Myocardial Perfusion Imaging with Radiation Dose Reduction by Half in Obese Patients

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Purpose: On 2011 we have reported that myocardial perfusion imaging (MPI) with radiation dose reduction by half is feasible with preserved image quality in patients up to 100 Kg. The aim of this study is to assess the feasibility of performing MPI with radiation dose reduction in obese population.

Methods: The study was done on obese patients weighting 100Kg and above who were referred for gated SPECT MPI. The study protocol was done by "half of the standard doses of Tc 99m sestsmibi in one day protocol instead of the standard 2 days protocol used in obese patients. Prone imaging was utilized for attenuation correction. The images were processed by "revolution for cardiac" software. The radiation doses of technetium 99m were adjusted for each patient weight, and recorded by mCi ,Becquerel's units and effective dose equivalent by milisieverts (mSv). The study was approved by local Helsinki committee, each patient signed on inform consent. The results were compared to a matched group

Results: In the half dose protocol, 42 obese patients, mean weight 116±11 Kg, and BMI 38±4 Kg/m2 compared to a matched group (by gender, weight, CAD) of 82 patients in the standard2 days protocol. The mean radiation doses in patients with half dose protocol were 33.4 ±13.9 mCi compared to 60±10 in 2 days protocol ($p<0.001$). Total effective dose for stress rest study was 10.1±4 mSv in half dose protocol compared to 21 mSv in the standard dose protocol ($p<0.001$). All patients showed good image quality. Eighteen (43%) patients with half dose protocol underwent stress only study and were exposed 4.6 ±1.3 mSv only.

Conclusions: MPI with radiation dose reduction by half in obese patients is feasible with preserved image quality. This protocol enables converting the standard 2 days protocol for obese patients to one day protocol, while further decreasing radiation doe activity.