EVALUATION OF LEFT VENTRICULAR WALL MOTION WITH FUNCTIONAL IMAGES. K. Nakajima, H. Bunko, T. Maeda, M. Yamada and K. Hisada. Department of Nuclear Medicine and Division of Central Radiologates Service, Kanazawa University Hospital, Kanazawa.

Functional images of left ventricular wall motion, stroke volume(SV) image, ejection fraction(EF) image and parado image were generated in fifty patients and compared with contrast left ventriculography in twenty patients. Biplane contrast angiograms were assessed based on the reporting system of American Heart Association grading committee. Left ventriculogram was divided into seven segments and severity of asynergy was classified into four grades. Multi-gated blood pool data were acquired using a scintillation camera and a minicomputer system in modified left anterior oblique projection. Processing of functional images were: SV image=ED image-ES image, EF image=SV image/ED image, parado image=ES image/ED image. Detectability of EF image was better than SV image, and parado image was useful for the detection of dyskinesis. As to location and severity of dyskinesis, EF image and Segmental wall motion of left ventriculogram were compared and had good correlations. The mean value of ejection fraction image of left ventriculogram was correlated with ejection fraction determined from left ventriculography (n=50, r=0.94).


As the most simple method, TI myocardial image (TI) is performed to detect myocardial infarction (MI) or ischemia. On the contrary, gated LV wall motion analysis (WMA) was needed the expensive computer systems. But, recent microprocessor controlled γ-camera with image memory can perform WMA very easily. The detection of regional LV WM abnormalities provides strong evidence for the presence of coronary heart disease. This study undertook to determine which study is sensitive to detect small MI. 39 pts. with clinically and ECG, VCG proved old MI were studied both rest TI and rest equilibrium WMA. TI was obtained by Searle Pho/ Gamma V in Ant., LAO 20°, 45°, 70°. WMA was made using cardiac analysis program of Searle Scintiview system in MLAO view. WMA evaluated both cine display and extended cardiac analysis program. This program makes stroke volume (SV), ejection fraction (EF), parado SV and parado EF images in 30 sec. TI failed to detect 9 of 27 small MI. WMA missed only 5 segmental abnormal WM segments in 9 normal TI pts. was 15.

And abnormal TI segments in 5 normal WMA pts. was 4. We conclude WMA is an useful method to detect small MI than TI.


Supine rest-exercise (R-Ex) first-pass radionuclide angiogram (RNAC) using by Baird-Atomic System 77 gamma camera and R-Ex thallium myocardial images (TI-TI) were performed in 18 patients (pts) of exertional angina and no pts had a history of old infarction. Ex RNAC and Ex 201-TI images were acquired using the bicycle ergometer in a supine position. All pts had an appearance of typical anginal pain and horizontal depression of ST segment during Ex. Pts were divided into 2 groups (Gr). Twelve (67%) Gr I pts demonstrated abnormal (abnl) Ex LVEF (a fall or within ±5% of resting value) and 6 (33%) Gr II pts had normal (nl) Ex LVEF (increase LVEF by ±5%). In Gr I, all (12/12) pts had abnl regional WM and 9 (9/12) pts had abnl 201-TI defects. In Gr II, 4 (4/6) pts had abnl regional WM and 5 (5/6) pts had abnl 201-TI defects. Both studies were abnl in 10 (10/12) Gr I pts, in 4 (4/6) Gr II pts and were nl in 1 (1/18) pt. More than 2 segmental abnormalities were detected in 9 (9/18) pts by Ex WM, while in 6 (6/18) pts by Ex 201-TI. In conclusion regional WM and 201-TI during Ex were closely related to myocardial perfusion and the combination of both studies is an useful method for the detection of exertional angina.

QUANTITATIVE EVALUATION OF SERIAL TL-201 MYOCARDIAL SPECTRAEGRAM AFTER STRESS TESTING IN ISCHEMIC HEART DISEASE. Y. Watatani, A. Sakai, T. Shiota, T. Shiraishi, A. Kobayashi, Y. Tanaka. KANSAI MEDICAL UNIVERSITY, OSAKA.

Five normal subjects and 31 patients with IHD were studied by stress test, and TL-201 was injected 1 min before the end of the test. Myocardial activation images (2 TL-201) were recorded 10 min, 1 and 2 hours (phase 0, 1, 2) after the injection. The myocardial wall was geometrically divided into 5 segments. At the area where the count rate (cts) was highest in phase 0 scintigrams, the washout rate from phase 1 to j was defined as WRj = (max ctsj - max cts) / max cts, where ctsj denotes cts at phase i in the relevant area. The redistribution index (RDij) in each segment was defined as RDij = ctsj / cts. ctsj denotes cts at phase j in the segment. The ischemic segment was identified as 70% or less of max cts 0, while the infarcted segment by V00 in phase 0 scintigram. Mean values of RDij were 0.80 in the normal, ischemic and infarcted segments were 6.1±5.6, 9.7±7.0 and 3.5±7.2%, respectively, and the differences were statistically significant (P<0.001). All the 26 anginal patients except one showed WRj greater than 1.0. When the peak pressure-rate product that attained at the test was 200 or more, it was significantly correlated with WRj (r=0.80). IN summary, the redistribution index was helpful in quantitative assessment of the ischemic segments. The finding of WRj>1.0 after the stress was reliable in suggesting myocardial ischemia.