

mM) was significantly accelerated when compared with physiological level of 6.24mM. Also four half life decay of ^{85}Rb accompanied by the four times increase of Rb concentration does not affect on the ^{86}Rb uptake of RBC.

(5) Free ^{86}Rb separation by resin column. After incubation of ^{86}Rb , RBC and serum with digitalis free ^{85}Rb EKT-test tube with special resin column made this separation with

ease.

(6) Effect of RBC aging on ^{86}Rb uptake was measured. Stored RBCs more than 2 weeks old could not be used as standard for this study.

Preliminary fundamental study proved this method is feasible for the assay of plasma digoxin level. Clinical study is now being progressed.

Study on peripheral circulation of the muscle clearance with radioactive iodine —A study of measuring condition—

H. FURUDATE

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We have made collimators for the study of peripheral circulation by the muscular clearance of radioactive iodine and made a comparative study of Tsuyatscan, isoresponce curve, resolution and sensitivity. As a result of this examination, we demonstrated that long cylindricol collimator with the in side diameter of about 10mm is suitable for the measurement of peripheral circulation.

Next, we examined in respect of some

measuring conditions using rabbits. The longer time constant and the more volume of injection, the smaller the muscle clearance. Therefore, we must measure fixed time constant and fixed volume of injection. The muscle clearance showed an extremely high level as compared with the subcutaneous clearance. There is no difference between right and left leg in the muscle clearance.

Studies on Cerebral Circulation Applying Intravenous One Shot of RISA

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We try to find a clinical test for cerebral circulation which gives less distress to the subjects. We would like to say that cerebral circulation must be considered as the problem about both brain and heart.

(Method, Results & Discussion) We use the cardiac function test already reported at the meeting of this society; that is the simultaneous recording of radio-activity from RISA in heart and brain. These records

are simulated by the computers, and cerebral blood flow (CBF) is calculated from cerebro-systemic blood flow ratio (CSR). That doesn't show CBF exactly, by reason of extracorporeal method, but normal value of CBF is 63.0 ± 13.5 ml/min./100g/1.48m². On the other hand, 99 cases with suspected cerebral circulatory disturbance are put to the test. Nine of 17 cases with arteriosclerosis have low CBF. Some cases with heart diseases, cerebral thromboses or cerebral vascular insufficiencies including transient ischemic attacks have low CBF, also. On the other hand, one half of hypertensive cases without complication have high CBF.

We can find relationship between cardiac index (CI) and cerebral-systemic blood flow ratio (CSR), because our method tests circulation in both heart and brain. Cerebral blood flow in cases with low CI may be compensated by increase in CSR. Therefore, we

find the existence of regulating system of cerebral circulation. This hypofunction is followed by CBF-abnormality. A few cases with cerebral thromboses or cerebral vascular insufficiencies have normal CBF, because, we suppose, they survived, and because their CBF from our test doesn't represent local condition in brain. High CI or high CSR in hypertensive cases without complication is followed by high CBF.

(Summary) Our test is not the direct method of measuring cerebral circulation, but it has a big advantage, that is, we can discuss cerebral circulation as function concerning with brain and heart. Cerebral blood flow in case with low cardiac index may be compensated by high cerebro-systemic blood flow ratio. We would like to say, this method is important for studies on regulating system in cerebral circulation.

Studies on changes of body fluid distribution produced by surgical operation (II)

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Changes in body fluid distribution and renal function produced by surgery of the digestive tract were studied using radioisotopes for measurements of the extracellular fluid volume (²²Na), circulating plasma volume (RISA), and total body water (HTO); of glomerular filtration rate (endogenous creatinine) and renal plasma flow (paramino-hippuric acid). Measurements were done on the pre- and post-operative samples taken simultaneously.

Seven cases of gastric or duodenal ulcers and six cases of gastric carcinoma were studied. Either resection or anastomotic pro-

cedure was performed under endotracheal or epidural anesthesia. Intravenous fluids were given at the rate of 30 ml/kg./hr., consisting of lactate Ringer's solution and 5% glucose in water in the ratio of 3 to 1.

GFR was found to rise and RPF to fall, resulting in a rise in filtration fraction. There was slight decrease in ECF, and no significant change was seen in CPV and TBW.

The patients with malignant lesion seemed to have lower values than those with ulcer and showed wider variations of values.