Summary

Relation between Wall Motion and Scintigraphic Uptake Altered by the Cut-Off Level on Technetium-99m Sestamibi Tomographic Imaging —The Preferable Cut-Off Levels According to Tomographic Uptake Correlated with the Wall Motion—

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Background. Whether technetium-99m sestamibi imaging can evaluate myocardial viability is still obscure. It may be partially because the preferable cut-off level for evaluation of the viability is not known.

Objectives. This study was aimed to investigate which cut-off level should be used for estimation of the contractile function, and verify whether technetium-99m sestamibi tomographic imaging can evaluate myocardial viability.

Methods. We studied 45 patients who had had myocardial infarction. They underwent technetium-99m sestamibi imaging, echocardiography, and cardiac catheterization. The myocardial image was divided into 16 segments, each of which was scored according to wall motion on echocardiography with a 4-point scale. The segmental technetium-99m uptake was also scored with a 4-point scale. We investigated the correlation between wall motion and scintigraphic uptake with the use of 7 cut-off levels (from 35% to 65%, in 5% increments). The correlation ranks were compared among patient groups with a number of stenotic vessels.

Results. Irrespective of the number of stenotic vessels, the defect score was similarly enlarged according to cut-off levels. The patient groups had the maximum correlation ranks with different cut-off levels, which were 40% for 1-vessel disease ($\rho = 0.512$, $n = 160$, $p = 0.0001$), 50% for 2-vessel disease ($\rho = 0.424$, $n = 208$, $p = 0.0001$), and 60% for 3-vessel disease ($\rho = 0.540$, $n = 272$, $p = 0.0001$). The correlation ranks for all groups were stable, whereas not high, throughout various cut-off levels.

Conclusions. Technetium-99m sestamibi imaging can approximately estimate myocardial viability from the point of view of function, which may be corrected by the careful choice of cut-off levels according to the number of the stenotic vessels (40% for 1-vessel disease, 50% for 2-vessel disease, 60% for 3-vessel disease).

Key words: Myocardial infarction, Viability, Perfusion, Cardiac function, Sestamibi.