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EVALUATION OF DILTIAZEM IN PATIENTS WITH EFFORT ANGINA BY CARDIAC BLOOD POOL SCAN. M.Sawamura, M.Kinoshita, S.Nishikawa, M.Motomura, K.Bito, S.Kawakita, T.Suzuki, E.Yabumoto, K.Masuda, Y.Ikemoto and T.Honda. Shiga University of Medical Science, Shiga.

We evaluated the efficacy of diltiazem in effort angina. Sixteen patients were classified as follows; group I with effort angina (10 cases) and group II with normal coronary artery (6 cases). Multiple-gated equilibrium blood pool studies by supine bicycle exercise were performed after the administration of diltiazem or placebo. We evaluated a efficacy of diltiazem by LVEF, standard deviation of pixel phase values (PSD) as index of wall motion abnormality (WMA), and double product (DP). Peak ejection rate (PER), time to PER (TPE), peak filling rate (PFR) and time to PFR (TPF) were also computed by two harmonics in the Fourier-series of the time activity curve. DP after diltiazem was more decreased, compared with placebo at every step. In group I, EF and PSD improved by diltiazem at 2nd step and maximal exercise. At maximal exercise after placebo, PER and PFR were more decreased, and TPF was more prolonged, in group I than in group II. In group I, PER and PFR after diltiazem were more increased, compared with placebo at maximal exercise.

In conclusion, diltiazem, in part, decreased myocardial oxygen consumption and improved exercise-induced myocardial ischemia. Diltiazem is a useful drug to maintain cardiac function and improve WMA.

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CLINICAL STUDIES ON THE ANALYSIS OF THALLIUM-201 MYOCARDIAL SCINTIGRAPHY USING MULTIGATE METHOD. M.Kanke, K.Owada, K.Kobayashi, S.Suzuki, K.Ono, Y.Miyazaki, N.Awano, T.Uchida, S.Kariyone. 1st Dept. of Internal Med., Fukushima Medical College, Fukushima.

Thallium-201 myocardial scintigraphy with the multigate method was analyzed in 10 normal cases and 16 patients with OMI or cardiomyopathy. Thallium-201 scintigram was divided into 20 frames by R-R interval. In LAO 45° view, left ventricular area was divided into 8 regions, and the changes of radioactivity in each area of 20 frames were analyzed. The indices of Tl (dV/dt), T2 (contraction time) and amplitude were examined, and Tl and T2 were corrected by R-R interval. In the patients with anteroseptal infarction, Tl and T2 tended to prolong and amplitude tended to decrease in their infarcted area. In the patients with HCM, Tl tended to shorten in all regions except septal region, T2 was ranged within normal value, and amplitude tended to decrease in septal region compared with the other regions. In the patients with DCM, Tl and T2 tended to prolong in the region with perfusion defect, and amplitude tended to decrease in all regions. These results suggest that the analysis of thallium-201 myocardial scintigraphy using the multigate method will be useful in the evaluation of regional wall function in ischemic heart disease and cardiomyopathy.

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EFFECTS OF ANTIARRHYTHMIC DRUGS ON LEFT VENTRICULAR FUNCTION ESTIMATED WITH MULTIGATED CARDIAC POOL IMAGING. K.Kanoh, Y.Tanahashi, H.Muramatsu, M.Suzuki, T.Higo, M.Takayanagi, M.Okada\*, H.Matsushima\*, S.Yamamoto\*, N.Kawai\* and I.Sotobata\*. Nagoya Ekisaikai Hospital and \*1st Dept. of Intern. Med., Nagoya Univ., Nagoya.

Effects of antiarrhythmic drugs on left ventricular function were evaluated in 16 patients with ventricular premature contractions (VPC) and 2 normal volunteers using multigated cardiac pool imaging. Seven patients with VPC were complicated with organic heart disease including old myocardial infarction and cardiomyopathy.

Cardiac pool imaging was performed for 5 minutes before and after intravenous injection of 1mg/kgBW of lidocaine or disopyramide. Left ventricular ejection fraction (EF) were measured, and plasma concentration of disopyramide was determined.

EF decreased significantly ( $p < 0.001$ ) after i.v. lidocaine (-3.7%) and i.v. disopyramide (-6.2%). Percent reduction in EF (-15.9 vs -11.2%) after disopyramide was larger and disopyramide concentration (5.3 vs 3.4 µg/ml) was higher in 4 patients with organic heart disease than in 11 without. There was a significant correlation between percent reduction in EF and disopyramide plasma concentration ( $r = -0.62$ ,  $p < 0.001$ ).

In conclusion, a negative inotropic action of i.v. disopyramide was greater than that of i.v. lidocaine.

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ASSESSMENT OF REGION WALL MOTION BY PHASE ANALYSIS OF THALLIUM-201 IMAGE ON THE HYPERTROPHIC HEART. K.Nakai, C.Itoh, T.Takahashi, T.Yanagisawa, K.Matsushita, Y.Usui, M.Kato. Iwate Medical University, Morioka.

To evaluate the cardiac hypertrophy and regional wall motion, combined technique with gated planner Thallium-201 (TI) image and gated cardiac pool image were applied to 13 cases, as involved 4 normal persons, 4 pt. with obstructive cardiomyopathy (HOCM) and 5 pt. with asymmetrical apical hypertrophy (AAH). The TI-201 image and cardiac pool image were obtained by gated technique at 30° LAO position. The count ratio was calculated by the formula (EDc-ESc/EDc) in each ROI, as radially divided into 16 segments. The functional image were constructed by phase distribution of TI-201 volume curves and the SD value were determined by the phase histogram.

The count ratio indicated higher value at the region of LV free wall in normal and 2 pt. groups, despite the low value at septal region in HOCM with marked septal hypertrophy. A significant fluctuation of a phase distribution was demonstrated at the septal region in HOCM and also noted at the apical region in AAH. These findings suggested that the contractual mode of the heart with pathologic muscle hypertrophy had an abnormal special torsion in spite of the higher value of ejection fraction. The phase analysis of TI-201 image was useful to assess the regional wall motion of the hypertrophic heart.