

zed gammacamera with conventional collimators after processing and reducing background of the image.

#### Method:

Gammacamera (Nuclear Chicago, PHO/GAMMA HP) and a minicomputer system (Nova 0,1 16 kwds with moving head disk 4047A, Diablo 31, graphic computer terminal 4002A, Tektronix, hardcopy unit 4601, Tektronix, and magnetic tape recorder TMZ) were used for the scintigraphy with Rb-81 and also for Tl-201 in comparison.

Twenty-two patients (including 6 old myocardial infarction) were studied with Rb-81, and 14 patients (including 8 old myocardial infarction) were for Tl-201 study.

Energy levels of gammacamera were set to  $190 \pm 15\%$  keV for Rb-81 and  $80 \pm 15\%$  keV for Tl-201

scintigraphy.

#### Results:

The images with Rb-81 were obscure when using gammacamera with conventional collimator and after processing and reducing background of the images by computer, almost same figure as that of Tl-201 was obtained.

Myocardial Rb-81 scintigrams of patient with old myocardial infarction showed defect in 5 of 6 patients, and a false positive defect was found in one of 22 patients. With Tl-201, five of 8 patients with old myocardial infarction showed myocardial defect. But no false positive defect was seen in control group.

#### Conclusion:

Myocardial scintigrams with Rb-81 after processing and reducing the background of the images were useful to diagnose myocardial infarction.

## A Scintiphotographic Method for Measuring Myocardial Wall

### By Double Tracer Method

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This study was aimed to evaluate the noninvasive method of radioisotopic angiocardigraphy and myocardial scan for detecting a disproportionate thickening of the interventricular septum relative to the left ventricular free wall in the patient with idiopathic hypertrophic cardiomyopathy.

The experimental study was performed to compare the imaged size of myocardial phantom. The myocardial phantom was composed of two concentric glass beakers, the smaller (150 ml) being suspended inside the larger (250 ml).

Positive myocardial image was obtained by filled with  $^{201}\text{Tl}$  in the space between the two vessels. Negative myocardial image was obtained by filled with  $^{99\text{m}}\text{Tc}$  in the inner beaker, simulating the cardiac chamber, and then lung phantom filled with  $^{99\text{m}}\text{Tc}$  labeled sponge was placed beside the cardiac phantom.

The resultant correlation between positive and

negative myocardial imaged size was excellent ( $r=0.75$ ).

In the clinical application of this method, a gated cardiac scan was performed after the intravenous administration of  $^{201}\text{Tl}$  or  $^{99\text{m}}\text{Tc}$  labeled human serum albumin. The cardiac images were obtained in left anterior oblique projection, evaluated by visual inspection and semi-quantitatively by tracing the myocardial borders. As a result, the imaged asymmetric septal hypertrophy was evident in all ten patients with PMD, with a ratio of septum to left ventricular free wall of 1.05–1.25 compared to 0.79–0.89 in six patients with left ventricular hypertrophy of known heart disease, and 0.92–0.94 in twenty-two miscellaneous cardiac patients without left ventricular hypertrophy.

Thus, double tracer method provides a safe, repeatable method for detection and evaluation of Primary Myocardial Disease.