218. INTRARENAL HEMODYNAMICS AND LEFT VENTRICULAR REMODELING IN ARTERIAL HYPERTENSION

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Introduction. In the last decades, a great attention were paid to the identification of early markers of asymptomatic target organ damage, such as left ventricular hypertrophy and remodeling in arterial hypertension, as they allow early evaluation of global cardiovascular risk.
Aim of the study. The aim of our study is the evaluation of the association of intrarenal hemodynamics with ambulatory blood pressure values, left ventricular geometry and left ventricular remodeling.
Materials and methods. The population of our study were 62 patients (30 females and 32 males, mean age 45.4 years +/- 9.2 years) with grade I-III arterial hypertension. In all of the subjects careful clinical history and physical examination were performed. Blood pressure was recorded following the recommendations of the 2018 European Society of Hypertension/ European Society of Cardiology Guidelines. All participants underwent a complete echocardiographic study, ambulatory blood pressure monitoring and color Doppler echography of renal and intrarenal arteries. After the renal Doppler wave form was obtained, the renal resistive index (RRI) was calculated by peak systolic velocity (S) and lowest diastolic velocity (D) with the formula S-D/S. In the last decades a great attention was paid to the identification of early markers of asymptomatic target organ damage, such as left ventricular hypertrophy and remodeling in arterial hypertension, as they allow early evaluation of global cardiovascular risk.
Results. The mean renal resistive index (RRI) was 0,685 ($p<0.01$), mean ambulatory systolic blood pressure (SBP) was 135.6 mmHg, mean ambulatory diastolic blood pressure (DBP) was 77 mmHg, (mean daytime SBP 141.96 mmHg, DBP 82.07 mmHg, mean nighttime SBP 128.67 mmHg, DBP 71.92 mmHg). The mean pulse pressure (PP) was 59.1 mmHg. RRI was negatively related to ambulatory DBP ($r=-0.339$, $p<0.05$), heart rate ($r=-0.326$, $p<0.01$) while it was positively associated with ambulatory SBP ($r=0.659$, $p<0.05$), ambulatory PP ($r=0.366$, $p<0.01$), age ($r=0.253$, $p<0.01$), left ventricular mass (LVM) ($r=0.459$, $p<0.001$) and relative wall thickness (RWT) ($r=0.493$ $p<0.01$), remaining statistically significant even after adjustment for various confounding factors in stepwise multiple linear regression analyses. Higher RRI values were associated with concentric hypertrophy (RWT>0.42) vs. eccentric hypertrophy (RWT≤0.42) of the left ventricle ($p<0,05$). When multiple regression analysis was used, SBP ($p<0.01$) and LVM ($p <0.05$) remained significant predictors of RRI.
Conclusions. In hypertensive patients RRI, which is considered an expression of arterial impedance, has a good correlation with the blood pressure values, left ventricular geometry and left ventricular remodeling. These may suggest that RRI, provides a noninvasive parameter in the evaluation of the patients with arterial hypertension. Thus, the evaluation of the RRI could facilitate the prediction of early cardiovascular damage and provide a fair assessment of the cardiovascular risk.
Key words: arterial hypertension, renal resistive index, left ventricular remodeling