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AN EVALUATION OF REGIONAL VENTRICULAR WALL MOTION USING THREE DIMENSIONAL DYNAMIC PATTERN ANALYSIS. E.Ohtake, K.Matsui, H.Murata, A.Kurosaki, Y.Kojima, S.Nishimura and H.Toyama. Yokohama City University, Toranomon Hospital and University of Tsukuba, Yokohama, Tokyo and Ibaraki.

This study was undertaken to evaluate the clinical usefulness of three dimensional dynamic pattern analysis (3DDP analysis) which we had developed for a more detailed analysis of multigated cardiac pool SPECT data.

Twelve cases were examined in this study. They were five healthy volunteers, three patients with myocardial infarction (MI), three with hypertrophic cardiomyopathy (HCM) and one with dilated cardiomyopathy (DCM). Data were collected from 64 directions over 360° using ZLC 7500 - Scintipac 2400 system, and multigated cardiac pool SPECT images were reconstructed. After creating the short-axial, horizontal long-axial and vertical long-axial images of right and left ventricles, the loci of contour, long axis and center of long axis in each frame image were depicted on a CRT as 3DDP. Also, three dimensional display of the short-axial images at the end diastole and the end systole was depicted.

In healthy volunteers, good regional cardiac function was observed. In patients with MI, HCM or DCM, abnormal regional wall motions were observed according to their sick conditions.

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PHASE ANALYSIS IN CARDIAC POOL-EMISSION CT -A STUDY ON PATIENTS WITH PACEMAKERS. H.Yada, T.Watanabe, M.Abe, Y.Naito, T.Goto, Y.Kobayashi, Y.Goto, Y.Nagai, I.Yamasawa, C.Ibukiyama, H.Murayama, J.Umeda. The 2nd Dept. of Intern.Med.&Radiol. Tokyo Medical College, Tokyo.

The ECG gated cardiac pool-ECT is extremely useful for detection of abnormalities, as it causes no overlapping with all cardiac cavities enabling to evaluation of multiple planes when compared with the conventional planar method. It can be applied to various heart diseases, but as it requires more procedures than the conventional method for image reconstruction, it involves noise and is considered to cause certain effects on the phase analysis while performing approximation with Fourier series. Phase analysis has so far been applied to conduction disturbance diseases. In this study cardiac pool-ECT was performed in patients with pacemakers, showing the accurate conduction system of the heart, and demonstrated the reliability of the phase analysis of this method. For cardiac pool-ECT $Tc-99m$ RBC at 40 mCi was used, and the data was collected at 30 sec./5° starting from LPO50° to RAO40° respectively, one beat being divided into a maximum of 18 frames; with which the phase analysis was performed. The results were good, and phase analysis was considered to be sufficiently reliable even in cardiac pool-ECT.

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DETECTION OF LEFT VENTRICULAR ASYNERGY BY CARDIAC BLOOD POOL ECT USING SUBTRACTION METHOD.

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Left ventriculography by cardiac catheter is invasive and two-dimensional. And conventional cardiac blood pool scintigraphy is taken from only LAO view, therefore it is difficult to detect left ventricular asynergy in apex and inferior wall. In order to evaluate left ventricular regional wall motion, ECG-dual gated cardiac blood pool ECT was performed in patients with ischemic heart disease and normal control (total 20 cases). Following conventional equilibrium blood pool method, SPECT was performed from 32 views (180°), and vertical and horizontal long axis were reconstructed from transaxial image. Then regional wall motion was evaluated from subtraction image; (end diastolic - end systolic) and (end systolic - end diastolic). This study was agreed with LV graphy by cardiac catheter in 88% of segments, and locations of perfusion defect by TI-201 myocardial ECT. Thus, we concluded this study is useful for evaluation of ventricular asynergy.

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THE CLINICAL UTILITY OF VENTRICULOGRAPHY (RVN) WAS EVALUATED IN ACUTE MYOCARDIAL INFARCTION. M.Yamamuro, T.Yada, Y.Futagami, T.Konishi, T.Nakano and H.Takezawa. 1st Department of Internal Medicine, Mie University, Tsu, Mie.

The subjects consisted of 25 antero-septal myocardial infarction and 25 inferior myocardial infarction patients. We got follow up radionuclide study during the recovery period; first, 7th-14th, 30th hospital day. Right ventricular (RV) infarction was documented in 15 out of 25 acute inferior infarction, but nothing in anterior infarction. With RV infarction, the mean RVEF was very low 28±8% at the initial day. But at 7-14 days, 30 days after the attack, the mean RVEF had remarkably improved to 36±9%, 39±9% respectively. Regional wall motion abnormalities disappeared 10 of 15 patients at 30 hospital day. In antero-septal infarction patients, there are no evidence of RV infarction. The mean RVEF did not change through follow up study (41±8% → 44±8%). The mean LVEF was increased from 42±15% to 47±16% at 30 hospital day. We concluded that RV infarction was popular complication in patients with acute inferior infarction. But RVEF and RV regional wall motion abnormalities were improved dramatically within a month. These findings supported that RV myocardium had peculiar coronary perfusions.