

Functional imaging of gated Tc-99m tetrofosmin study as a simple method to quantify ventricular wall motion

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Myocardial perfusion scintigraphy with wall motion analysis is known to enhance accuracy in diagnosing ischemic heart disease. The purpose of this study is to determine the best method to evaluate regional wall motion in a gated planar perfusion study. Planar gated ^{99m}Tc tetrofosmin (GTF) study in two projections was performed after rest-exercise sequence SPECT studies (n = 29). To evaluate wall motion, cine-mode display, wall thickening, and inverted tetrofosmin studies including ventricular inner border tracing, segmental wall shortening and functional images were used. The results were compared with gated blood-pool (GBP) study in the same projections. In the GTF study, functional image identified asynergy significantly better than cinematic display. The best correlation between GTF and GBP studies was observed with functional images of phase and amplitude, with complete visual agreement seen in 145 of 168 (86%) segments. With quantitative analysis by means of regions of interest (n = 280), a good correlation was observed between GTF and GBP regarding regional amplitude (r = 0.78), regional phase (r = 0.84), average left ventricular phase (r = 0.91) and standard deviation of phase values (r = 0.90). The value for the count-based "ejection fraction" derived from inverted GTF showed insufficient correlation to that of the GBP study (r = 0.69). Functional imaging with myocardial perfusion imaging is a simple and effective means to evaluate ventricular asynergy. Similar diagnostic criteria to gated blood-pool imaging and comparable diagnostic accuracy are advantages of this approach.

Key words: myocardial perfusion, gated Tc-99m tetrofosmin study, gated blood-pool study, cardiac function