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MYOCARDIAL DYNAMIC POSITRON EMISSION TOMOGRAPHIC STUDY USING (F-18) FLUORO-DEOXYGLUCOSE. H.Sasaki, M.Murakami, K.Takahashi, H.Nakamichi, S.Mizusawa, A.Takahashi, Y.Ono, I.Kanno. Research Institute for Brain and Blood Vessels-AKITA, Akita.

Myocardial dynamic positron emission tomographic (PET) study using (F-18) Fluorodeoxyglucose (FDG) was performed with three normal volunteers. A method to calculate blood volume using measured dynamic curve was developed, and ratio of blood volume (R) in myocardium was about 40-50 %. Myocardial rate constant of Phelps' FDG model was calculated using blood volume corrected dynamic curve. Myocardial rate constants were not stable compared with cerebral tissue, and  $k_1$  in myocardium was about one third of that in cerebral tissue. Myocardial metabolic rate for glucose using autoradiographic method was larger than using kinetic method.

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ASSESSMENT OF CARDIOMYOPATHY USING POSITRON EMISSION TOMOGRAPHY (PET). T.Fudo, H.Kambara, T.Hashimoto, C.Kawai, Y.Yonekura, M.Senda and K.Torizuka. Kyoto University School of Medicine and Fukui Medical College, Kyoto and Fukui.

Hypertrophic cardiomyopathy (HCM) and dilated cardiomyopathy (DCM) are disease entities which have not been sufficiently elucidated. There are many discussions about the pathophysiology and metabolism. To investigate their pathophysiology, we performed positron emission tomography (PET) in patients with HCM, DCM and ischemic heart disease. We used ammonia, and fluorodeoxyglucose (FDG) as markers of myocardial perfusion and myocardial glucose metabolism, respectively. In patients with HCM, PET showed increased myocardial perfusion corresponding to myocardial hypertrophy. A few cases with HCM had regional abnormalities of glucose metabolism. In patients with DCM, PET demonstrated left ventricular enlargement and myocardial thinning. Some of the cases with DCM had regional increase of myocardial uptake of ammonia and glucose metabolism. In the present cases DCM and ischemic heart disease with marked left ventricular enlargement and diffuse hypokinesia could easily distinguished, since IHD patients showed a mismatch between myocardial perfusion and glucose metabolism. Thus, PET was a useful method for the diagnosis and investigation of cardiomyopathy.

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NEW CRITERIA FOR DIAGNOSIS OF MYOCARDIAL ISCHEMIA. K.Imai, S.Yumikura, T.Ando, S.Sito, Y.Ozawa, M.Hatano, T.Takemoto, H.Abe and R.Kamata. Nihon Univ. Dep. of 2nd Internal Medicine and Radiology, Tokyo

For quantitative analysis of Tl myocardial scintigraphy with exercise, the lower limit (LL) of washout rate (WR) was used. that was obtained from healthy volunteers and was fixed as Mean-2SD without regard to exercise load. Firstly, we determined the relation between WR and pressure rate product (PRP).  $WR = (PRP - 10974) / 303$   $r = 0.72$  Mean=42% LL=22%. Secondary we proposed the new criteria that the lower limit of WR is half of the maximal WR except for base. We evaluated the utility of new criteria in the 21 patients who are received PTCA. (8pts:LAD lesion with anteroseptal MI, 5pts:LAD lesion with inferior MI, 8pts:Angina. We regarded that viability or transient ischemia are present in case of ECG changes and/or angina when balloon is inflated in coronary artery.

	Old Cr.	New Cr.
Sensitivity		
MI(Anteroseptal)	50%	100%
MI(Inferior) & Angina	77%	92%
Total	66%	95%
Specificity	100%	100%

From this results, the new criteria of washout rate is useful for diagnosis of transient myocardial ischemia and viability.

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EVALUATION OF THALLIUM-201 WASHOUT RATE BY FUNCTIONAL MAP IN THE CORONARY ARTERY DISEASE AND NORMAL SUBJECTS. K. Nakajima, I. Nanbu, M. Taniguchi, H. Bunko, J. Taki, Y. Shiire, A. Muramori, K. Kato, N. Tonami, K. Hisada and T. Nishida\*. Dept. Nuclear Medicine and Internal Medicine\*, Kanazawa University School of Medicine, Kanazawa

A method for generating functional maps using Tl-201 myocardial scintigraphy has been reported. The polar map summarized the distribution of perfusion and washout rate (WR) derived from single photon emission computed tomography. This study was undertaken to evaluate the significance of WR in the coronary artery disease (CAD) and normal subjects. The WRs in CAD group were 30±8, 32±11, 34±7 and 44±6% for 3 vessel disease (VD)(n=10), 2VD (n=8), 1VD (n=11) and control group (n=16), respectively. The WR was relatively low in multiple vessel disease. The WR had significant positive correlation to rate-pressure product (RPP) in CAD ( $r = 0.62$ ) and controls ( $r = 0.46$ ). Scores of abnormality, extent and severity scores were compared with the degree of coronary stenosis. Only extent score in LAD has correlation with the degree of stenosis. The WR and scores can be indices for the severity of CAD. However, it is affected by the degree of exercise. Therefore, relative distribution of WR is important as well as absolute WR, particularly in patients with insufficient exercise or high degree of exercise in multiple VD.