
We developed a computerized cardiac single probe system. With this system left ventricular ejection fraction (LVEF) can be obtained by three different modes; first pass (FP), beat-by-beat (B-B) and multi-gated (MG) modes. The purpose of this paper is to report the results of its clinical trials.

In 20 patients with coronary heart disease, the LVEFs obtained with this system by MG mode were compared with those obtained by gamma camera. There was good correlation between LVEFs obtained by these methods; correlation coefficient (r) = 0.905. The LVEFs obtained by MG mode were compared with those obtained by B-B and FP modes. The correlation coefficient between the LVEFs obtained by MG mode and those obtained by B-B mode was 0.961. There was also good correlation, r = 0.905, between the LVEFs obtained by MG mode and FP mode, but the latter were generally lower than the former.

In the same patients the LVEFs were obtained repeatedly by B-B mode and there was very good correlation between these LVEFs; r = 0.981.

In the MG mode, one minute data collection was enough for accurate estimation of LVEF.


Clinical significance of peak diastolic dp/dt has been emphasized as a sensitive and easily obtainable parameter of left ventricular dysfunction in coronary artery disease. But clinical meanings of this index has been obscure. We analyzed the parameters of left ventricular (LV) function between cardiac catheterization and gated blood pool scintigraphy (GBPS).

Materials and Methods: GBPS and cardiac catheterization were performed in 40 cases (8 normal, 25 coronary artery disease and 7 hypertrophic cardiomyopathy). We compared the systolic index (max dp/dt and LVEF) to peak systolic dp/dt and diastolic index (max negative dp/dt and time constant (T)) to peak diastolic dp/dt.

Results: There is no correlation between dp/dt and LVEF during systole or diastole. especially, time constant (T) is also not related to peak diastolic dp/dt. We conclude that dp/dt as parameter of LV function was still unclear. Especially, diastolic dp/dt would not show LV compliance solely.


With the purpose to evaluate clinical usefulness of preoperative equilibrium gated blood pool scintigraphy (GBPS) was performed on 47 preoperative cases including 23 malignant tumors, 6 gallstones, 4 peptic ulcers and 14 others. Ninety three patients with heart diseases (57 coronary, 9 valvular, 5 myopathy and 22 others) were used as controls. The LVEF & RVEF in 47 preoperative cases were 67.7±8.4% & 53.9±9.2% (mean±S.D.), respectively. In patients who did not have associated heart diseases LVEF was 72.0±5.4% (n=22) and RVEF 54.7±8.3% (n=12). Among 25 cases of known postoperative courses 4 cases showed heart failure after operation, but there were no significant differences in LVEF & RVEF. Postoperative LVEF was 57.2±13.5% (n=93) and RVEF 52.4±11.4% (n=61).

In the present series of patients we did not encounter a patient in whom the preoperative GBPS contributed to predict postoperative cardiac deterioration. Further prospective studies will be continued before final conclusion is made.