

279

EVALUATION OF LEFT VENTRICULAR SYSTOLIC AND DIASTOLIC PHASE INDEXES BY EQUILIBRIUM RADIONUCLIDE ANGIOCARDIOGRAPHY IN AMYLOID HEART DISEASE

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To evaluate left ventricular (LV) systolic and diastolic performances in amyloid heart disease (AH), we analyzed LV time-activity curves obtained from equilibrium radionuclide angiocardiograms in a patient with primary amyloidosis and 4 with familial amyloid polyneuropathy. All of them were biopsy-proved AH and showed normal sinus rhythm in their electrocardiograms. There were no significant differences in systolic phase indexes including ejection fraction (EF), first third EF, peak ejection rate (PER) and time to PER between in patients with AH and in normal subjects. On the other hand, first third filling fraction, first third mean filling rate and first third peak filling rate (PFR) were significantly lower and time to PFR was significantly prolonged in patients with AH when compared with those in normal subjects, but PFR was not significantly different between them.

We conclude that 1) LV systolic performance is preserved, 2) diastolic abnormalities are characterized by decrease in filling rate and prolongation of filling time at the early phase, in patients with AH with sinus rhythm.

280

EVALUATION OF LEFT VENTRICULAR RELAXATION BY USING BLOOD POOL IMAGING.

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Left ventricular isovolumic relaxation period was studied by using multi gate blood pool imaging. Twenty four cases of hypertrophic cardiomyopathy and 10 cases of normal patients were studied. Patients were diagnosed by coronary angiography, left ventriculography and ultrasound study. There was no difference between these two groups in age. Blood pool imaging was performed for 30 msec/frame, 400 sec and at MLAO view. Volume curve was analyzed between the beginning and the end of the rapid filling wave. Fourier function was applied to get the fitted curve, and then the differential function curve was obtained. In 28 cases, increase of left ventricular and differential volume curve was identified during isovolumic relaxation period. The maximum value of differential volume curve during isovolumic relaxation period was compared with other parameters. PFR & 1/3PFR showed lower value and TPFPR delayed in HCM. But, many patients overlapped each other. PER, LVEF & 1/3FF had no significant difference between two group. There was marked significant difference between the groups in PFR at relaxation. The study of isovolumic relaxation period by blood pool imaging suggests useful in evaluation of relaxation of cardiac function

281

ANALYSIS OF LEFT VENTRICULAR FUNCTION BY ECG-GATED EQUILIBRIUM RADIONUCLIDE ANGIOCARDIOGRAPHY IN PATIENTS WITH DIABETES MELLITUS.

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To evaluate left ventricular (LV) function in patients with diabetes mellitus (DM), we analyzed LV time activity curve obtained from ECG-gated equilibrium radionuclide angiography in 18 DM patients. Four normal adults served as controls. LV ejection fraction (LVEF) and mean first third filling rate (1/3 FR-mean) were calculated for systolic index and diastolic index, respectively. The patients were divided into two groups according to 1/3 FR-mean: DM-A group (1/3 FR-mean < 1 , 11 patients), DM-B group (1/3 FR-mean > 1 , 7 patients). LVEF and 1/3 FR-mean in each group were: controls, $57 \pm 8\%$, 1.56 ± 0.15 sec-l; DM-A, 47 ± 13 , 0.55 ± 0.27 ; DM-B, 59 ± 8 , 1.54 ± 0.34 . A history of congestive heart failure (CHF) were founded in 6 patients of DM-A group and one of DM-B group. Complications, e.g. hypertension, LV hypertrophy, triopathy, abnormal findings in Tl-201 myocardial scintigram or in ECG (ST,T), were more frequent in DM-A group than in DM-B group. The results indicate that (1) some of DM patients had impaired LV early diastolic filling function, while LVEF was well preserved, and (2) decrease of 1/3 FR-mean was correlated with number of DM related complications. Thus, 1/3 FR-mean may be a useful index for the detection of early LV dysfunction, particularly of early diastolic filling impairment, in DM patients.