

In case of 18 hypothyroidism patients, less than $5 \mu\text{g}/\text{dl}$ was present in 94% by the former, all cases by the latter method.

3) The correlation between the two methods was as follows; $r=+0.73$ and $P<0.01$. A significant correlation was evident.

4) A simultaneous measurement was made

with every examination by using Monitrol I ($8.3 \mu\text{g}/\text{dl}$) and Monitrol II ($16.4 \mu\text{g}/\text{dl}$), standard serum of known thyroxine contents. The results of both methods were compared with each other, and showed correct amounts of thyroxine.

Comparison of Thyroid Gland Scintiphoto Using $^{99\text{m}}\text{Tc}$ -Pertechnetate and ^{131}I -Iodine

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Thyroid gland image using $^{99\text{m}}\text{Tc}$ -pertechnetate and ^{131}I -iodine were compared in 62 patients. ^{131}I -iodine of $50 \mu\text{Ci}$ to $150 \mu\text{Ci}$ was administered and scintiphoto was obtained at 24 hours after oral administration. Then $^{99\text{m}}\text{Tc}$ -pertechnetate of 1mCi to 5mCi was administered and scintiphoto was obtained at 30 min. after injection.

Results:

1) $^{99\text{m}}\text{Tc}$ -pertechnetate and ^{131}I -iodine

scintiphoto usually gave equivalent results.

2) Scintiphoto could be obtained sooner because of high doses of $^{99\text{m}}\text{Tc}$ -pertechnetate owing to its life as well as its stay in the gland and good images were obtained on high or hypothyroidism.

3) Radiation doses to the gland of $^{99\text{m}}\text{Tc}$ -pertechnetate may be greatly decreased compared with ^{131}I -iodine.

Hemesynthetase Activity and Ferrokinetics in Hyperthyroidism

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Hyperthyroid patients and rats with thyroid induced hyperthyroidism were used for measure of hemesynthetase activity and ferrokinetics.

Procedure:

1. Hemesynthetase activity was measured in bone marrow cells by counting radioactivity of ^{59}Fe incorporation into hemin in the incubation mixture of the enzyme preparation, protoporphyrin, and the isotope (modification of Labbe's method).

2. Plasma iron clearance was determined by measuring the rate of decline of radioactivity in blood (0.2ml . in rat, 1ml . in human) obtained 5, 60, 120, and 180 min. after intravenous injection of ^{59}Fe ($0.2 \mu\text{Ci}$ in rat, $10 \mu\text{Ci}$ in human). The degree of incorporation of iron into red blood cells, or iron utilization, was determined after intravenous injection of ^{59}Fe . Each blood sample was obtained on intervals 1, 5, 10 days, and radioactivity was counted by well-type scintillation

counter. The rats, were divided into three groups:

1. control group
2. group I (thyroxine was administered 300 μg per day for a week)
3. group II (thyroxine was administered 300 μg per day for two weeks)

Results.

1. Hemesynthetase activity in hyperthyroidism was as low as one sixth of normals.

2. Plasma iron disappearance half-time (PIDT 1/2) was as follows:

control: 97.0 \pm 20.0 min.
group I: 104.0 \pm 23.5 min.

group II: 64.7 \pm 20.5 min.

PIDT 1/2 of group II was faster than control. These differences were statically significant ($P < 0.01$). But here was no significant difference group I and controls. Percentage of iron utilization was as follows:

Control: 82.1 \pm 10.1%

group I: 85.4 \pm 8.1%

group II: 88.3 \pm 9.7%

These differences were not significant.

3. PIDT 1/2 and percentage of red cell utilization in two hyperthyroid patients were faster and increased, as simulated with iron deficiency anemia.

The Treatment of the Thyroid Cancer with Radioactive Iodine

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We reported our clinical examples in treating distant metastasis of the thyroid tumors with radioactive iodine. We treated 4 patients with radioactive iodine. Of the 4 patients, 1 had papillary adenocarcinoma, 1 had follicular carcinoma, 1 had trabecular carcinoma, and 1 had tubular adenoma (so-called malignant

adenoma). Out of them, in 3 cases our treatment with radioactive iodine were effective on their X-ray films.

We consider that radioactive iodine is an important therapeutic agent in selected cases of metastatic thyroid cancer.

Tissue Concentration of ^{131}I -Toluidine Blue in Rats and Dogs with Special Reference to the Parathyroid Concentrations by Intracardiac and Intravenous Administration

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Tissue concentration of ^{131}I -toluidine blue was studied in rats and dogs after intracardiac and intravenous injection. The parathyroid-thyroid ratio and parathyroid-neck muscle ratio was significantly higher in rats only after

intracardiac injection. Neither intracardiac nor intravenous injection of ^{131}I -toluidine blue (including infusion) gave a high parathyroid-thyroid ratio in dogs as compared to intravenous injection in rats.