Quantification of Functional Mitral Valve Regurgitation in Patients With Congestive Heart Failure: Comparison of Electron-beam Computed Tomography With Cardiac Catheterization


Objectives
We sought to determine the agreement between electron-beam computed tomography (CT) and cardiac catheterization for the quantification of mitral regurgitation and to evaluate their association with echocardiographic assessment.

Material and Methods
Fifty patients with congestive heart failure were examined both by electron-beam CT and catheterization to calculate mitral regurgitation volume and fraction based on the difference between the left ventricular stroke and aortic flow volume. The severity of regurgitation was also compared with visual assessment by echocardiography (grade, 0-4+).

Results
The mean values for the mitral regurgitation volume and fraction did not differ significantly between electron-beam CT and catheterization (mean differences: 0.2 mL/m² and -0.9%, P > 0.05 each, limits of agreement: -14.0 to 14.4 mL/m² and -26.3 to 24.5%, respectively) and showed a good correlation (r = 0.79 and r = 0.76, respectively; P < 0.05 each). Good levels of correlation were observed between echocardiographic severity grading and quantitative measurements of regurgitation volume and fraction, which were somewhat better between echocardiography and electron-beam CT (rS = 0.78 and rS = 0.84, respectively; P < 0.05 each) than between echocardiography and catheterization (rS = 0.72 and rS = 0.81, respectively; P < 0.05 each).

Conclusion
Our results suggest that electron-beam CT allows for quantification of mitral valve regurgitation with similar accuracy as cardiac catheterization. Measurements with both modalities correlated well with the results of echocardiographic assessment.

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