Summary

Assessment of Regional Quantitative Analysis by ECG-gated Myocardial SPECT after Coronary Artery Bypass Surgery

Takahiro HiGUCHI*, Junichi TAKI*, Kenichi NAKAJIMA*, Sirou TSUJI**, Tatsuya YONEYAMA*, Seigo KINUYA*, Norihisa TONAMI* and Michio KAWASUJI***

*Department of Nuclear Medicine, School of Medicine, Kanazawa University
**Department of Health Science, School of Medicine, Kanazawa University
***First Department of Surgery, School of Medicine, Kanazawa University

Purpose: ECG-gated myocardial SPECT (G-SPECT) was performed before and after coronary artery bypass surgery (CABG) to investigate how this operation would affect the assessment of regional quantitative analyses. Methods: Nineteen patients with coronary artery disease underwent G-SPECT before and 1 month after uncomplicated CABG. $^{99m}$Tc-MIBI 740 MBq was injected at rest, then G-SPECT was performed 60 min later. Regional ejection fraction (rEF), wall motion (WM), systolic wall thickening (WT) and % tracer uptake were evaluated by quantitative gated SPECT program (QGS). Parameters were obtained quantitatively in 16 segments based on the functional bull’s eye map. Results: Percent tracer uptake increased in septum from 75 ± 11% to 78 ± 11% (p < 0.001), while WT did not change (40 ± 19% to 41 ± 20%) after CABG. However, in septum rEF decreased from 17 ± 13% to 6 ± 9% (p < 0.001) and WM decreased in septum from 1.6 ± 1.1 mm to 0.6 ± 0.9 mm (p < 0.001). Conclusion: Significant reduction of rEF and WM despite of no deterioration of WT and % tracer uptake suggested that rEF and WM were affected by pseudoparadoxical asynergy after uncomplicated CABG. For the evaluation of regional function after CABG by G-SPECT, WT might be the preferred parameter.

Key words: ECG-gated myocardial SPECT, Coronary artery bypass graft (CABG), Septal motion, Quantitative gated SPECT (QGS), Technetium-99m sestamibi.