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EVALUATION OF MULTIDIRECTIONAL FOURIER ANALYSED ABNORMAL REGION SUPPLIED BY EACH BRANCH OF CORONARY ARTERY IN ISCHEMIC HEART DISEASE. H.Wakamastu, K.Atarashi and K.Kishino Kanaya Hospital.

Authors showed left posterior oblique(LPO) and left anterior oblique(LAO) view at least are necessary to detect regional and abnormal wall motion of left ventricle by Fourier analysis with precise statistical data at previous 24th and 25th meetings. In this session, we evaluated Fourier analysed abnormal region(FAR) supplied by respective branch of pathological coronary artery in ischemic heart disease. 1) RCA lesion; In LAO view, FAR was hardly recognized because of overlapping the apex, but LPO view showed postinferior FAR. One case expressed development of FAR in clinical course. 2) LMT lesion (one case); LAO view was obuse, but LPO view showed apical FAR clearly. LAO view was assumed relatively covered other part of wall motion. 3) LAD lesion; LAO view showed anteroapical or apical FAR in even moderate pathological cases. LPO view is necessary to evaluate severity of disease. 4) Diagonal lesion; LAO and LPO view showed midanterior FAR moderately. 5) CX lesion; left lateral view showed high lateral FAR. LPO and LAO views are vague because of insufficient differentiation on abnormal wall motion. We concluded this method is precise to detect the abnormal wall motion clinically and each coronary supplying region related closely with the region in LPO, LAO and left lateral views in radionuclide cardiac blood pool scanning.

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PHASE ANALYSIS OF ECG GATED BLOOD POOL OF CUT-INTO-HALF LEFT VENTRICLE OBTAINED BY SPECT. T.Matsushita, K.Yamashita, H.Maeda, and Y.Ishii. Dept. of Radiology, Fukui Medical School.

False negative results of interpretation of ECG gated blood pool were sometimes due to the collection of data from only one direction. ECG gated SPECT studies were carried out to reconstruct the gated blood pool images of the cut-into-half left ventricle. One cardiac cycle was divided into sixteen frames. Data were collected from 40 different angles, 30 s for each step. The vertical and horizontal long axial images were computed from the transaxial images. The vertical long axial images to the septal side of the long axis were added pixel by pixel. Thus, we obtained a set of cardiac blood pool images corresponding to those viewed from the cut off surface along which the heart was divided into halves. Applications of the phase analysis method to this set of images enabled one to assess the septal wall motion. The vertical long axial images to the lateral side of the long axis were added to assess the lateral wall motion. The horizontal long axial images were added in the same manner to obtain the anterior and the posterior wall motions. With this technique, the signal to noise ratio was better than that of a single slice method, and the abnormal wall motions which were not found with the conventional method were detected.

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3-DIMENSIONAL RECONSTRUCTION OF LEFT VENTRICLE FROM GATED BLOOD POOL ECT AND REGIONAL WALL MOTION ANALYSIS USING LENGTH METHOD MEASURED FROM THE CENTER OF VOLUME GRAVITY. K.Yamashita, T.Matsushita, N.Asada, M.Tanaka, Y.Hasegawa, H.Maeda, Y.Ishii, and H.Ishihara. Fukui Medical School, Fukui.

Although there are many reports of left ventricular wall motion analysis using gated blood pool ECT (GECT), there are no length analysis measured from the center of left ventricular end-diastolic volume gravity (CVG). We tried 3-dimensional reconstruction using GECT and length analysis based on CVG. GECT was performed 10 minutes after intravenous injection of 20mCi Tc-RBC. Projection data were collected for a minute at every 9° half around a patient. Each cardiac cycle was divided into 16 consecutive frames. Left ventricular boundaries were defined by a threshold method. 3-dimensional left ventricular reconstruction was done by these boundaries. Length from regional wall to CVG was calculated in each cardiac frame. Based on this length, we obtained 3-dimensional functional images such as a %-shortening image, a phase image and so on. We compared these results with functional images obtained by biplane X-ray cineangiography and discussed its reliability. We think that 3-dimensional regional wall motion analysis should be done on the basis of CVG. These functional images are useful in recognizing the regional abnormal wall motion of left ventricle.

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STUDY OF BULL'S EYE PLOT OF CARDIAC POOL SCAN. K.Machida, N.Honda, T.Takisima, J.tsukada, T.Maeda, N.Yosimoto, H.Matsuo and M.Hosoba, Saitama Medical Center, Saitama Medical School and Simadzu Corp.

Bull's eye plot of Tl-201 SPECT images is one of the new functional picture which has been introduced recently. We applied this method to cardiac pool scintigram in order to demonstrate the wall motion of left ventricular wall. SPECT image was obtained using a scintillation camera (ZLC-7500) with Scintipac 2400. Data collection was performed using 180 degrees rotation and 32 images were collected. The time for each image was 30 seconds. After intravenous administration of pyrophosphate, 20mCi Tc-99m was injected and a ECG-gated SPECT cardiac image was recorded. We performed this examination in patients with myocardial infarction, angina pectoris, valvular heart disease etc. and clinical usefulness was evaluated.