



Imaging

ABSOLUTE CORONARY BLOOD FLOW AND CORONARY FLOW RESERVE ASSESSED BY GATED SPECT WITH CADMIUM-ZINC-TELLURIDE DETECTORS: A DIRECT COMPARISON WITH ¹³N-AMMONIA PET

Oral Contributions

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Background: New gamma cameras with Cadmium-Zinc-Telluride detectors (CZT) enable stationary whole heart acquisition. We sought to determine whether absolute coronary blood flow could be determined using these new cameras during a standard nuclear myocardial perfusion scan.

Methods: Twenty six patients referred for 1-d adenosine stress/rest myocardial perfusion SPECT with ^{99m}Tc-tetrofosmin were prospectively recruited. The absolute coronary blood flow (CBF) and the coronary flow reserve (CFR) were evaluated using ¹³N-ammonia PET (PET) and reassessed within two weeks using perfusion scanning with ^{99m}Tc-tetrofosmin on a CZT gamma camera. Results were compared using Pearson's correlation. The cut-off value of CZT CFR to predict abnormal PET CFR (<2) was determined using a receiver operator characteristic curve.

Results: The mean CFR by CZT was 2.06 +/- 0.74 (stress CBF: 1.03 +/- 0.29 ml/g/min, rest CBF: 0.55 +/- 0.23 ml/g/min) comparing to the 2.19 +/- 0.67 (stress CBF: 2.07 +/- 0.69 ml/g/min, rest CBF: 0.95 +/- 0.22 ml/g/min) obtained with PET (p= NS). The CBF values by CZT correlated well with those obtained after PET (r= 0.806, p= 0.001). Thirteen out of 16 patients with preserved CFR by PET (> 2) and 8/10 with CFR < 2 were accurately characterized by CZT (agreement rate: 80.7%).

Conclusions: Nuclear myocardial perfusion imaging on a CZT gamma camera allows quantification of CBF with accurate depiction of abnormal CFR compared to PET which is added information in the functional characterization of coronary artery disease.