
We evaluated the efficacy of diltiazem in effort angina. Sixteen patients were classified as follows: group I with effort angina (n=19) 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 ejec- tion rate (PER), time to PER (TPP), peak filli- ng 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 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.


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 lmg/kgBW of lidocaine or disopyramide. Left ventricular ejection fraction (EF) was 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 ug/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.


Thallium-201 myocardial scintigraphy with the multigate method was analyzed in 10 normal cases and 16 patients with QMI or cardiomyopathy. Thallium-201 scintigraphy was divided into 20 framed 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 exam- ined, and T1 and T2 were corrected by R-R interval.

In the patients with anteroseptal infarction, T1 and T2 tended to prolong and amplitude tended to decrease in their infract- ed area. In the patients with HCM, T1 tended to shorten in all resions except septal resion, T2 was ranged with normal value, and amplitude tended to decrease in septal resion compared with the other re- sions. In the patients with DCM, T1 and T2 tended to prolong in the resion with perfusion defect, and amplitude tended to decrease in all resions. 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.


To evaluate the cardiac hypertrophy and regional wall motion, combined technique with gated planar 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 calcu- lated 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 apical region of the heart with pathologic muscle was abnormal, and group had a 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.