3 mci.of Tl-20I was injected intravenously,both in the sustaining supine position strictly at rest, and during upright exercise by bicycle ergometer.

At least IO minutes after injection, the human distribution of the radio activity concentration was studied using SHIMAZU SCC-IO50.

The data then were processed by the computer,and the percent activity per organ was determined : the heart 5%,liver I3%,kidney I4%,abdomen 23%,arms 5%, legs I5%,lung I3%,and thyroid 2%,respectively.

There was relatively little difference in the above distribution among individuals studied,as far as the person has been strictly at rest and sustaining supine position.

In contrast,during exercise by bicycle ergometer, the whole-body imaging showed a significant difference in the organ distribution,i.e.,3-fold accumulation of activity was observed in the leg (I5%→4I%),and a decrease of activity in abdomen (23%→I4%),kidney (I4%→7%),liver (I3%→7%), respectively.

It is expected that after further experience and validation,the total-body imaging could be usefull in detecting the distribution of cardiac output in a variety of clinical situations.

figure I.

LAD disease on CAG		Hypoperfusion on Stress Scintigram +	−
+	13	12	1
−	17	2	15

Sensitivity : 12 13 **92%** false negative : 1 16 **6%**
Specificity : 15 17 **88%** false positive : 2 14 **14%**

figure 2.

RCA disease on CAG		Hypoperfusion on Stress Scintigram +	−
+	10	9	1
−	20	0	20

Sensitivity : 9 10 **90%** false negative : 1 21 **5%**
Specificity : 20 20 **100%** false positive : 0 9 **0%**

figure 3.

LCx disease on CAG		Hypoperfusion on Stress Scintigram +	−
+	11	6	5
−	19	1	18

Sensitivity : 6 11 **55%** false negative : 5 23 **22%**
Specificity : 18 19 **95%** false positive : 1 7 **14%**

EVALUATION OF LEFT VENTRICULAR FUNCTION BY RADIONUCLIDE ANGIOCARDIOGRAPHY. A COMPARATIVE STUDY WITH ECHOCARDIOGRAPHY

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The radionuclide(RI) imaging technique of the left ventricle(LV),as a measure to characterize the functional state of LV in a variety of heart diseases, was evaluated. The RI angiocardiography,involving the procedures of "the equilibrium method(ECG-gated cardiac blood-pool imaging) and "the first pass method", was compared with echocardiography in the analysis of parameters relating to various aspects of LV function; ie,contractile state of the myocardium, pump performance and asynergy of the contraction.

In the determination of ejection fraction of LV in 10 cases with valvular heart diseases,comparison with echocardiography showed an excellent correlation with a correlation coefficient,r=0.875, while the correlation was poor in 14 cases with recent or old myocardial infarction(r=0.427). Thus it would appear that RI angiocardiography,in which counting rate is analysed, is more accurate in cases with ventricular dilatation and/or wall motion abnormalities.

Since ejection fraction is influenced not only by contractile state of LV,but also by loading status of LV(i.e.;preload or afterload), a more sensitive index to reflect the contractile state will be required. In this respect, a beat-to-beat analysis will give an additional information. Echocardiography is more suitable, at the present time,for the analysis of beat-to-beat changes of ejection fraction or change of circumferential shortening velocity of LV, when wide range of R-R intervals is present or contractile state is potentiated by interventions ;ie. postextrasystolic potentiation.

It can be expected that improvements of technique in RI angiocardiography,including better detecting technique with a higher counting rate and less statistical error, will allow the beat-to-beat analysis and more comprehensive evaluation of LV function.