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ASSESSMENT OF VARIOUS SYSTOLIC PHASE INDEXES OBTAINED BY RADIONUCLIDE ANGIOCARDIOGRAPHY.

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The purpose of this study is to obtain the useful systolic phase index to detect coronary artery disease (CAD). After Tc-99m was labeled with RBC in vivo, blood pool imaging was obtained at anterior and LAO view by mutigated acquisition at rest. In addition to left ventricular ejection fraction (EF) and wall motion (WM) abnormality, 1/3 EF, mean normalized systolic ejection rate, SdV/dt/EDV (maximal ejection rate normalized by end-diastolic volume) and SdV/dt/V (maximal ejection rate divided by LV volume at the maximal ejection) were calculated. Patients were divided into 3 groups: Normal (n=14), CAD with normal EF ($\geq$55%) and normal WM (Gr I, n=14) and CAD with abnormal EF and/or WM abnormality (Gr II, n=31). All systolic phase indexes were correlated well with EF ($r \geq 0.77$) and their reproducibility was high. All systolic phase indexes could differentiate Normal and Gr II significantly ($p<0.01$), but they could not differentiate Gr I and Gr II except for SdV/dt/V. By using SdV/dt/V<0.4 as a criteria of CAD, sensitivity of this index was 75% in Gr I and 100% in Gr II. This sensitivity in Gr I was identical with that of exercise stress angiography. Specificity of SdV/dt/V (86%) was a little inferior to that of exercise stress angiography (94%).

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INTEROBSERVER REPRODUCIBILITY OF INTERPRETATION OF LEFT VENTRICULAR REGIONAL WALL MOTION. -COMPARISON OF CINE DISPALY,EDGE OVERLAY DISPLAY AND FUNCTIONAL IMAGE-.

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Interpretation of the regional wall motion requires greater skill and some art because of the difficulty of ditecting ventricular border. We evaluated the interobserver reproducibility of interpretation of the regional wall motion by gated blood pool imaging in 3 observers. In the 39 studies, regional wall motion were evaluated with cine display and overlay of the ventricular outline of 60% threshold. Agreement ratio of 3 observers was 68% with cine display and 83% with outline overlay.
In segmental analysis, agreement of anteroseptal wall was poor compared to the inferior and posterolateral wall. In another 44 studies, cine display and functiona image (rEF image) were compared and evaluated. Agreement ratio was 76% with functional image and 68% with cine display. In conclusion, interobserver agreement of both outline overlay and functional image were superior to cine display. Criteria for wall motion should be determined for each ventricular segment.

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EVALUATION OF EFFECTS OF SUBLINGUAL ISOSORBIDE DINITRATE ON LEFT VENTRICULAR FUNCTION DURING EXERCISE USING RADIONUCLIDE ANGIOGRAPHY

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To evaluate effects of sublingual isosorbide dinitrate(ID, 5mg) on left ventricular performance during supine bicycle exercise, ECG-gated equilibrium radionuclide angiocardiography was performed with injection of Tc-99m-RBC(20mCi) in eight normal subjects(N), 17 patients(pts) with angina pectoris(AP), and 12 pts with myocardial infarction(MI). In N, ejection fraction (EF) was slightly increased during exercise before ID administration(58.0±6.3 to 64.0± 3.6%;NS) and after ID administration(62.5± 4.7 to 67.3±5.0%;NS). In AP, exercise resulted in decreased EF(56.6±10.5 to 49.5± 11.6%;$p<0.01$) before ID administration, whereas exercise increased EF(54.4±5.9 to 62.2±11.7%;$p<0.05$) after ID administration. In MI EF was slightly increased during exercise both before ID administration(48.7 ±13.4 to 49.8±15.2%;NS) and after ID administration(48.2±13.7 to 53.8±17.8%;NS). EF at rest was not significantly changed after ID administration in all groups. ID remarkably improved left ventricular function during exercise only in pts with AP.

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EVALUATION OF SERIAL Tl-201 MYOCARDIAL SCINTIGRAM AT REST IN PATIENTS WITH EFFORT ANGINA.

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Exercise scintigram has been undertaken to assess myocardial ischemia in patients with effort angina. Reduced uptake(RU),however,is not uncommonly obserbed in a serial scintigram at rest in those patients.

We reviewed serial Tl-201 myocardial scintigrams in 75 patients with effort angina and positive exercise ECG. Serial scintigrams were taken 15 min. and 60 min. after injection of 2.5 mCi of Tl-201.

Of 75 pts, 36(48%) had RU and 39 normal uptake(NU). 27(75%) of 36 pts with RU showed hypokinesis in LVG, whereas 12(31%) of 39 with NU($p<0.001$). Moreover scintigram and LVG were compared in the anterior,apical and inferior segment. Hypokinesis was found in 18% of NU and 40% of RU(NS) in the anterior, 39% and 62%($p<0.02$) in the apical and 8% and 67%($p<0.001$) in the inferior. Coronary arteriogram revealed severe stenosis of 90% or more in 89% of RU comparing in 38% of NU($p<0.001$). Collateral vessels were not related to abnormal uptake.

These data suggest the existence of myocardial ischemia even at rest in some of patients with effort angina. Reduced uptake may be related to abnormal LVG and severe coronary arteriosclerosis.