Rapid data acquisition protocol in ECG-gated myocardial perfusion
SPECT with Te-99m-tetrofosmin

Shin-ichiro Kunita,* Tetsuo Kinawara,* Keiichi Cho,* Shujiro Mizumura,* Tetsuji Kuimi,*
Makiko Hidenaka,* Hidekazu Nakao,* Junko Sano,** Yumiko Tada,**
Shunta Saka,** Yoshiaki Kusama** and Kazuo Munakata**

*Department of Radiology and **First Department of Internal Medicine, Nippon Medical School

In 25 patients with heart disorders, 99mTe-tetrofosmin 555–740 MBq was injected intravenously at rest. After 40 minutes, ECG-gated myocardial perfusion SPECT was performed with a two detector gamma camera VERTEX (ADAC), setting up two detectors to form a 90-degree angle. Sixteen frames per R-R interval were acquired during a 180° rotation from the RAO 45° to the LPO 45°. A pair of data sets with standard (SDA) and rapid data acquisition (RDA) protocols was collected. In an SDA protocol, SPECT imaging was performed for 50 sec per step in 5° angular steps (total acquisition time; 15 minutes). An RDA protocol was conducted with 12 sec per step, 6° angular steps (acquisition time, 3 minutes). LVEF (%) and LVEDV (ml) quantitated automatically with a QGS program showed excellent correlations between two protocols with correlation coefficients of 0.980 (p < 0.01) and 0.983 (p < 0.01), respectively. Subsequently visual assessment of regional wall motion based on a four-point grading system was carried out with a 3-D cine LV display. High complete agreement was gained with 158 (0.03%) out of total 175 segments, so that assessment of the global and regional LV function with the RDA protocol demonstrated high reliability and feasibility.

Key words: technetium-99m-tetrofosmin. Single-photon emission computed tomography, left ventricular ejection fraction