Materials of Conferences

CHANGES IN VESSEL WALL RIGIDITY IN PATIENTS WITH STABLE ANGINA AND METABOLIC SYNDROME AFTER THE NEBIVOLOL THERAPY

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Combination of stable angina with metabolic syndrome (MS) is an important medical and social problem due to its widespread in the world. Moreover, a close pathogenetic connection and mutual aggravation of the two diseases pose a threat of an early disability or death from numerous complications. The risk factors are: dislipidemia, obesity and hyperinsulinism that determine the occurrence and accelerate the development of vascular dysfunction, which declare themselves in endothelial dysfunction, higher rigidity and the MS. Currently, an increasing arterial rigidity is regarded as one of the factors of cardiovascular risk, associated with an unfavorable prognosis. That is why it is of interest at this time to research a possibility of a medicated correction of the vessel wall elasticity dysfunction, as it could let improve the therapy and the disease prognosis.

The aim of the study: to research on the effectiveness of nebovolol against the vessel bed rigidity in patients with stable effort angina with metabolic syndrome.

Materials and methods. We observed 62 patients with the stable effort angina II-III functional classes (cardiovascular insufficiency II-III functional classes) with the metabolic syndrome aged 56,2 ± 3,1 years old, 50 men and 12 women. A comparison group consisted of 32 patients with cardiovascular insufficiency II-III functional classes without any signs of the metabolic syndrome; a control group included 20 clinically healthy persons. All examined persons were matched in age and gender. Arterial mechanical properties were studied using a daily monitor for arterial blood pressure by «Petr Telegin» (Russia) and software system BPLab. A statistic evaluation was conducted using application software package Statistica.

Results and discussion. While evaluating the vessel wall elasticity in the observed patients, it was registered that, in comparison with the control (168,3 ± 1,8 ms), the pulse wave transmission time (PTT) reliably reduced by 24% in patients with cardiovascular insufficiency II-III functional classes without dysfunction of carbohydrate metabolism, and by 39% – in IHD patients with metabolic syndrome. Maximal speed of rise of the arterial blood pressure (dPdt)max, indirectly reflecting the strain of vessel walls during the pulse wave transmission, was 1,7 times smaller ($p < 0,01$) in IHD patients and 2,0 times smaller in IHD patients with the metabolic syndrome than in the control group. A rigidity index (ASI) was 24% above the control values in IHD patients, and 49% – in IHD patients with the metabolic syndrome. An augmentation index (growth) A/x rose 2,9 times ($p < 0,01$) in patients from the comparison group, and 4,2 times ($p < 0,01$) in patients with IHD and metabolic syndrome, compared with the control group. The revealed changes prove that the vessels become less elastic in the observed patients. The disorders were reliably stronger in patients with cardiovascular insufficiency II-III functional classes who also suffered from the metabolic syndrome. It was also registered that the stroke volume index (SSY) in IHD patients and in IHD patients with the metabolic syndrome increased by 17,5% and 29% correspondingly. Estimation of the pulse wave velocity (PWV), which is a criterion of the vessel wall rigidity, revealed that the PWV in patients with combined pathology was 38% ($p < 0,01$) higher than in the control group (136,9 ± 1,4 m/s); in IHD patients without signs of metabolic syndrome – 18% higher ($p < 0,01$).

To sum up, it was established that the rigidity of the arterial bed increased while its elasticity reduced in the examined patients. The largest changes were observed in the group of patients with the combined pathology.

Two weeks before the conduced research, the therapy of the patients included reduced physical activity, hypoholesterinemic diet, nitroglycerin on demand, aspirin 75 mg/day, simvastatin 20 mg/day, zofenopril 15 mg/day. After the initial parameters had been determined, the therapy was added by nebivolol. We evaluated the effect of the nebivolol therapy on the studied parameters in IHD patients with metabolic syndrome. After 12 week therapy, we could observe a reliable PTT increase by 14,6%, as well as a considerable reduction of the rigidity index (ASI) by 22%, while the augmentation index (A/x) reduced 1,9 times ($p < 0,05$). It is worthy of mentioning a reliable reduction of PWV by 10% after taking nebivolol. The obtained data proved the reduction of rigidity and rise of elasticity of vessel wall in IHD patients with metabolic syndrome after the nebivolol therapy.

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