Quantification of Mitral Valve Regurgitation by Left Ventricular Volume and Flow Measurements Using Electron Beam Computed Tomography: Comparison with Magnetic Resonance Imaging


Purpose
This study was designed to evaluate electron beam computed tomography (CT) for quantifying mitral regurgitation in comparison with magnetic resonance (MR) imaging as a reference method.

Method
Forty-three patients, among them 33 with known mitral regurgitation, underwent electron beam CT and MR imaging. Total left ventricular stroke volume (TSV), antegrade stroke volume (ASV), and mitral regurgitation volume (MRV) and fraction (MRF) were determined and compared between the two modalities. Additionaly electron beam CT measurements were compared with the corresponding echocardiographic findings.

Results
Significant differences between electron beam CT and MR imaging were found for measurements of TSV and MSV but not for ASV and MRF. There was a close linear correlation between both modalities for all parameters. Furthermore, there was good agreement between electron beam CT and echocardiography, although electron beam CT shows a tendency to overestimate mitral regurgitation slightly.

Conclusion
The results indicate that electron beam CT offers an additional procedure for quantifying mitral regurgitation and that it may be used as an alternative to MR imaging.