

Summary

Collection Conditions of ECG-Gated Myocardial SPECT

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In ECG-gated myocardial SPECT, we evaluated the effects of data acquisition and imaging conditions on the parameters of left ventricular cardiac function by a phantom experiments and in patients (n = 50) and normal controls (n = 15). Data acquisition was performed under the following conditions: (1) matrix size, 64 × 64 or 128 × 128; R-R interval, 8 or 6 frames; (3) presence or absence of attenuation and scatter corrections; and (4) changes in the accumulation rate of the radioactive tracer (information content) in the myocardium. When the matrix size was 64 × 64 and an R-R interval was divided into 8 frames, end-diastolic volume (EDV), end-systolic volume (ESV), and ejection fraction (EF) were 98.30 ± 13.74 ml, 44.20 ± 7.45 ml, and

$54.91 \pm 2.84\%$, respectively, for normal controls. These values were slightly lower than those under other conditions. When attenuation and scatter corrections were not performed, the values of the above parameters were even lower. In patients with high accumulation of the radioactive tracer in the liver affecting the myocardial area, the cardiac function parameters were markedly decreased. In phantom experiments in which a decreased accumulation of the radioactive tracer was assumed, the left ventricular volume increased.

Key words: Quantitative gated SPECT (QGS), Perfusion and function analysis myocardial gated SPECT (pFAST), ^{99m}Tc -tetrofosmin.