Non-invasive evaluation of left ventricular function with electron beam tomography (EBT) and contrast echocardiography in patients with dilatative cardiomyopathy before and after partial left ventriculectomy


Purpose:
To assess left ventricular size and function in patients before and after partial left ventriculectomy by electron beam tomography (EBT) and echocardiography.

Methods and Materials:
16 patients with dilatative cardiomyopathy (DCMP) were evaluated by EBT before and 4 weeks after partial left ventriculectomy. After intravenous administration of contrast material (90 ml, 3 ml/s) 12-level function studies were carried out in the short axis (50 msec exposure time). Endocardial and epicardial borders were traced for volumetric assessment of the left ventricle. Echocardiography was performed after intravenous injection of 10 ml Levovist (300 mg/ml concentration). Left ventricular enddiastolic volume (LVEDV), end systolic volume (LVESV), stroke volume (SV), ejection fraction (LVEF) and myocardial mass (MM) were measured.

Results:
Electron beam tomography demonstrated a reduction of LVEDV (315 ± 123 vs 171 ± 92 ml; p < .05), an improvement of LVEF (13 ± 11 vs 39 ± 14%; p < .05) and a reduction of MM (234 ± 53 vs 165 ± 52 g, p < .05). A reduction of LVEDV (183 ± 23 vs 120 ± 29 ml; p< .01) and an improvement of LVEF (20 ± 11 vs 39 ± 12%; p< .05) were found with echocardiography. Correlation between EBT and echocardiography was high regarding LVEF (r = 0.88; p < .001) and moderate concerning LVEDV (r = 0.67; p = 0.051).

Conclusion:
EBT is a reliable noninvasive modality for demonstrating left ventricular size reduction and functional improvement after partial left ventriculectomy.

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