Thesis Title To Validate the Ejection Fraction obtained from Gated SPECT Myocardial Perfusion Study

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ABSTRACT

The purpose of this thesis is to validate the left ventricular ejection fraction (LVEF) from a newly-developed method: gated SPECT myocardial perfusion study. (The left ventricular ejection fraction is the fraction or percentage of the blood that is ejected from the left ventricle per beat compared to the end diastolic volume). At present, the LVEF can be determinely by many methods, however the most popular one is MUGA (Multigated acquisition) which is considered as a gold-standard. The LVEF is the most important index of the Left ventricular function.

The advantage in performing gated SPECT Tc-99m sestamibi(MIBI) is that one can study both myocardial perfusion and the ejection fraction of the left ventricle (LVEF) after a single tracer injection in one study. To

validate the value of LVEF obtained from this technique, we studied 50 patients who had symptoms of coronary artery disease and 10 normal volunteers. Each individual received 15-20 mCi Tc-99m MIBI during treadmill exercise. Eight-frame per cardiac cycle, gated SPECT rotating 180 degree was performed 60 minutes after injection, then the LVEF was determined. The result was linearly correlated with LVEF obtained from the gold standard multigated acquisition (MUGA) using Tc-99m red blood cell performed within 3 days ($r = 0.955$). We concluded that the value of LVEF determined from gated SPECT Tc-99m sestamibi was reliable ($P < 0.001$).