1105

EVALUATION OF CARDIAC PERFORMANCE WITH GRADED EXERCISE.

K.Nakajima, H.Bunko, A. Tada, K.Hisada, S.Matsushita, T.Murakami and H.Asanoi Department of Nuclear Medicine and Internal Medicine, School of Medicine, Kanazawa University. Kanazawa

To evaluate the cardiac performance with graded exercise using the radionuclide angiocardiography, the methodology of gated blood pool scan was studied.

According to the ventricular phantom study, we used the thresholding method for the left ventricular edge detection. When using a scintillation camera with high sensitivity collimator, 90 sec of data acquisition time was supposed to be sufficient and reliable. Exercise was performed in the supine position and its load was increased 25w stepwise in every three minute until fatigue or chest pain was induced. After determination of cardiac output from radionuclide angiography, end-diastolic volume, end-systolic volume, stroke volume, ejection fraction and cardiac output were calculated in each stage. Cardiac output determined by the dye dilution technique and these radionuclide methods at rest and during exercises correlated well(n=26,r=0.925).

Typical examples of normal subject, ischemic heart disease, pacemaker implantation and drug(propranolol) administration were shown.

1106

LEFT VENTRICULAR WALL MOTION IN PATIENTS WITH MYOCARDIAL INFARCTION: COMPARISON WITH RADIONUCLIDE ANGIOGRAPHY AND CONTRAST ANGIOGRAPHY.

Y. Fudemoto, T.Yoshino, T. Oda, T. Kobayashi and K. Fujimoto Department of Circulatory Dynamics, The Center for Adult Diseases, Osaka. M. Ohno Internal Medicine, Mimihara General Hospital, Sakai.

In the radionuclide angiography we employed right anterior oblique view routinely used in contrast angiography. Thirty three patients with myocardial infarction who underwent radionuclide and contrast angiography were studied in this view. Of 33 patients, 15 were anterior myocardial infarction, 10 inferior myocardial infarction and 8 anterior and inferior myocardial infarction.

Using the System 77, radionuclide angiography was taken in 20 ms. frame mode with 25 mCi of Tc-99m via external juglar vein. Global ejection fraction was measured according to Jones' method. Segmental regional ejection fractions were calculated in fan-shaped ROI of anterolateral, apical and diaphragmatic segment using representative cycle.

Good correlations between segmental wall motion of contrast angiography and segmental regional ejection fraction of radionuclide angiography were recognized in anterolateral and diaphragmatic segment. However, there was no obvious correlation in apical segment.

1107

ASSESSMENT OF WALL MOTION BY FIRST-PASS RADIONUCLIDE ANGIOGRAPHY USING MULTICRYSTAL CAMERA.

H. Oota, Y. Ibuki, H. Kato, K. Yanagihara, Y. Takagi, T. Okumachi, K. Yoshida, J. Yoshikawa, T. Mori, H. Ito, N. Oshiro, Y. Morimoto, S. Bito, K. Ikekubo, N. Tamaki, and K. Yamamoto Kobe Central Municipal Hospital, Kobe, and Dept of Radiology & Nuclear Medicine, Kyoto University, Kyoto

Left ventricular ejection fraction (LVEF), cardiac output (CO), and regional wall motion abnormality (RWMA) estimated by radionuclide angiography (RNA) were comparatively evaluated with two dimensional echocardiography (Echo) as well as contrast ventriculography (CVG). RNA was performed after bolus injection of 20 mCi ^{99m}Tc-RBC using multicrystal camera in 24 cases with IHD.

LVEF and CO calculated from RNA were well correlated with those from CVG (r=0.89, and 0.74, respectively). Results of RWMA assessed by RNA and Echo were similar with those by CVG, however, both noninvasive methods underestimated RWMA slightly. In comparative evaluation of these noninvasive methods, RNA was inferior in the assessment of posterobasal segment, while Echo was inferior in apical segment.

We conclude that RNA using multicrystal camera is a reliable method to evaluate LVEF, CO, and RWMA noninvasively.

1108

THE CLINICAL EVALUATION OF RADIONUCLIDE LEFT VENTRICULAR REGIONAL WALL MOTION.

I. Okuzumi, Y. Kawamura, T. Uchi, M. Hukumoto, H. Oosawa, S. Suzuki, S. Iida, J. Hirai, T. Morishita Ist Internal Medicine of Toho University, Tokyo.

With radionuclide left ventriculography used 99mTc-HSA, the quantitative analysis of left ventricular regional wall motion was performed in 100 patients with ischemic heart disease under gone coronary cine-angiography. The purpose of this study was to determine the relation between abnormality of regional wall motion and locations of coronary artery lesions. Regional wall motion were classified three grades, normal wall motion, hypokinesis and akinesis according to standard pattern of normal subjects. Specificity of RI regional wall motion to coronary artery lesion was above 90%, and sensitivity of it was about 50%. False positive cases were included the patients with recanalization and good development of collateral artery.