

and easily applicable even during exercise loading, it is expected to be useful means for quantitative

assessment of intermittent claudication as well as its distribution image of blood flow supply.

Thallium-201 Myocardial Imaging: Morphological Evaluation of Various Heart Diseases

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Thallium-201 (Tl) myocardial scintigraphy was performed in patients with various heart diseases to evaluate their characteristics in morphology.

They were 105 patients (10 normal, 23 congenital heart disease, 33 valvular heart disease, 17 primary myocardial disease, and 22 other various cardio-pulmonary diseases). Coronary artery disease was excluded in this study. Cardiac catheterization was performed in 67/105 patients. Myocardial imaging was performed at rest 10 minutes after intravenous injection of 2 mCi of Tl. Images were obtained with a Toshiba GCA-202 scintillation camera, using a low-energy high-resolution parallel hole collimator. A 30% window centered on the mercury X-ray peak was used. A complete five projection study was performed with the detector placed in the anterior, left anterior oblique 30°, 45°, 60°, and left lateral projections.

Patients with ventricular overloading revealed characteristic myocardial images. In patients with left ventricular (LV) volume overloading, such as aortic regurgitation, LV myocardial image was enlarged and increased in R.I. activity, suggesting LV enlargement and hypertrophy. In patients with decreased LV contraction, the LV cavity was seen clearly, but that in patients with increased ejection fraction was not identified. In patients with LV pressure overloading, such as aortic stenosis, LV myocardial image was normal in size, though its R.I. activity was highly increased, indicating con-

centric hypertrophy of LV.

In patients with right ventricular (RV) volume overloading, such as a trial septal defect, RV free wall was visualized with dilated cavity, and LV image was small and interventricular septum was convex to the RV cavity. In patients with RV pressure overloading, such as primary pulmonary hypertension, mitral stenosis and pulmonary stenosis, RV free wall was clearly visualized. The septum was straight in appearance. In patients with Eisenmenger syndrome, ventricular septal image was straight in appearance with enlarged RV cavity and increased R.I. activity of RV free wall.

The images of RV free wall were graded in 4 degrees with its concentration of tracer, according to Cohen's criteria. RV free wall activity was increased, related with RV systolic pressure ($P < 0.05$). RV stroke work index was higher in patients with RV visualization (RVV), than in patients without RVV ($P < 0.05$). Higher stroke work accompanies increased coronary blood flow. Tl given via intravenous route distributes in the myocardium in proportion to coronary blood flow. Therefore, RVV does not always suggest RV hypertrophy, but in some cases, reflects only RV overloading.

In conclusion, Tl myocardial scintigraphy is a useful non-invasive technique to evaluate ventricular overloading! Images particularly reflect the type and the degree of RV overloading.