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REPRODUCIBILITY OF RIGHT VENTRICULAR EJECTION FRACTION DETERMINATION USING FUNCTIONAL IMAGE. J.Taki, H.Bunke, A.Tada, K.Nakajima, N.Tonami and K.Hisada. Kanazawa University. Kanazawa.

The reproducibility of Right Ventricular Ejection Fraction (RVEF) by gated equilibrium scintigraphy using functional image was evaluated in 14 patients with heart disease. The data were acquired in the LAO projection by both parallelhole (10-15° caudal tilt) and 30° slant-hole collimator. Background ROI was set on adjacent to the left ventricle. Regions of interest for the right ventricle were defined by manual, Stroke Volume image and Phase image. RVEF was calculated by the 30% threshold variable ROI method. Best reproducibility within and between observer were obtained in both parallel and slant-hole collimator when ROI was defined using Stroke Volume image. Correlation coefficients of RVEF derived from Stroke Volume image as a reference were excellent. (parallel-hole collimator:  $r=0.972$  (intraobserver),  $r=0.948$  (interobserver) slant-hole collimator:  $r=0.983$  (intraobserver),  $r=0.966$  (interobserver)) In conclusion, it is preferable to use Stroke Volume image as a reference in setting ROI for right ventricle for the calculation of RVEF, because Stroke Volume image can be created easily compared with Phase image, and showed better reproducibility.

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ASSESSMENT OF RIGHT VENTRICULAR FUNCTION DURING EXERCISE IN PATIENTS WITH CORONARY ARTERY DISEASE. BH.Kim, Y.Ishida, Y.Tsuneoka, T.Hiraoka, M.Fukushima, M.Matsumoto, M.Inoue, H.Abe, K.Kimura\*, Y.Kusumi\*, Y.Nakamura\*. The 1st Dept. of Med. and the Div. of Nucl. Med\*. Osaka University Medical School, Osaka.

To clarify determinants of right ventricular function during exercise (Ex) in patients (pts) with coronary artery disease (CAD), right ventricular ejection fraction (RVEF), LVEF and the ratio of pulmonary blood volume (PBV) between Ex and rest (R) were calculated by radionuclide angiography in 10 normals (N) and 35 pts with CAD, 18 pts with (CAD-1) and 17 pts without (CAD-2) right coronary artery (RCA) lesion. In N both LVEF and RVEF invariably increased during Ex (LVEF:  $61 \pm 6\%$  to  $70 \pm 5\%$ ,  $p < 0.001$ ; RVEF:  $50 \pm 5\%$  to  $58 \pm 5\%$ ,  $p < 0.01$ ). CAD-1 showed significant decreases in RVEF ( $47 \pm 7\%$  to  $40 \pm 7\%$ ,  $p < 0.05$ ) regardless of the responses of LVEF to Ex. Although CAD-2 showed no significant change in LVEF and RVEF (LVEF:  $49 \pm 12\%$  to  $52 \pm 13\%$ , RVEF:  $48 \pm 9\%$  to  $49 \pm 10\%$ ), differences of LVEF between Ex and R and those of RVEF had a positive correlation ( $r=0.83$ ). Seven pts in CAD-2 showed decreases in RVEF despite the absence of RCA lesion and PBV ratio in these 7 pts was larger than that in 10 pts in CAD-2 who had increases in RVEF ( $1.16 \pm 0.06$  vs  $1.06 \pm 0.07$ ,  $p < 0.05$ ). Thus, we conclude that right ventricular function during Ex is deteriorated not only with the presence of RCA lesion but also with pulmonary congestion by left ventricular dysfunction.

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BASIC REASSESSMENT FOR MEASURING RIGHT VENTRICULAR EJECTION FRACTION USING MULTI-GATED EQUILIBRIUM METHOD. S.Kosuda, J.Satoh, M.Nakamura, Y.Yonahara, T.Asato, M.Naito, H.Nagoshi, M.Honda, A.Kubo, S.Hashimoto. Ohkura National Hospital, the 2nd Tokyo National Hospital, Keio University School of Medicine Tokyo.

Multi-gated equilibrium scintigraphy was performed in 55 patients who had miscellaneous heart diseases and no evidence of heart disease. The value of RVEF was calculated using various methods and the results were basically evaluated, compared to those obtained using first pass method.

There was a change of a few to 10% in the value of RVEF by changing the position of ROI on the right ventricular background. RVEF showed the highest value when the right ventricular background was created in the end-diastolic periright ventricular region. Wherever the ROI on the right ventricular background was created, there were relatively excellent correlations between the value of RVEF by multi-gated equilibrium method and that by first pass method.

Functional images (Amplitude and Phase images) might be of help toward creating the right ventricular ROI, but it is necessary to observe carefully the right ventricular wall motion in cine mode.

When the threshold level of RV was fixed for 70% in the end-diastole and 75% in the end-systole after observing the right ventricular wall motion carefully, the value of RVEF showed relatively excellent coincidence with that by first pass method.

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EVALUATION OF RIGHT VENTRICULAR FUNCTION IN PATIENTS WITH MYOCARDIAL INFARCTION. H.Tabuchi\*, S.Takaoka\*, T.Ohkubo\*, H.Kataoka\*, K.Nakamura\*, S.Hashimoto\*, H.Murata\*\*, H.Toyama\*\*, H.Yamada\*\* and K.Ueda\*\*\*. \*2nd Department of Internal Medicine, Kagoshima University School of Medicine. Kagoshima. \*\*Department of Nuclear medicine and Radiological Sciences. \*\*\*Internal Medicine, Tokyo Metropolitan Geriatric Hospital. Tokyo.

In order to evaluate the right ventricular (RV) function, multigated blood pool study were performed in 10 normal subjects and 72 patients with myocardial infarction (MI). Patients with MI were divided in 5 subgroups by defect site on Tl-201 myocardial scintigraphy and ECG findings as follows: Antero-septal 25 cases, Antero-lateral 6 cases, Infero-posterior 24 cases, Postero-lateral 5 cases, Anterior and Inferior 12 cases. Three parameters (global ejection fraction (EF), regional wall motion and phase analysis) were compared in each group. Mean value of RVEF was lower in the infero-posterior MI group, however, there was no significant difference in each group. In the visual finding of regional wall motion and phase image, abnormality was detected in nearly 66% of the infero-posterior MI group. This finding was the same result as the previous report. Abnormality was also detected in nearly 28% of the antero-septal MI group and the role of ventricular septum on the right ventricular function was suspected. In the quantitative phase analysis, each MI group except infero-posterior MI group showed phase delay of LV. On the contrary, many patients with infero-posterior MI group showed phase delay of RV.

Thus, we concluded that regional wall motion and phase analysis were useful for evaluation of right ventricular function.