

per femoral veins of adult dogs were exposed bilaterally. Thrombus was induced by injection of 5000 u. of thrombin directly into the proximally ligated femoral vein. On the contralateral side, no incision or manipulation was performed. ^{131}I -UK was injected into the brachial vein of dogs, each after 30 min., 24 hours, and 48 hours following the induction of thrombi. The uptake of RA to the thrombi was recorded by rate meter jointed to the two scintillation detectors which were set to the same sensitivity, and placed each over the bilateral upper legs. Over the site of the fresh thrombi were observed distinctly increased RA and its accumulation till

three hours after the injection. Over the site of 24-hour-aged thrombi, fairly increased RA was seen as compared with the nonclotted control leg, but its accumulation was little seen during the observation. Over 48-hour-aged thrombi, the difference of RA was very little.

These observations support the concept that urokinase, a plasminogen activator, will localize on a fibrin clot, and presumably plasminogen within fibrin clot. The trial to detect occult thrombi by external scintillation counting seems to have the limitation that thrombus is up to 24 hours old or less.

VII. Thyroid Gland

The Long-term Follow-Up Study of ^{131}I Treatment for Thyrotoxicosis

M. MATSUOKA, M. HARA, T. MIKUNI, Y. EGUCHI, M. UTOSAWA,
T. SATO, Y. SATO and M. KOBAYASHI

Niigata University, Department of Internal Medicine, Niigata

In 1966, the long-term follow-up study was done about the thyrotoxic patients treated by ^{131}I between 1954 and 1964.

The condition of 321 cases (66 males and 255 females) was known, as they were either attending the clinic or information regarding death had been received.

Seven were dead, and the causes of death were not related thyrotoxicosis or ^{131}I -treatment. Our youngest patient was 14 years old and the oldest 62 years old.

The method of determining the dose of ^{131}I has been kept constant, except the early cases, aiming to deliver 110 or 115 μCi of ^{131}I per gram of the thyroid gland.

At the time of review 273 (85.5%) of the patients were euthyroid. Diagnosis of euthyroid, free from subjective and objective complaints, was determined clinically without regard to the results of thyroid function tests. 187 (67.8%) patients become euthyroid after a single dose, 68 (24.6%) required two doses, 17 (6.2%) three doses and one has required

four doses. The mean doses of ^{131}I for them were 9.9 mCi. The incidence of hypothyroidism was 5.3% after one year from ^{131}I treatment and reached 19.0% (36 cases) after 10 years, and their mean doses of ^{131}I were 11.7 mCi. The clinical diagnosis of hypothyroidism was confirmed by the thyroid function tests. The occurrence of leukemia following ^{131}I -treatment for thyrotoxicosis is not known at our clinic. In one case thyroid nodule was found. 4 mCi. of ^{131}I was given to a girl of 14 years old and she had been good and well till a nodule was detected in her neck after 11 years from ^{131}I treatment. The histological picture of the nodule showed that of thyroid adenoma or low-grade adenocarcinoma.

Five cases were remaining thyrotoxic at the time of review. Some of them were receiving the antithyroid drugs and were free from complaints with its small dose.

At the follow up study, the ^{131}I - T_3 resin sponge uptake were carried with 176 cases. 43% of clinical euthyroidism showed the low

value. This fact was considered to suggest the presence of subclinical hypothyroidism and occurrence of late developed hypothyroidism.

Serological test, using the tanned red-cell haemagglutination technique, in relation to hypothyroidism after ^{131}I treatment showed

no significant difference in euthyroid and hypothyroid patients, but the incidence of thyroid autoantibody was higher in the late developed hypothyroidism than in hypothyroidism appearing in a year after the ^{131}I treatment.

Studies on the distribution of ^{131}I in human body by whole body counting

Y. MOCHIZUKI and T. KUMATORI

Department of Radiation Health

S. TANAKA and E. YABUMOTO

Department of Clinical Investigation

T. IINUMA, T. ISHIHARA and S. YASHIRO

Department of Physics

The study of the distribution of ^{131}I in the human body is of prime importance both for study of the whole body metabolism of iodine and nuclear health problems.

The original scintigrams were obtained with two collimated NaI (TI) crystals that were motor-driven along a long axis of the body inserting a subject between them, at the various intervals after oral administration of Na ^{131}I . The distortion in scintigrams due to a finite resolution of the collimeter was corrected using the iterative approximation method. Effects of antithyroid drugs such as NaI or mercapazole were also investigated on the distribution of ^{131}I in the body.

Total body retention curve of ^{131}I in a

adult male subject indicated two phases of exponential elimination. The curve of the thyroidal region decreased exponentially after a few days, and the rate of decline of radioactivity was slightly faster than the total body retention. The curve of legs in the second phase indicated increasing tendency and this is probably due to the accumulation of hormonal ^{131}I in the tissue.

Two phases of exponential elimination was also observed in the total body retention curve following administration of the drugs and this suggests the presence of the slowly exchanging inorganic iodine pools in the extra-thyroidal tissue.

^{131}I -Triiodothyronine Resin Sponge Uptake Test in Diagnosis of Thyroid Disorders (IV)

F. KINOSHITA, M. YASUDA, A. MAEKAWA and Y. SHICHIRI

Tokyo Metropolitan Hospital at Okubo

The result of ^{131}I -T₃ RSU test on patients with various thyroid disorders treated at the thyroid clinic of Okubo Hospital in the past 4 years is reported.

1) The average and standard deviation of

^{131}I -T₃ RSU were $31.6 \pm 4.5\%$ in 245 normal subjects ($32.9 \pm 3.9\%$ in 57 men and $31.2 \pm 4.5\%$ in 188 women), $54.1 \pm 7.5\%$ in 224 thyrotoxic patients, $22.3 \pm 2.0\%$ in 22 hypothyroid patients, $30.9 \pm 4.0\%$ in 127 patients