

The functional state of the kidneys and endothelial dysfunction in patients with arterial hypertension

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Abstract

Endothelial dysfunction (ED) is the leading pathogenetic link connecting the development of atherosclerosis, diabetes mellitus (DM) type 2, arterial hypertension (AH) and chronic kidney disease (CKD). In this regard, the integrated assessment of markers of endothelial dysfunction in patients at the early stages of hypertension based on kidney function seems important. The survey included 67 patients with hypertension (mean age 48.2 ± 2.4 years) and 30 matched for sex and age healthy volunteers. The levels of markers of endothelial dysfunction of blood VEGF, endothelin-1 and renal damage - MAU, VEGF in the urine - were significantly higher in the group with AH. Correlation analysis showed the existence of a high degree of direct connection between the level of VEGF in the blood and the arterial pressure value, the degree of obesity, cholesterol, creatinine, MAU and negative correlation with VEGF and glomerular filtration rate (GFR). We also found a positive correlation of endothelin-1 and VEGF in the blood. Similarly, there was a positive relationship between the levels of VEGF in the urine and the systolic AH, MAU, uric acid, and the negative one - with GFR. The value of the MAU is directly dependent on the level of diastolic blood pressure and creatinine, and it was inversely proportional to GFR value. Thus, in patients with hypertension endothelin-1 and VEGF in the blood are markers of endothelial dysfunction responsible for the adverse cardiovascular prognosis, and the level of MAU and VEGF in urine correlating with the degree of decrease in kidney function and high blood pressure are markers of adverse cardiorenal relationship.

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Keywords

Arterial hypertension, Endothelial dysfunction, Kidney disease