Summary

Assessment of Left Ventricular Function by $^{201}$Tl ECG-gated Myocardial SPECT

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We applied the QGS program for LV function analysis (described by Germano, 1995) to a $^{201}$Tl SPECT study at rest, and estimated its accuracy. We performed $^{201}$Tl ECG-gated myocardial SPECT in 25 patients with ischemic heart disease under an acquisition time used in the routine $^{99m}$Tc ECG-gated SPECT study. The quality of the gated images was visually assessed with a 4-point grading system. LVEDV, LVESV, LVEF determined by the QGS program were compared with those by Simpson’s method on biplane LVG in 25 patients. Regional wall motion scores in 7 myocardial segments were assessed on the three-dimensional display created by the QGS program and the cine display of biplane LVG with a 5-point grading system. Wall motion scores obtained by the QGS program were compared with those by LVG. Although 72.0% of $^{201}$Tl ECG-gated SPECT images were fair or poor in image quality, there were good correlations between the values obtained by the QGS program and LVG (LVEDV: $r = 0.82$, LVESV: $r = 0.88$, LVEF: $r = 0.89$). In addition, wall motion scores by the QGS program were correspondent to those by LVG in 77.1% of all 175 myocardial segments. We conclude that the QGS program provides high accuracy in evaluating left ventricular function even from $^{201}$Tl ECG-gated myocardial SPECT data.

Key words: $^{201}$Tl, Gated SPECT, LV function.