

Evaluation of Myocardial Blood Flow in Man by Means of External Monitoring Method Using ^{86}Rb Cl

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In this report, the measurement of the myocardial blood flow was attempted by means of precordial external counting method using ^{86}Rb Cl with little trouble to patients.

The method presented is based on application of the indicator fractionation principle. (SAPIRSTEIN 1958)

According to the principle, when radioactive indicator ^{86}Rb is injected at once intravenously, its uptake in organ is proportional to their blood flow fraction of the cardiac output. Experimental observations revealed that these relationships lasted during the first 5 or 6 minutes in man. On these grounds the myocardial blood flow (MBF) can be described as follows:

$$\text{MBF} = \frac{\text{Myocardial Uptake of } ^{86}\text{Rb}}{A \times E}$$

where, A=Integrated primary arterial dilution curve

E=Whole body extraction ratio of ^{86}Rb

After a single intravenous injection of ^{86}Rb , precordial counting was made, obtaining simultaneously arterial samples every 1 minute. The same procedure was made using RIHSA in order to calculate the vascular radioactivity, and then, subtracting this values

from the former counting, the myocardial radioactivity was obtained.

Determinations were made in 27 subjects, and their mean values of MBF(ml/min/100 Gm) were 101 in 9 normal young subjects, 127 in 2 with hyperthyroidism, 97 in 7 aged without coronary artery disease and 85 in 9 with coronary artery disease. In all of 24 cases, the second determinations were made following sublingual administration of nitroglycerin or intravenous administration of Intensain (R) (Carbochromen). In 14 subjects without coronary artery disease, their MBF increased, while in 10 with coronary artery disease their MBF did not increase further, after administrations of these drugs.

With this method, we can also determine the value of cardiac output in each procedure, and in addition to measurement of the systemic blood pressure, it is possible to evaluate the cardiac work simultaneously. Then we observed that there was the tendency to decrease in both cardiac output and cardiac work in aged subjects, and definite decrease in the subjects with coronary artery disease, while young normal subjects did not respond with definite inclination, after administrations of these drugs.

Estimation of Blood Flow through the Portopulmonary Anastomosis Following Splenopneumopexy by the Use of Radioactive Krypton (^{85}Kr)

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As the surgical treatment for portal hypertension, especially for Budd-Chiari syndrome,

splenopneumopexy, resecting a part of the left diaphragm, and fixing the lung and spleen