1341

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 devided 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.

1343

CHARACTERISTICS OF DIGITAL PERFUSION IMAGES (DPI) IN MITRAL STENOSIS.

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Distribution of pulmonary perfusion in 60 patients with mitral stenosis was studied by using DPI.Patterns of DPI were classified to 6 grades,i.e.G-0;normal subjects,G-1;disappearance of apical hypoperfusion area(HO),G-2:disappearance of basal hyperperfusion area (HY)at anterior DPI,G-3;limitation of HY to upper zone of DPI,G-4;appearance of basal HO, and E;patients with NYHA 4°(E-A;without basal HO,E-B;with basal HO).

	mPA,mmHg	mPw,mmHg	TPR,HRU	$CI,L/mM^2$	p
G-0	12.0+1.4	7.7+1.6	2.5+0.6	3.3+1.2	<0.001
G-1	23.7+4.1	16.7+3.7	5.8+1.7	2.9+0.5	
G-2	22.8+3.0#	14.7+2.6#	7.3+0.6	2.2+0.3	<0.05
G-3	31.9+3.5	23.9+3.8	9.1+2.3	2.1+0.6#	#,NS
G-4	40.3+4.9	28.7+6.6	12.7+2.8	2.1+0.5#	other
E-A	51.0+2.0	27.6+6.1	28.9+6.3	1.4+0.3	
E-B	57.6+6.7	30.4+3.9	16.1+3.1	2.4+0.2	

CI;cardiac index,mPA;mean pulmonary artery pressure,mPw;mean PA wedge pressure,TPR; total PA resistance(mPA/cardiac output). This classification proved to be hemodynamically significant.At G-1 elevation of mPA and disappearance of apical HO may occur and CI may be relatively maintained.At G-2 CI may decrease without elevation of mPA and basal HY may disappear.E-A proved to be that of pulmonary hypertension with both low output and high pulmonary artery resistance.It may be possible to estimate pulmonary hemodynamics in mitral stenosis by using DPI.

1344

ESTIMATION OF PULMONARY PRESSURE BY PULMONARY BLOOD RATIO USING IN VIVO Tc-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 Tc-99m was very high and stable (96.6± 0.91%)in our studies. The altered distribution of counts between in 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, r= 0.49 in the erect position and the supine position, respectively.

This simple method for estimation of pulmonary pressure was useful for the evaluation of pulmonary and cardiac-function.

1345

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(P"V"V), and 80% of the increment of the PBV was ΔP"V"V. Simultaneously mean pulmonary artery wedge pressure($\overline{PAW}$) was recorded. From ΔP"V"V and Δ$\overline{PAW}$, pulmonary "venous" compliance was calculated. The results were as follows.

(1) Where $\overline{PAW}$<13mmHg, P"V"V≥270ml, P"V"V-$\overline{PAW}$ plots and their shifts with leg elevation showed that ΔV/ΔP=15.8±8.7(ml/mmHg±SD) It is suggested that they represent short segments of steep(compliant) curves.

(2) Where $\overline{PAW}$≥13mmHg, ΔV/ΔP=10.7±5.8(ml/mmHg ±SD).It is suggested that they represent short segments of flatter(more rigid) curves.