To evaluate left ventricular (LV) systolic and diastolic performances in amyloid heart disease (AH), we analyzed LV time-activity curves obtained from equilibrium radionuclide angiograms 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 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 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.

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 ± 8.5, 1.56 ± 0.15 sec⁻¹; DM-A, 47 ± 13, 0.55 ± 0.27; DM-B, 59 ± 8.1, 1.54 ± 0.34. A history of congestive heart failure (CHF) were found in 6 patients of DM-A group and one of DM-B group. Complications, e.g., hypertension, LV hypertrophy, triopathy, abnormal findings in TI-201 myocardial scintigram or in ECG (ST), 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 LEVF 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.