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ECT IMAGING IN THE PATIENTS WITH MYOCARDIAL INFARCTION. -RELATIONSHIP WITH ABNORMAL WALL MOTION IN LVG-. Y.Ohsumi, K.Gotoh, T.Suzuki, H.Fujiwara, Y.Yagi, H.Takatsu, M.Gotoh, S.Hirakawa. The 2nd Department of Medicine Gifu University School of Medicine. Gifu.

We performed ECT on 47 patients more than 14 days after acute MI in order to clarify the relationship between the location of the perfusion defect and (1) ECG abnormalities (in 47 patients) or (2) the area where abnormal LV wall motion was observed during the LVG with contrast medium (in 38 patients). After injecting 4mCi of Tl-201 to the patients, gamma camera was rotated 360 degrees and scintigraphy was performed in 36 directions. Tomographic image was taken at every 6mm on the three dimensions. The location of the perfusion defect was determined using visual assessment. Comparison was also made between ECT and ECG. Analysis of LV wall motion abnormality was made regarding the 7 segments according to the AHA Committee Report. (1) In 33 patients (70%), complete agreement between ECT and ECG abnormality was observed, including the location of the perfusion defect. Of these who showed discordance between ECT and ECG abnormality, all those who showed positive findings in ECG but negative in ECT had small q waves or poor R wave progression, and normal wall motion of LV corresponded to the ECG abnormality. (2) In 34 patients (89%), a complete agreement was observed between ECT and LVG. Sensitivity and specificity of ECT to LVG were 93% and 84%, respectively.

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ANALYSIS OF LEFT VENTRICULAR VOLUME FROM GATED CARDIAC SCAN USING SPECT. M. Kagawa, T. Nishimura, M. Hayashi, Y. Yamada, T. Uehara and T. Kozuka. National Cardiovascular Center. Osaka.

We tried to measure end diastolic left ventricular volume (LVEDV) by gated cardiac scan using SPECT.

In basic experiment, cardiac phantom showed linear relationship between source activity and count rate in phantom image that the rate of magnification and width of slice was decoded in cardiac phantom. So we could calculate LVEDV by arithmetic area integration using SPECT. This study was made for usefulness of analysis of LVEDV from SPECT and comparison of LVEDV with contrast angiography in accuracy.

In 10 cases of gated cardiac scan including normal and ischemic heart disease, there was good correlation ($R = 0.983$) between LVEDV from contrast angiography and LVEDV from SPECT at edge detection by 60% cut off level.

At edge detection by 40 or 50% cut off level, it was difficult to define LV edge using SPECT.

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TC-99m PYROPHOSPHATE MYOCARDIAL EMISSION COMPUTED TOMOGRAPHY IN THE ASSESSMENT OF ACUTE MYOCARDIAL INFARCTION. N.Tamaki, T.Mukai, H.Sakahara, K.Yamamoto, T.Fujita, K.Minato, K.Torizuka. Dept. of Radiology & Nuclear Med. and S.Tamaki, Y.Suzuki, K.Kadota, H.Kambara, T.Nohara, C.Kawai. Dept. of Med. Kyoto University Med. School, Kyoto, and Y.Ishii. Fukui Med. School, Fukui.

To depict three-dimensional distribution of Tc-99m pyrophosphate (PYP), myocardial emission computed tomography (ECT) was performed following the conventional planar PYP imaging in 16 cases with suspected acute myocardial infarction. Cardiac short-axis, plane (LAO view) and the long-axis plane (RAO view) were also reorganized from a series of transaxial tomograms for three-dimensional evaluation of PYP accumulation.

While the planar imaging revealed diffuse pattern of myocardial uptake in 6 cases, the ECT imaging showed focal pattern of myocardial uptake in each 14 cases with acute myocardial infarction. In ECT imaging, myocardial uptake was more delineated by the separation from the bone activity. On the other hand, the ECT images showed diffuse blood-pool activity in 2 cases with angina pectoris and 2 with congestive cardiomyopathy, in which the planar imaging showed diffuse pattern uptake.

We conclude that the ECT imaging is useful in topographical assessment of PYP myocardial accumulation and in differentiation from residual blood-pool activity, especially in case of diffuse pattern uptake by the planar imaging.

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CLINICAL EVALUATION OF Tc-99m HYDROXYMETHYLENE DIPHOSPHONATE IN ACUTE MYOCARDIAL INFARCTION. K.Miyao, T.Takahashi, S.Kusuoka, K.Ozasa, T.Shibata, H.Nakagawa, T.Tanimura, T.Mineo, T.Sutani, A.Ohtuka, M.Murata, H.Kotera, M.Ohmura, T.Yamada and H.Sugihara. Kyoto 2nd Red Cross Hospital and 2nd Department of Medicine, Kyoto Prefectural University of Medicine. Kyoto.

Clinical comparison between a new skeletal imaging agent, Tc-99m hydroxymethylene diphosphonate (TcHMDP) and the standard agent, Tc-99m pyrophosphate (TcPYP), was performed in 56 patients with acute myocardial infarction (AMI). 32 of all patients were imaged with TcHMDP and the other 24 patients with TcPYP. Rib/Background ratio was significantly greater in TcHMDP group (1.45 ± 0.11) than TcPYP (1.30 ± 0.08) ($p < 0.01$). There was no significant difference between both groups in uptake intensity (Willerson's) and sensitivity (90.3% in TcHMDP and 91.6% in TcPYP). Uptake intensities in both groups were significantly correlated with global EF (MUGA) ($p < 0.02$) and defect score (Tl201) ($p < 0.02$). Classification of uptake pattern is useful as an index for estimation of infarct size. Serial scintigraphy is also valuable for assessment of expectant clinical course in patients with positive AMI scintigram. The results indicate that compared with TcPYP, TcHMDP not only has a faster blood clearance but also has an almost same sensitivity for AMI. TcHMDP is a new good agent same as TcPYP for myocardial imaging.