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Sympathetic Renal denervation in patients with refractory arterial hypertension: 2-years follow-up

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Aim: to evaluate the efficacy of the sympathetic renal denervation procedure in patients with refractory arterial hypertension and heart failure.

Methods: the study included 72 patients with refractory arterial hypertension. We used randomization in 2 main groups: the Group I (n=36) included patients, who underwent denervation procedure of the main trunk of the renal artery and the Group 2 (n=36) - included patients who underwent denervation procedure in main trunk and also in second-order renal arteries. Additionally, patients were divided into 2 subgroups: the subgroup A (n=30) included patients, who underwent denervation procedure with a SYMPPLICITY catheter, and the subgroup B (n=42) - included patients who underwent denervation procedure with a VESSIX catheter. Also, the renal denervation procedure efficacy, in patients with chronic heart failure (CHF) was analyzed. In all groups, 24-hour blood pressure monitoring, echocardiography and a 6-minute walk test were monitored. Inclusion criteria: refractory hypertension, age of patients 18-85 years, systolic blood pressure (SBP) =140/90 mmHg and =130/90 mmHg in patients with diabetes mellitus, functioning kidneys, renal arteries =40 mm in diameter and the length of the site up to the first bifurcation of at least 20 mm, absence of stenoses in the renal arteries, GFR=40 ml/min/1.73m², suitable anatomy of the renal arteries for endovascular procedure.

Results: 24 months result after the denervation procedure was demonstrated significantly decreased SBP in patients of both groups. In group I, it was, compared with pre-operative data (174.9±1.6 vs. 151.7±2.3 mmHg, respectively; p<0.05), and in group II - 181.9±2.1 vs. 140.4±3.8 mmHg, respectively; p<0.05). However, when comparing SBP values between groups, SBP in group I was significantly higher, than in group II (151.7±2.3 vs. 140.4±3.8 mmHg, respectively; p<0.05). In addition, the average number of drugs in group I was decreased to 2.1±0.8 after 24th month, and in group II - to 1.4±0.6 (p<0.05). When comparing SBP value in subgroup A and subgroup B, the average daily SBP also significantly difference and amounted to 147.8 ± 1.8 vs. 138.4 ± 3.2 mmHg, respectively; p <0.05). Among the all patients included in the study, 38 patients were with CHF. The 6-minute walk test results, compared with pre-operative data, showed a significant improvement and amounted to 321.24 ± 83.22 vs. 212.42 ± 54.72m, respectively; p <0.05.

Conclusions: the sympathetic renal denervation may be regarded as an effective method of treatment of patients with resistant hypertension, as well as patients with concomitant chronic heart failure. Performing denervation in the arteries of the second order, significantly improves the prognosis of patients, and in patients with concomitant heart failure significantly increases the quality of life and exercise tolerance.