

Abstract

Myocardial damage is one of the most serious consequences of arterial hypertension. Changes in the heart structure and function develop not only due to pressure overload itself, but many other hemodynamic and neurohumoral factors contribute to their formation. Our work has compared echocardiographic structural and functional changes of the left ventricle, caused by essential hypertension and hypertension associated with primary aldosteronism (PA) as the most common reason for secondary hypertension.

The first part of our work focused on the differences in left ventricle geometry in men with PA and essential hypertension after separating its low-renin form (where, similarly to PA, the plasma volume expansion was considered to have the dominant effect on left ventricle remodeling). In men with low-renin forms of hypertension including PA, we observed greater both endsystolic and enddiastolic diameter of the left ventricle, lower relative wall thickness and more frequent eccentric type of hypertrophy when compared to essential hypertensives with normal renin levels. Whereas left ventricle cavity diameters were positively correlated to aldosterone levels, wall thicknesses were associated mainly with hypertension severity expressed as an average 24-hour blood pressure and number of antihypertensives. Changes in the left ventricle geometry could be explained by long-term volume overload in low-renin forms of hypertension.

The second part was aimed to long-term effects of different possibilities of PA treatment, i.e. adrenalectomy and conservative treatment with spironolactone, on blood pressure control and reverse myocardial remodeling. Despite both therapeutic approaches improved blood pressure control, adrenalectomy seemed to be more effective in left ventricle mass reduction, because it successfully reversed both hypertrophy of the left ventricle walls and dilation of the cavity.

The results of our work contribute to better understanding of physiopathological changes leading to the development of organ damage in PA.

Key words: hypertension, primary aldosteronism, renin – angiotensin – aldosterone system, left ventricle hypertrophy, echocardiography