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COMPARISON OF RI-FIRST PASS STUDY, DSA, CINE-ANGIOGRAPHY AND TL-SPECT FOR DETECTING LV WALL MOTION ABNORMALITY. T.Kasuga, F. Nakanishi, Y.Sakai, S.Sone, M.Takeda, S.Haruta, K.Yano and K.Yokota. Shinshu University School of Medicine, Matsumoto.

The wall motion abnormality of left ventricle in the RAO projection was evaluated on the 17 patients using RI-first pass, DSA and cine-angiography. Of 17 patients, 7 patients had angina pectoris, 9 patients myocardial infarction, and 1 patient CLBBB. Of 9 cases with a low grade stenosis less than 75% of the coronary artery shown on the coronary arteriogram, 5 showed wall motion abnormality on the cine-angiography (sensitivity 56%), three on RI-first pass (sensitivity 38%), 8 on DSA (sensitivity 89%), and exercise TL-SPECT (sensitivity 44%). Of 14 cases with a high grade stenosis greater than 90%, the sensitivity of the tests were 78.9% by cine-angiography, 75% by RI-first pass, 92.9% by DSA and 100% by TL-SPECT. The results obtained by DSA was superior, probably due to its superior spatial resolution than RI-first pass and superior contrast resolution than cine-angiography. Utilizing amplitude image and phase image, wall motion abnormalities could easily be evaluated. Time-differential image permitted an easy evaluation of LV wall motion through a cardiac cycle. A slight abnormality of wall motion in a case with a low grade stenosis of coronary artery could be demonstrated by DSA.

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RELIABILITY OF VOLUMETRY BY VARIOUS INSTRUMENT USING CARDIAC PHANTOM. Y.Ogura, T.Nishimura, K.Hayashida, M.Hayashi, H.Oka, T.Katabuchi and I.Yokota. National Cardiovascular Center, Suita, Osaka.

In nuclear cardiology, various instruments were devised to measure left ventricular volume for evaluation of cardiac function. The volumetry based on count calculation between 50 ml to 350 ml with increment of 10 ml using cardiac phantom (static and moving) was performed by Cd-Te detector, nuclear stetoscope and gamma camera (planar and SPECT). The linearity between count and measured volume by gamma camera (planar and SPECT) was good from 50 ml up to 350 ml. That by Cd-Te detector was limited up to 220 ml and that by nuclear stetoscope was limited by 170 ml. However, portable instruments to measure volume such as Cd-Te detector and nuclear stetoscope have the merit of high responsiveness on count in changes, they lose linearity in counting of larger volume because of geometric attenuation.

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CONTINUOUS MONITORING OF LEFT VENTRICULAR FUNCTION USING A DUAL CADMIUM TELLURIDE PROBE SYSTEM. M.Ide, S.Hirose, N.Kanemoto, Y.Goto and Y.Suzuki. Tokai University School of Medicine, Kanagawa.

We had developed a dual single cardiac probe system made by cadmium telluride (CdTe). This system made it possible for continuous counting of left ventricular counts and background counts, simultaneously. We also developed a new vest like system for attaching the probe. The purpose of this study is to discuss the preliminary study of potential value in continuous monitoring of cardiac function. We placed one probe over the left ventricle and another one over the right upper lung under the image of gamma camera. In eight patients, the continuous monitoring was tested, and the effect of sublingual administration of isosorbide dinitrate (ISDN) upon the ejection fraction (EF) was evaluated. These data showed that the EF increased after the administration of ISDN. Also we can evaluate the change of the EF during ergometer exercise and the background count. The background count showed three different attitude; increase, decrease and no change.

We conclude that the dual CdTe probe system has the potential utility for continuous monitoring of the EF in clinical use, and continuous counting of background counts was needed during the continuous monitoring of the EF.

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EVALUATION OF CARDIAC FUNCTION IN PATIENTS WITH ARTIFICIAL PACEMAKERS USING PHASE ANALYSIS OF EXERCISE CARDIAC POOL IMAGING. K.Kanoh, N.Kawai, A.Suzuki, H.Matsushima, A.Satoh, R.Katoh, K.Yamauchi, I.Sotobata, M.Okada\* and Y.Tanahashi\*. First Dept. of Intern. Med., Nagoya Univ., Nagoya and Nagoya Ekisaikai Hospital.

Effects of pacing mode on LV function during supine bicycle ergometer exercise (Ex) were studied in 26 pts with an artificial pacemaker (AAI in 4, VVI in 11, VDD in 2 and DDD in 9) and in 5 controls using cardiac pool imaging. Pacing mode was converted from VDD or DDD to VVI in 5 pts, and pacing rate was changed from 70 to 110 bpm in 4 pts with AAI and 5 with VVI pacemaker. LV-RV phase difference (PD) during Ex decreased in control group (-16 to -4 msec, NS) and also in 11 pts with VDD or DDD (54 to 26 msec,  $P < 0.05$ ). LV posterior-RV apex PD during Ex decreased in 11 pts with VDD or DDD (106 to 41 msec,  $P < 0.05$ ), but increased in 4 with AAI and in 16 with VVI. At the increase in pacing rate from 70 to 110 bpm, LV-RV PD and LVp-RVa PD both increased in 5 pts with VVI (36.2 to 64.2 msec and 49.4 to 83.0 msec, respectively,  $P < 0.05$ ), but unchanged in those with AAI.

Conclusion: VDD and DDD pacemakers were considered to be more suitable for maintenance in exercise of cardiac function than VVI pacemakers.