

## Summary

### Assessment of Left Ventricular Contraction Abnormalities with Myocardial Infarction Using Gated Technetium-99m Sestamibi SPECT: Comparison of Wall Thickening and Regional Ejection Fraction Analysis for the Detection of Coronary Artery Stenosis

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ECG-gated myocardial Technetium-99m sestamibi SPECT is a useful technique to measure myocardial perfusion and function simultaneously. In this study, wall thickening (WT) and regional ejection fraction (rEF) using ECG-gated SPECT have been studied to determine which parameter would be more sensitive to detect coronary artery stenosis in patients with acute myocardial infarction (AMI). Forty-five patients (36 men, 9 women, mean age  $63 \pm 9$  years old) with AMI were examined. CAG was performed for all patients. ECG-gated SPECT was performed 60 min after the intravenous injection of 555 MBq  $^{99m}\text{Tc}$ -sestamibi at rest. Commercially available software (QGS) was used to produce WT and rEF polar maps from acquired SPECT data. The WT and rEF polar maps were evaluated visually and quantitatively. WT indicated higher sensitivity (80.3% vs. 59.1%,  $p < 0.05$ ) and accuracy (86.7% vs. 74.8%,  $p < 0.05$ ) than rEF for detecting overall coronary artery stenosis on visual inter-

pretation. On quantitative analysis, WT had higher specificity (91.3% vs. 75.4%,  $p < 0.05$ ) and accuracy (85.9% vs. 72.6%,  $p < 0.05$ ) than rEF for detecting overall coronary artery stenosis, and showed a higher specificity (93.8% vs. 59.4%,  $p < 0.01$ ) and accuracy (88.9% vs. 62.2%,  $p < 0.01$ ) for detecting LCX stenosis. Moreover, sensitivity of WT for detecting coronary artery stenosis without infarction was higher than that of rEF significantly in quantitative analysis (75.0% vs. 31.3%,  $p < 0.05$ ). These results suggested that WT was superior to rEF for detecting the coronary artery stenosis in patients with and without myocardial infarction. We concluded that WT is more sensitive indicator to determine localization of regional left ventricular dysfunction in AMI than rEF.

**Key words:** ECG-gated myocardial scintigraphy,  $^{99m}\text{Tc}$ -sestamibi, Acute myocardial infarction, Regional ejection fraction, Wall thickening.