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REGIONAL MYOCARDIAL BLOOD FLOW IN PATIENTS WITH CORONARY ARTERY DISEASE.

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Regional myocardial blood flow (RMBF) was measured in 56 patients with coronary heart disease to evaluate blood supply and ischemia in the myocardial region supplied by stenosed coronary arteries at rest. Five to 20 mCi of Xe-133 was injected into coronary arteries and RMBF was obtained by initial slope clearance method using Baird System 77.

Patients were divided into three groups; Group 1(G-1) consists of 24 pts with less than 50% of stenosis in the coronary arteries, G-2 of 26 with 90% or more in LAD and G-3 of 6 with 90% or more in LAD and LCX. RMBF in LAD region(LAD-RMBF) and in LCX region(LCX-RMBF) were 84.4±22.7 ml/min/100g and 80.4±20.6 respectively in G-1. Those values were 71.6±19.9(p<0.05 compared to G-1), 72.6±18.6 in G-2 and 68.5±17.5, 64.8±17.3 in G-3. Ratio of RMBF in LAD and LCX region(LAD/RMBF/LCX/RMBF) were 1.04±0.07 in G-1, 0.98±0.07(p<0.01 compared to G-1) in G-2 and 1.06±0.10(p<0.05 compared to G-2) in G-3.

These data suggest a reduced myocardial blood flow and ischemia in the region of LAD with severe stenosis of 90% or more even at rest.

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ESTIMATION OF PULMONARY PRESSURE BY PULMONARY BLOOD RATIO USING IN VIVO Te-99m RBC POOL SCAN.

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The count rates in the lung were thought to be pulmonary blood flow, because of the labeling rate of RBC with Te-99m was very high and stable (96.6±0.91)% in our studies. The altered distribution of counts between erect and supine position was expected in normal pulmonary pressure but not in high pulmonary pressure. Pulmonary blood flow (PBF) ratio (counts in upper third lung field / counts in lower third lung field) was obtained by the quantitative analysis. The correlation coefficients between PBF ratio and systolic pulmonary arterial pressure was r=0.61, r²=0.49 in the erect position and the supine position, respectively.

This simple method for estimation of pulmonary blood flow was useful for the evaluation of pulmonary and cardiac function.

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PARTIAL ESTIMATION OF THE PRESSURE-VOLUME CURVES OF THE HUMAN PULMONARY "VENOUS" SYSTEM.

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We estimated the pulmonary blood volume (PBV), from pulmonary artery bifurcation to left atrium, using RI-angiography and our methods. After the radioactivity became stable for several minutes, both legs were elevated passively at angle of 30-40 degrees. Increment of PBV was calculated from the increase of the RI-count over the right chest, initial PBV, and two correction factors. By definition, 70% of the PBV was pulmonary "venous" volume (PVMV), and 80% of the increment of the PBV was APMV. Simultaneously mean pulmonary artery wedge pressure (PAW) was recorded. From APMV and APAW, pulmonary "venous" compliance was calculated. The results were as follows.

(1) Where PAW<3mmHg, P' MV>V<270ml, P' MV-PAW plots and their shifts with leg elevation showed that ΔMV=15.8±8.7 (ml/mmHg±SD).
(2) It is suggested that they represent short segments of steep (compliant) curves.
(3) Where PAW<3mmHg, ΔV/ΔP=10±5.8 (ml/mmHg±SD). It is suggested that they represent short segments of flatter (more rigid) curves.