Pattern of cardiac remodelling of the left ventricle in patients with essential hypertensive disease and concomitant type 2 diabetes mellitus

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Introduction

The aim of this research was to study the pattern of cardiac remodelling of the left ventricle in patients with essential hypertensive disease (EHD) and concomitant type 2 diabetes mellitus (DM2).

Methods

Sixty patients (36 female and 24 male) were examined for 3 months, their average age being 58.8(±4.2) years and their age range from 40–70 years. Fifteen patients had EHD degree 1–2, stage II, treatment-compensated group I (GI); 15 patients had DM2 treatment-subcompensated (glycated haemoglobin (HbA_{1C}) from 7.0% to 11.0%; group II (GII)); and 30 patients with EHD degree 1–2, stage II, treatment-compensated and concomitant DM2 treatment-subcompensated (HbA_{1C} – from 7.0% to 11.0%; group III (GIII)). The control group consisted of 20 healthy volunteers. Groups examined were randomised in age, sex, body mass index, duration of EHD and DM2. Research was conducted with strict adherence to Helsinki declarations concerning human research.

Echocardiography was used to determine the pattern of cardiac remodelling of the left ventricle according to the criteria of Ganau *et al*.[1] Types of cardiac remodelling of the left ventricle:

- normal left ventricular geometry = normal index of myocardial mass of left ventricle (iMMLV) and relative thickness of left ventricular wall (RTLVW) <0.44 (iMMLV = MMLV/total body surface area (TBSA), where TBSA is calculated according to Mosteller's formula with the aid of a scientific calculator; RTLVW calculated according to formula)
- concentric left ventricular hypertrophy (concentric LVH) = presence of LVH and RTLVW ≥0.45
- eccentric LVH = presence of LVH and RTLVW <0.45
- concentric remodelling of left ventricle = normal iMMLV and RTLVW ≥0.45.

Results and discussion

According to the results of the echocardiography, normal left ventricular geometry was detected in three (20.0%) GI patients ($p<0.05$), in six (40.0%) GII patients ($p<0.05$) and in three (10.0%) GIII patients ($p<0.05$); concentric LVH in 10 (66.7%) GI, in eight (53.3%) GII and in 14 (46.7%) GIII patients ($p<0.05$); eccentric LVH in one (6.7%) GII and in two (6.7%) GIII patients ($p<0.05$); and concentric remodelling of the left ventricle was detected in two (13.3%) GI and 11 (36.7%) GIII patients ($p<0.05$).

Conclusion

Concentric LVH was detected most frequently and eccentric LVH was detected in rare cases – <7.0% in patients with EHD and concomitant DM2. ■

Reference

1 Ganau A, Devereux RB, Roman MJ *et al*. Patterns of left ventricular hypertrophy and geometric remodeling in essential hypertension. *J Am Coll Cardiol* 1992;19:1550–8.

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