

DETECTION OF CORONARY ARTERY DISEASE USING REAL-TIME MYOCARDIAL CONTRAST ECHOCARDIOGRAPHY AND SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY

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BACKGROUND: Real-time myocardial contrast echocardiography (MCE) has the potential to evaluate myocardial perfusion and wall motion (WM) simultaneously. The purposes of this study were to correlate the diagnostic value of MCE to radionuclide single-photon emission computed tomography (SPECT) and to assess the sensitivity and specificity of real-time MCE in detecting coronary artery disease (CAD).

MATERIALS AND METHODS: Seventy patients with clinically suspected CAD underwent MCE and SPECT at baseline and after dipyridamole infusion. Segmental perfusion with MCE using low mechanical index after bolus injections of perfluorocarbon exposed sonicated dextrose albumin (PESDA) solution was performed. All patients had a SPECT imaging study performed both at baseline and after dipyridamole infusion. Forty patients had subsequent quantitative coronary angiography.

RESULTS: Abnormalities were noted in 27 patients (38.6 %) by MCE, in 29 patients (41.4 %) by WM analysis, and in 30 patients (42.9 %) by SPECT imaging. When MCE and WM analysis were combined, the agreement to SPECT imaging improved from 75.7 % (Kappa= 0.50) to 82.0% (Kappa=0.62). Compared with quantitative angiography, there was no difference in sensitivity, specificity, and accuracy in detecting significant CAD among the three modalities. The combination of MCE and WM had better sensitivity (84 %), specificity (93.3 %) and accuracy (87.5 %) than the MCE and WM analysis alone. However, the difference has not reached statistical significance.

CONCLUSIONS: The real-time MCE has a good agreement with SPECT imaging for detecting CAD. The combination of MCE and WM appears to have higher sensitivity, specificity, and accuracy in detecting CAD than either technique alone.

Keyword: Contrast Agent, Coronary Artery Disease , Echocardiography