D-SPECT Myocardial Perfusion Imaging Provides Better Image Quality in Obese Patients – Result of a Multi-Center Trial.

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BACKGROUND: D-SPECT (DS), a novel high-speed and ultra-sensitive single-photon emission computed tomography (SPECT) myocardial perfusion imaging (MPI) technology, has recently been shown to provide fast MPI with high image quality in a non selected population. Image quality in obese patients tends to be degraded. Therefore, we aimed to compare D-SPECT vs. conventional Anger camera SPECT (A-SPECT) MPI in obese patients.

METHODS Forty three patients (age 54±13, M 44%, weight 118±24 kg, BMI 42±6) underwent same-day Tc-99m sestamibi rest / stress MPI.

D-SPECT images were performed within 30 min after A-SPECT. Images were visually analyzed on separate occasions by two readers blinded to the scores given for the other imaging modality. Summed stress score (SSS) and summed rest score (SRS) were calculated. Images were qualitatively assessed with a 5-point scale (poor, fair, good, very good, excellent).

RESULTS SSS and SRS were 1.3±3.2 vs. 3.5±3.8 and 0.8±2.7 vs. 1.9±3.1 for D-SPECT and A-SPECT, respectively. D- SPECT SSS and SRS correlated with A-SPECT respective scores ($r=0.67$, $p<0.0001$ for SSS, and $r=0.90$, $p<0.0001$ for SRS). The rates of normal, equivocal and abnormal studies were 31/43(72%), 7/43(16%) and 5/43(12%) vs. 7/43(16%), 23/43(53%) and 13/43(30%) for D-SPECT vs. A-SPECT, $p=0.008$. In 7/8 cases where A-SPECT was abnormal and D-SPECT was normal, motion and/or breast artifacts were noticed. The rate of good and higher image quality was 42/43 (98%) vs. 29/43 (77%) for D-SPECT and A-SPECT respectively, $P<0.01$.

CONCLUSIONS In obese patients, D-SPECT technology provided better image quality than A-SPECT and reduced the rate of equivocal studies.