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THE COMPARISON OF ECT BY THALLIUM-201 MYOCARDIAL IMAGING TO CORONARY ANGIOGRAPHY. T. TSUDA, Y. AIZAWA, A. SHIBATA,*H. HAMA,*T. MITANI The First Department of Internal Medicine, Niigata. * Kido Hospital, Niigata.

The clinical efficacy by ECT of stress Thallium 201 scintigraphy, was compared with coronary angiography as well as three conventional image (AP, LA045 L-Lat.). We studied 18 patients with angina pectoris or old myocardial infarction who had more significant stenosis than one vessel. The scintigraphy and the coronary angiography was performed within a month. After multi-staging stress test, 4mCi of Thallium was injected. ECT was obtained in transverse, sagittal and frontal section, every 12mm width per slice. We applied the interpolative background subtraction method (Goris's method).

In the coronary artery disease, diagnostic rate of "ischemia" by ECT was 78% compared with 91% by subtraction image. Ect was same sensitivity in posterior segment, compared with subtraction image. In another one, ECT was less sensitive and more specific than subtraction image.

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EMISSION COMPUTED TOMOGRAPHY WITH Tc-99m PYROPHOSPHATE IN MYOCARDIAL INFARCTION, SHOWING DIFFUSE ACCUMULATION ON PLANAR IMAGING. A.Tada, H.Bunko, K.Koizumi, K.Nakajima, N.Tonami, K.Hisada, S.Matsushita* Department of Nuclear Medicine, and Internal Medicine, Kanazawa University Hospital

Conventional gamma camera myocardial scintigraphy with Tc-99m-Pyrophosphate (PYP) has become a simple and non-invasive procedure for diagnosis of acute myocardial infarction. However the procedure has its limitations in interpretation of the images and in estimating the size and position of infarction. We have evaluated myocardial uptake using ECT to demonstrate its potential for identification, and accurate localization. Seven patients were studied and all showed positive intensity on planar images. However, two of them had diffuse accumulation in the cardiac region, which were definite focal accumulation in the posterolateral wall in one, and posterior wall and right ventricular wall in the other on ECT. These localization agreed with ECG localization. Non-specific Tc-99m-PYP accumulation, especially grade 2 diffuse type, was reported and recommended to be equivocal. From our result, we consider ECT is able to separate and localize myocardial activity from bone and background activity, quantitate myocardial uptake, and increase specificity of Tc-99m-PYP myocardial imaging.

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ROC ANALYSIS OF DIAGNOSTIC CRITERIA AND SENSITIVITY FOR TL-201 MYOCARDIAL EMISSION TOMOGRAPHY(ECT) H. Bunko, A. Tada, K. Nakajima, K. Koizumi and K. Hisada Department of Nuclear Medicine, School of Medicine, Kanazawa University, Kanazawa

The purpose of this study are (1) to evaluate the diagnostic criteria for Tl-201 transverse myocardial ECT based on ROC analysis of the circumferential profiles, and (2) to determine the efficiency of ECT for the detection of IHD.

Seventy-nine patients (63 males and 16 females, 41-81 year-old) including 50 patients with myocardial infarction (MI) and 29 patients without IHD (NM) were studied. Fifty patients with MI were divided into two groups of 30 anterior MI and 20 inferior MI.

Up to 5 ECT slices at 1cm intervals were obtained by Tomogscanner II. Circumferential profiles were obtained at 10° intervals (patient right = 0°). ROC analysis was performed on the combination of criteria of myocardial area and threshold.

From ROC analysis of the criteria, less than 70% of the maximum within myocardial area of 30°-270° should be evaluated as abnormal in the anterior MI group. With this criteria, sensitivity (93%) and specificity (100%) of anterior MI group were greatly improved compared to planar imaging, and the highest accuracy was obtained. In the inferior MI group, ECT was not efficient in terms of sensitivity (50%), however, lateral and posterior extensions of the lesion could be evaluated. In the lower slices, the apex was difficult to evaluate.

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CLINICAL EFFICACY OF SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY USING A ROTATING DUAL GAMMA CAMERA SYSTEM FOR THALLIUM-201 MYOCARDIAL IMAGING. K. Takeda, H. Maeda, T. Nakagawa, M. Taguchi, M. Hamada, M. Fujii, M. Kakegawa and S. Matsui Department of Radiology and Internal Medicine, Mie University School of Medicine and Toshiba corporation. Tsu, Mie and Nasu, Tochigi

Using a rotating gamma camera system with opposed dual cameras (Toshiba GCA-70A-S), single-photon emission computed tomography (SPECT) for Thallium-201 myocardial imaging was performed in sixteen patients with ischemic heart disease proved by left ventriculography and coronary angiography. After bolus injection of 2mCi of Thallium-201 at peak stress during exercise, stress and redistribution imagings were performed 10 minutes and 3 hours later, respectively. After conventional planar imaging, projection data were acquired during total sampling time of 6 minutes with a sampling interval of 6 degrees. SPECT images in 5.4 mm thickness were reconstructed by convolution method with Shepp-Logan's filter and then, sagittal and coronal tomographic slices were obtained from these transaxial images. In addition, the oblique angle tomographic images were constructed according to Borrello's method. In comparison to conventional images, the SPECT had high sensitivity in detecting myocardial infarction, especially inferoposterior lesion. Furthermore, the more accurate extent of the lesion could be visualized by oblique angle tomography than ordinal SPECT image.