Thus this method is useful to evaluate non-invasively and quantitatively coronary hemodynamics in various loading.

We designed the method to obtain the rate of change of coronary blood flow (ΔFlow) and of coronary vascular resistance (ΔCVR) in two different conditions by TL-201 double dose scintigraphy. As we reported previously, the rate of change of myocardial blood flow distribution (ΔPract) can be acquired from the rate of change of TI myocardial uptake. And now we developed the method to obtain the rate of change of cardiac output (ΔCO) by TI double dose, to calculate ΔFlow from both ΔCO and ΔPract, and moreover to calculate ΔCVR from the change of mean blood pressure and ΔFlow. Stewart-Hamilton formula was applied to obtain ΔCO. The initial component of histogram on heart from the first injection was fitted into gamma function, and in the second injection subtracted component was fitted. The areas bounded by gamma functions were the first SI, and the second S2, ΔCO was calculated as (S1/S2 - 1). The 3rd portion on the scintigram, which were corresponded with oval or spade shape of left ventricular cavity on contrast ventriculogram. Patients of type II(n=6) had extremely hypertrophic myocardium so that their ventricular lumen could not be detected. Most of them had kidney or banana shape and hour-glass shape of left ventriculogram. It was certified that mean LV mass of type I was significantly lower than that of type II(p<0.01).

Asymmetric septal hypertrophy and apical hypertrophy confirmed by echocardiography was also shown in patients of type III(n=4) and type IV(n=2), respectively. Patients of all types had subnormal levels of 1/3 mean filling rate(mFR) derived from LV volume curve of cardiac blood pool scan(type I=1.40, type II=1.16, type III=1.17, type IV=1.20/sec). We recognized that 1/3 mFR was the important diastolic index in diagnosis of hypertrophic cardiomyopathy.

TL-201 myocardial images were reviewed in 10 patients(pts) with TGA after Mustard's operation. The visualization of the right ventricle corrected as systemic ventricle was strong in all pts, but that of left ventricle corrected as pulmonary ventricle was weak in most pts(7/10). In 2 pts with pulmonary hypertensive PH and 1 pt with pulmonary stenosis(PS) with increased LV pressure, however, LV was strongly visualized similar to RV. To compare the TL-201 uptake in LV and RV walls quantitatively, we determined the ratio of radioactivities in LV and RV walls in LAO image after the processing of interpolative background subtraction. Results: In 7 pts with weak visualization of LV, the RV/LV ratio was higher(3.13±0.40) than in 3 pts with strong visualization of LV(0.93±0.08). This ratio also correlated well with that of RV and LV pressure (RVP/LVP) (r=0.98, p<0.01). Thus, the relative increase of TL-201 uptake in LV wall in pts with TGA after Mustard's operation suggests the possibility of predicting the presence of PH and PS complicating this disorder.