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Comparison of Regional Myocardial Perfusion, LV Volumes and Ejection Fraction Between 8 and 16 Frames Gated SPECT

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Objectives: Eight-interval gating is commonly used in Tc-99m MIBI SPECT. The differences in regional myocardial tracer uptake were not fully evaluated between 8 and 16-interval gated SPECT. The purpose of this study was to compare regional myocardial perfusion and LV functional parameters between 8 and 16-interval gated SPECT in the same subject. **Methods:** 38 patients (mean age: 55 years, male:female=23:15) with suspected coronary artery disease underwent rest-gated SPECT twice by 8 frames and 16 frames a cardiac cycle. LV end-diastolic volume (EDV), end-systolic volume (ESV) and ejection fraction (EF) were obtained and we analyzed regional myocardial uptake of end-diastolic images using a 18-segment, 4-point scale of perfusion (0=normal to 3=severe hypoperfusion). **Results:** The agreement of regional myocardial perfusion between 8 and 16-interval gated SPECT was fairly good (agreement: 87.0%, tau-b: 0.750, $p<0.001$). The differences in EDV and EF between 8 and 16-interval gated SPECT were small, although statistically significant. **Conclusion:** The agreement of regional myocardial perfusion between 8 and 16-interval gated SPECT was fairly good and the differences in LV functional parameters were small.

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Gated Myocardial SPECT Imaging with ^{99m}Tcn-Noet: Comparing with ^{99m}Tc-MIBI

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To evaluate the clinical value of ^{99m}TcN-NOEt myocardial perfusion imaging and the relationship between the tracer uptake in lung and the left ventricular function, 18 patients (pts) were detected with gated SPECT imaging, and the LVEF, EDV, and ESV was calculated automatically. According to the value of LVEF, 18 pts were divided into two groups. G1 (n=12), LVEf≥50%, the mean age was 48.8±14.8 yr, including 1 normal volunteer, 9 suspected coronary artery disease, 1 acute myocardial infarction (AMI), and 1 old myocardial infarction (OMI). G2 (n=6), LVEF<50%, the mean age was 49.3±13.4 yr ($p>0.05$ vs G1), including 3 OMI, and 3 dilated cardiomyopathy (DC). All the pts underwent gated SPECT imaging at 30 min and 120 min after injection of 925 MBq ^{99m}TcN-NOEt at rest, and the heart to lung activity ratio (H/L) was calculated. 3 days later, 5 pts in G2 also underwent ^{99m}Tc-MIBI imaging at 120 min after injection of agent under the same condition as ^{99m}TcN-NOEt. The left ventricle of the 5 pts was divided into 45 segments, and a four-point scoring system was used to evaluate the tracer uptake in the segments. O=normal; 1=mildly reduced; 2=moderately reduced; 3=defect. **Results:** The image quality was good in G1 and poor in G2. There is a significant difference of H/L and LVEF between G1 and G2 ($p<0.01$, H/L; $P<0.001$, LVEF). There was no significant difference in LVEF, EDV and ESV between 30 min and 120 min imaging, and also there was no significant difference between NOEt and MIBI imaging, even though more abnormal segments were depicted with NOEt (2.4±0.84 vs 1.8±0.92, $p>0.10$). **Conclusion;** ^{99m}TcN-NOEt image quality was good if the left ventricular function was normal. If the lung uptake is high, it suggested that the left ventricular function was poor. The LVEF, EDV and ESV shows no significant difference between 30 min and 120min with NOEt. Compared with ^{99m}Tc-MIBI, the image quality with NOEt was medium, but the results of LVEF, EDV, and ESV was in concordance between MIBI and NOEt, and the myocardial abnormal area and defect degree was more severe with NOEt than with MIBI.