

22

ACCURACY AND CLINICAL USEFULNESS OF TEMPORAL PARAMETERS IN CARDIAC FIRST PASS STUDY. A. Komatani, K.Takahashi, T.Takanashi and K.Ya maguchi. Department of Radiology, Yamagata University School of Medicine, Yamagata.

Right anterior oblique (RAO) view might be often sensitive to detect an asynergic wall-motion of the left ventricle (LV). Accuracy and usefulness of temporal parameters were investigated in cardiac first pass study. Regional analysis of the left-ventricular ejection fraction (REF), ejection time (RET), peak filling rate (PFR) and time to peak filling rate (TPFR) were performed with the retention of several harmonics in the Fourier transform of the regional time-activity curve. Histogram, standard deviation (SD) and functional images of these parameters were also generated. Accuracy of these parameters was estimated based on root mean square in percent (%RMS) and statistic error in events of a pixel (32x32 in size).

As a conclusion, the first two harmonics in the Fourier transform was most appropriate, and these parameters might be useful for clinical application also in the first pass study.

23

QUANTITATIVE ASSESSMENT OF CARDIAC PERFORMANCE AND PULMONARY BLOOD VOLUME IN END-STAGE RENAL FAILURE BY FIRST-PASS ANGIOCARDIOGRAPHY; EFFECT OF HEMODIALYSIS. H.Seto, R.Futasuya, T.Kamei, N.Furumoto, M.Kakishita, H.Iida and T.Sugimoto. Toyama Med. and Pharm. University, Toyama.

Cardiac performance and pulmonary blood volume were measured by first-pass angiocardio-graphy, using a multicrystal camera before and after hemodialysis in 20 uremic patients.

The patients were divided into the two groups; one was normal left ventricular ejection fraction (LVEF) group (n=10), the other was abnormal LVEF group (n=10). In the normal group LVEF and RVEF were unchanged or slightly decreased. Left ventricular end-diastolic volume (EDV), stroke volume (SV), cardiac index (CI) and pulmonary blood volume index (PBVI) were also slightly decreased. In the abnormal group EDV, SV, PBVI and pulmonary mean transit time (PMTT) were also decreased, however LVEF, RVEF and CI were slightly increased. Heart rate was also increased after hemodialysis in both groups.

In conclusion, the decreased cardiac performance and PBVI after hemodialysis in the normal LVEF group might be attributed to the decrease in circulatory blood volume. In the abnormal group the increases in LVEF, RVEF and CI might be due to relief of the volume-pressure overload secondary to the volume reduction after hemodialysis.

24

EVALUATION OF LEFT VENTRICULAR WALL MOTION: COMPARISON BETWEEN RADIONUCLIDE ANGIOGRAPHY (RIACG) AND CONTRAST LEFT VENTRICULOGRAHY (LVG). Y.Fudemoto, T.Yoshino, T.Oda and T.Kobayashi. Department of Circulatory Dynamics, The Center for Adult Diseases, Osaka.

In 113 patients including 55 with old myocardial infarction and 58 with angina pectoris, we compared the evaluation of left ventricular segmental wall motion (LVSWM) by RIACG using first pass method and conventional LVG with visual inspection. In RIACG, LVSWM was evaluated with cine display of RAO view and regional ejection fraction image. According to AHA report, left ventricular wall was divided into 7 segments. In this paper, we employed anterolateral, apical and diaphragmatic segments. LVSWM was divided into normal and abnormal (reduced, none, diskinctic and aneurysmal). Results obtained in cine display and regional ejection fraction image were as follows:

	RIACG		REFI	
	Sn	Sp	Sn	Sp
all seg.	69	79	67	81
ant.lat.	77	78	72	81
apical	70	66	82	78
diaph.	61	90	46	85

Sn:sensitivity, Sp:specificity

These sensitivity and specificity show that noninvasive RIACG is useful for clinical evaluation of LVSWM.

25

EVALUATION OF MYOCARDIAL ISCHEMIA AND LV PERFORMANCE RESERVE DURING EXERCISE BY FIRST PASS RADIONUCLIDE ANGIOGRAPHY. T.Yoshino, T.Oda, T.Kobayashi, Y.Fudemoto, K.Sakaguchi and N.Tanaka. The Center Adult Diseases Osaka and Osaka Prefectural Habikino Hospital, Osaka.

In order to evaluate myocardial ischemia and left ventricular performance reserve, we assessed the response of LVEF, LV volumes and PSP/ESV (peak systolic pressure/end systolic volume) during exercise using first pass radionuclide angiography in 26 patients who underwent coronary arteriography. There were 9 patients with angina pectoris (AP) (G-A), 13 patients with myocardial infarction (MI) (G-M) and 4 normal subjects (G-N). G-M was divided into 2 groups, 7 with AP (G-M1) and 6 without AP (G-M2). All patients who had AP and/or MI had more than 75 percent coronary artery stenosis. EF and EDV (end diastolic volume) assessed by first pass radionuclide ventriculography correlated well with those by contrast ventriculography (EF: $r=0.84$; $p<0.001$, EDV: $r=0.77$; $p<0.001$). G-N showed increase in LVEF and PSP/ESV, and decrease in EDV and ESV. G-A and G-M1, however, revealed reduction in EDV and ESV during exercise. In G-M2, LVEF and PSP/ESV increased but EDV and ESV remained unchanged.

We concluded that exercise radionuclide angiography was clinically useful for the evaluation of myocardial ischemia and left ventricular performance reserve.