and we evaluated their varidity.

The scintillation camera equipped with pararell-hole collimator (pinhole collimator in case of rabbits) was interfaced to the minicomputer. For myocardial imaging, ^{201}TlCl (1-2mCi) was injected intravenously. Exercise stress was done by bicycle ergometer. RI-angiocardiography (^{99m}Tc-HSA) was performed by Ecg-synchronous method.

We processed background-free myocardial image by using interpolative background subtraction method described by Goris. We used three rabbits for basic investigation of background subtraction method. The animals were sacrificed fifteen minutes later of Tl injection. After the initial myocardial image, the heart was removed and imaging was repeated (true background). True heart image was constructed by subtraction of true background from initial image.

Excellent agreement between true heart and background subtracted image was shown by comparison of profile curves and myocardial counts.

Tl-uptake index was calculated as ratio between background count-rate at upper mediastinum and ROI count-rate which was set at various parts of myocardium. In normals, Tl-uptake index became twice of resting value by exercise of 85% of maximal predicted hearrt rates. In eleven old myocardial infarctions, sites of asynergy were well coincided with locations of cold area in myocardial scintigram. The greater the degree and extent of asynergy, the smaller was Tl-uptake index.

We performed exercise stress scintigram in 23 patients of effort angina. We diagnosed exercise induced hypoperfusion in 74% by comapring routine resting and exercise scintigrams. But by using these two methods with routine scintigrams, we could raise diagnostic rate to 86%.

In the clinical application of myocardial scintigraphy, the procedures seem to be helpful in the interpretation of the data.

Quantitative Assessment of Myocardial Blood Flow Using ^{201}Tl Evaluation of Values on Exercise Loading

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Quantification of myocardial blood flow on exercise loading with bicycle ergometer was attempted using a myocardial imaging radionuclide, ^{201}Tl. A bolus of ^{201}Tl was injected intravenously and its rapid transport phase was recorded during initial three minutes by a scintillation camera and stored into a mini-computer. Quantification of myocardial blood flow was accomplished according to the indicator fractionation principle. Total activities of administered ^{201}Tl(A) were obtained from the counts during the initial passage through the heart and lung, and myocardial uptake (B) was counted three minutes later with subtraction of the background. The ratio of B/A is assumed to be proportional with fractional myocardial blood flow to cardiac output.

Mean value of normal subjects was $3.5\pm0.6\%$, that of HCM $6.2\pm1.2\%$, that of angina pectoris $4.9\pm1.5\%$, and that of myocardial infarction $4.4\pm0.8\%$, whereas normalized values by LV mass using echocardiography showed no significant difference between these groups. However, on exercise loading, myocardial uptake ratio increased in all normal cases, whereas slightly increased in HCM and no increment was noted in ischemic heart disease.

While the stress ^{201}Tl myocardial scintigraphy has become accepted to be more sensitive than the stress electrocardiography, present data substantiated clearly that quantification of myocardial blood flow was appeared to be superior adjunct to the simple stress scintigraphy.