lows: R to L,5.6±0.6sec; R to P,3.1 ±0.4sec; P to L,2.4±0.4sec. R to P was usually longer than P to L, and this ratio was 1.3 though half cases with intracardiac shunt were less than 1.0 and one case bearing obvious R to L shunt was greater than 6.0. Curve pattern could distinguish between aoetic and other valvular disease, and show any findings of intracardiac shunt. The patter of heart failure due to various cancers was resemble control.

Scintiphot sequence exposed less than 1sec referring the dilution curve could clearly demonstrate not only shape and size of every cardiac chamber but abnormal flow attributable to intracardiac shunt.

Measurement of Total Myocardial Blood Flow with ^{43}K and Scintillation Camera

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It is the primary purpose of the present report to demonstrate the feasibility and reliability of using 43-K with a scintillation camera to measure the total myocardial blood flow as well as its imaging of flow distribution.

The method was based on the indicator fractionation principle, that the uptake of the radioactive potassium or rubidium by the heart muscle epuals the fraction of cardiac output supplying the myocardium after single intravenous injection of the tracer. Thus, combinding the myocardial uptake and the total amount of injected dosis in the term of the external counting rate, the myocardial blood flow can be obtained as a fraction of cardiac output.

The recent availability of 43-K and scintillation camera can facillitate the complete delineation of the myocardial region separating from the surrounding region and attain the relative independence from the uncertainty of the geometrical problem.

Ten dogs were injected intravenously with 43-K and the rapid passage of the initial bolus recorded by serial frames collected every 0.6 seconds by a scintillation camera with a numerical distribution matrix. The accumulation of the radioactive material in the myocardium was determined by the collection of similar distribution matrices every minute and delineating the area identified on the scan as the heart border.

Following the in vivo measurement the entire heart was excised and compared with an aliquot of the injected dose. Finally the total content of the myocardium was assayed by a well scintillation counter.

Reasonable agreement has been achieved between estimation of the fraction of dose in the myocardium determined in vivo and the measurement of myocardial uptake on the excised heart. Because of difficulties in ascertaining the heart border on the scans, a deconvolution program has been applied to the matrices to sharpen the transition between country levels.