

TU of the patients with the cerebral palsy of spastic type corresponded only in 21%, while those of the patients with the cerebral palsy of athetotic type did in 83%, but this reason is at present unknown.

Of 7 patients of pituitary dwarfism, RU and TU after TSH were both increased in 5 cases and not changed in one case, but in another case only TU was increased without change in RU.

Both RU and TU in a case of dwarfism with primary hypothyroidism were not chang-

ed after TSH.

The discrepancy between RU and TU as the indices of TSH-response, observed in some of the investigated cases, seems to be similar phenomenon as that between PBI and TU after TSH, which has been occasionally noted by other authors.

On this investigation, especially in the cases of dwarfism, it will be concluded that the in-vitro test of TSH-response of the thyroid gland by means of RU be available.

The Follow-up Studies with Triosorb Test After ¹³¹I Treatment for Hyperthyroidism

H. OYAMADA, H. MATSUDAIRA and S. KUMAOKA

National Cancer Center Hospital, Division of Radiology

Recently, we have made follow-up studies, with Triosorb test (T_3 test) in relatively short intervals, on the cases administered iodine-¹³¹I (¹³¹I) for the treatment of hyperthyroidism.

The distributions of the values of T_3 test (T_3 values) obtained from 233 euthyroid, 43 hyperthyroid and 15 hypothyroid cases were as follows: the euthyroid cases ranged from 17.5 to 40.0% and 94% of them were found in between 22.5% and 35.0%, the hyperthyroid ranged from 35.0% to 67.5% and the hypothyroid ranged from 15.0 to 25.0%.

The serum obtained from the patient after the administration of ¹³¹I contains radioactivity for some time. In such cases, T_3 test was performed with a blank test.

Generally speaking, immediately after or sometimes even a month after the administration of ¹³¹I there was a tendency to keep T_3 values somewhat higher than its original level.

Among the patients who became euthyroid, some showed a gradual decrease in T_3 values to normal level. Some others showed relatively steep drop and reached once to hypothyroid level, demonstrating sometimes mild and transient hypothyroid symptoms for a short time; then, T_3 values went up to normal level. In one case, T_3 values were kept continuously high for 2.5 months; then, showed a gradual decrease to normal level.

In two cases on whom hyperthyroidism recurred, T_3 values were found not so high. In one case, T_3 value was only 34.6% with ¹³¹I uptake 64.8% and BMR +34%. In another case, T_3 value was 39.5% with ¹³¹I uptake 74.5%, BMR +43% and PBI 11.9 μ g/dl. To both cases administered 30 mg. of Balance daily for about 5 weeks; then, T_3 values as well as other laboratory test in both returned to normal level without re-administration of ¹³¹I.

In cases who became hypothyroid, one showed T_3 values kept completely normal for about 8 months; then, decreased to hypothyroid level suddenly, showing myxedema. In another case, T_3 values were kept definitely high (45%) with clear hyperthyroid symptoms even in 2 months after the administration; then, it dropped suddenly to 16% within 2.5 weeks, showing gradual manifestation of myxedema.

In the cases that became hypothyroid, the increase in T_3 values immediately after the administration of ¹³¹I were not so higher than the original levels. However, this is not conclusive because the number of induced hypothyroid was too small.

As a conclusion, changes in T_3 values with the lapsing of time after the administration of ¹³¹I were so variable in each case that, from the T_3 values within one or two months

after the administration, the anticipation of the final results of ^{131}I treatment for hyperthyroidism is impossible. In cases of recur-

rence, T_3 values were found not so high and re-administration of ^{131}I is not always necessary.

Study on Determination of Free Thyroxine in Serum

T. NAKAGAWA, S. HAMADA, T. MORI, R. MORITA, T. SAKURAI
K. FUJII and K. TORIZUKA

The Second Division, Department of Internal Medicine, Kyoto University, School of Medicine, Kyoto

At present, we do think that the amount of ^{131}I to be given should be kept small and the continuous observation of the patients after the administration is necessary.

It has been generally accepted that free thyroxine in serum is responsible for a thyroid status in the subject. Recently Clark and Horn presented "free thyroxine" index, a factor proportional to the concentration of free thyroxine, and showed that values for this index were closely related to the thyroid status in various thyroid diseases. Our studies confirmed the results indicated previously, and showed that this index was still better than triosorb resin sponge uptake itself.

Further, it was studied to assess the level of free thyroxine by equilibrium dialysis using thyroxine ^{131}I . Tracer dosis of T_4 ^{131}I were added to serum, and incubated at 37°C for 1 hour. There ml. of undiluted serum, containing T_4 ^{131}I were dialyzed against 5–20 ml. of potassium phosphate buffer

(p.H. 7.4, $I = 0.15$) at 37°C for 20–24 hours. Stable thyroxine was added to 3 ml. of dialysate, and was precipitated with 10% MgCl_2 . Radioactivity of the precipitate was determined by a well-type scintillation counter. When 0.02% Merthiolate was added to the outside buffer, the level of free thyroxine was shown to augment with increasing amount of the outside buffer. The same results were obtained in the experiments using further purified thyroxine ^{131}I . However, when Merthiolate was absent in the buffer, the level of free thyroxine did not rise, but rather decreased with increasing amount of the outside buffer. Therefore, it was concluded that Merthiolate increased the level of free thyroxine. Moreover, it was shown that Krebs-Ringer solution diminished the effect of outside volume on the level of free thyroxine, and therefore, it was more suitable than potassium phosphate buffer. The values of normal serum ranged between 0.035 and 0.042.

A New Simple Method for the Determination of Thyroxine in Serum

H. NAKAJIMA, M. KURAMOCHI, T. HORIGUCHI and S. KUBO

Department of Pediatrics, School of Medicine, Chiba University, Chiba

A new simple method to measure serum thyroxine (T_4) was introduced here by using the conventional resin sponge uptake of ^{131}I -triiodothyronine (T_3) (Triosorb test). Different from the conventional resin sponge uptake test, the present method can measure T_4 concentration in the serum, not disturbed

by the amount of T_4 binding protein in the sample serum.

Four ml of 95% ethanol is added to 2 ml of the sample serum and is mixed well. After centrifuging, 4 ml of the ethanol supernatant is dried up in a test tube under nitrogen gas. Then, 1 ml of ^{131}I - T_3 in Tris buffer, and 0.5