

## 1

EVALUATION OF LEFT VENTRICULAR FUNCTION BY SINGLE CARDIAC PROBE SYSTEM. Y.Suzuki, M. Nakamura and H.Tomoda. Tokai Medical School. Isehara-city.

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 of obtained by B-B mode was 0.961. There was also good correlation,  $r=0.809$ , 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.

## 2

EVALUATION OF LEFT VENTRICULAR FUNCTION BY SINGLE PROBE RADIOCARDIOGRAPHY WITH ECHOCARDIOGRAPHY. Y.Ono, E.Kinoshita, N.Kanemoto and Y.Suzuki. Tokai University. Isehara.

Our experience evaluating left ventricular function using single probe radiocardiography with echocardiography (SPR) was reported. This handy type SPR system is characterized by examining left ventricular function non-invasively in short acquisition time with low dose radioisotope. Subjects were 50 patients (pts, 44 men and 6 women) ranging in ages from 37 to 78 years. These pts were divided into 5 groups; group 1 consisted of 19 pts with old myocardial infarction; group 2, 15 pts with angina pectoris; group 3, 5 pts with cardiomyopathy; group 4, 5 pts with hypertension and group 5, 6 normals. Left ventricular ejection fraction (EF) at rest and during hand grip exercise test was assessed. In 19 pts of groups 1 and 2 the correlation coefficient of EF between SPR system and contrast ventriculography (CV) was  $0.90$  ( $CV=0.92 \times SPR + 3.3$ ,  $p < 0.001$ ). EF at rest in normals was  $65 \pm 13\%$  and increased to  $71 \pm 9\%$  during hand grip exercise test ( $p < 0.001$ ). In groups 1 and 2, EF at rest was  $53 \pm 12\%$  and  $59 \pm 9\%$  respectively, and decreased significantly during hand grip exercise test.

There was a close relationship in EF at rest between SPR and CV ( $r=0.90$ ,  $p < 0.001$ ). This is a valid method to measure EF at rest as well as during peak exercise even 1 min acquisition period.

## 3

COMPARATIVE ANALYSIS BETWEEN CARDIAC CATHETERIZATION AND RADIONUCLIDE CARDIOGRAPHY. T.Ichikawa, K.Makino, Y.Futagami, T.Konishi, M.Hamada, T.Nakano and H.Takezawa. 1st Dept. of Intern. Med. H.Maeda. Radiology. Mie University School of Medicine. Tsu.

Clinical significance of peak diastolic  $dv/dt$  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  $dv/dt$  and diastolic index (max negative  $dp/dt$  and time constant (T)) to peak diastolic  $dv/dt$ .

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

## 4

MEASUREMENT OF LVEF & RVEF BY EQUILIBRIUM GATED BLOOD POOL SCINTIGRAPHY FOR THE ASSESSMENT OF PREOPERATIVE CARDIAC FUNCTION. C.Kurata, H.Terada, R.Fujita, Y.Matsuda, S.Hamabe, M.Shimizu, A.NaKamura. ShaKaioken Hamamatsu Hsp. Hamamatsu. K.Kashiwada. St. Marianna University School of Medicine. Y. Sasaki. Toho Univ. School of Medicine. Tokyo.

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  $67.7 \pm 8.4\%$  &  $536 \pm 9.2\%$  (mean  $\pm$  S.D.), respectively. In patients who did not have associated heart diseases LVEF was  $72.0 \pm 5.4\%$  ( $n=22$ ) and RVEF  $54.7 \pm 8.3\%$  ( $n=12$ ). Among 25 cases of known postoperative courses 4 cases showed heart failure after operation, but there were no significant differences in LVEF & RVEF between these cases and other 21 cases. On the other hand in the control group LVEF was  $57.2 \pm 13.5\%$  ( $n=93$ ) and RVEF  $52.4 \pm 11.4\%$  ( $n=61$ ).

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.