplasty and stenting of the left external iliac vein were executed. During the first day postoperative swelling of the left lower limb was docked. The patient was discharged from the hospital the next day after stenting in a satisfactory condition, anticoagulation therapy was canceled. The therapy included clopidogrel and acetylsalicylic acid during 1 month. After 5 and 90 days the control dopplerography signs of thrombosis of the left common femoral and external iliac veins were not identified.

Keywords: external iliac vein, stenting.

Anniversary of V.V. Kukharchuk

Congratulations on the anniversary of the chief editor of "Atherosclerosis and dyslipidemia" Kukharchuk Valery Vladimirovich

October 30, 2016 celebrates 75-year anniversary of the chief editor of the journal "Atherosclerosis and dyslipidemia," the professor, corresponding member of the Russian Academy of Sciences Valery Vladimirovich Kukharchuk.