SPECF was performed in 25 patients with clinically evident myocardial infarction at least 2 weeks after the attack. SPECT image was constructed from the data obtained from the anterior aspect of the heart, i.e., at the angle from LAO 45 to LPO 45 degrees, at the points of time 10 minutes and 3 hours after intravenous injection of 4 mCi of T1-201 at rest. Three different examiners investigated early and late images separately with visual assessment judged comprehensively as to the presence or absence of defect and low density area as well as the redistribution. As a result, redistribution was found in 5 patients. We obtained circumferential profile curve and washout ratio from these 5 patients and comparisons were made in detection of circumferential analysis and visual assessment. It was found that circumferential analysis tended to detect redistribution of much greater area as compared with visual analysis. Furthermore, it was found that there was a good correlation between defect on SPECT and left ventricular wall motion abnormalities obtained with LVG and UCG (2-dimensional echocardiography). Some discussions were made on this point.

We devised the ischemic map for evaluating ischemic area with visual and visual analysis using stress single photon emission computed tomography (SPECT). Seven short axial sections in left ventricle were reconstructed continuously from apex to base with SPECT, and circumferential profile curve was created in each sections. Stress T1-201 myocardial SPECT were obtained in patients with coronary artery disease and normal subjects. Circumferential washout curve were calculated for initial and delayed (3 hours after exercise) circumferential profile curve in cases of ischemic heart disease and normal cases. Ischemic area was defined as the area in which the circumferential washout curve in patients with ischemic heart disease below that of normal subjects. We conclude that this method with ischemic map may be useful in assessing non-invasively the extent of myocardial ischemic region.

To evaluate the influence of the infarct size on hemodynamics during exercise, we compared the infarct size measured by T1 SPECT with hemodynamic parameters during exercise in 40 patients with myocardial infarction. The infarct size was defined as the degree of left ventricular myocardium of which profile curve fell 2 or more SDs below the circumferential profile curve of the myocardium in a series of normal subjects. According to the results of stress T1 myocardial scintigraphy, patients were classified into two groups with and without angina pectoris (AP). The infarct size and resting stroke work index correlated significantly in both groups. On the other hand, the infarct size and hemodynamics during exercise didn't correlate in patients with AP, but in patients without AP the infarct size well correlated with peak stroke work index (r = -0.708) and peak pulmonary artery wedge pressure (r = -0.627).

In conclusion, the infarct size can be accurately quantitated by the T1 SPECT and the infarct size relates not only with the resting cardiac function but also with hemodynamics during exercise in patients without AP.