

Results of the Treatment of Hyperthyroidism with Radioiodine

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From 1953 to 1966, more than 11500 patients with hyperthyroidism were treated with ^{131}I at 80 hospitals in Japan, and 7494 individual records of the treated patients were collected from 56 hospitals. According to these reports, results of the treatment were summarized as follows: cured or markedly improved in 72.5%, hypothyroid in 3.6% of them and in the remainder not improved or unknown about the results. Of these 7494 persons inquiry was made by mail about the present state of their health, complicated diseases, cause of death, if patient was already dead, and their children born after treatment with ^{131}I . Reply on these inquiries was returned from 4494 of them. If the reply of the inquiry were taken into consideration, the rate of incidence of hypothyroidism should be about 1% more than the percentage above

described. The incidence of hypothyroidism was a little more frequent in patients younger than 50 years in comparison to those older than 50 years, and more frequent in the patients treated before 1963 than those after 1963. But no correlation was evidently demonstrated between the incidence of hypothyroidism and the dose of ^{131}I in mCi, 40 patients with various malignant neoplasms found after the treatment were reported, and 28 of them were diagnosed as such more than 2 years following the treatment, including 2 thyroid, 8 breast, 5 stomach, 4 uterine, 2 liver, 2 lung cancers, and others. Acute myeloid leukemia was occurred in 2 patients within 2 years after the treatment.

Further survey and analysis are now carrying on.

Measurement of Serum Insulin by ^{125}I Insulin

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After incubation of 0.1 ml reconstituted binding reagent with 0.1 ml of standard insulin or plasma samples at 4°C for 12 hours, 0.1 ml insulin- ^{125}I was added to the mixture and incubated at 4°C for 24 hours. The precipitates yielded during incubation were collected by micro-filtration through "oxoid" cellulose acetate membrane; each solution sucked up from the tubes using a micro-teat-pipette was filtered through the membrane under 180~200 mmHg vacuum suction.

Then the tube and pipette were washed out twice with 0.5 ml phosphate buffer (pH 7.4) containing bovine albumin. Filtration procedure was repeated with the washings and then the treated filter dish was wrapped in a 5 cm square of aluminium foil which was made into a pellet. Radioactivity of precipitates on the

filter dish was counted using well-type scintillation counter. Standard insulin curve was obtained satisfactorily with this technique. The reproducibility of duplicate determinations was also confirmed. Repeated freezing and thawing of the insulin binding reagent had no significant influence on the results of assay.

But it was confirmed that value of IRI tends to become low when freezing or thawing of plasma is repeated. Some experiments were carried out to find causes of major errors in the assay.

As the results it was recommended that (1); filtration procedure should be done carefully under constant vacuum suction power since it is the important step to get quantitative collection of precipitated insulin. (drop-

wise filtration around the center of filter membrane prevents a leakage of the solution.) (2); the larger size of filter membrane (at

least 26 mm in diam.), the better. (3); for washing procedure of the tubes high concentration of albumin solution should be used.

Radioimmunoassay of Insulin by Modified Method of Hales and Randle

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The purpose of this paper is to report the insulin blood level measured by the method modified by Hales and Randle.

a) Method

Mixture of 0.5 ml of standard insulin and/or assay sample, 0.5 ml of ^{125}I -Insulin and 0.5 ml of insulin binding precipitate is incubated for 24 hours at 4°C. 0.1 ml of normal G.P. serum and anti γ -globulin serum compound is added to it and the mixture is centrifuged for 15 min at 2500 γ pm to avoid supernatant.

The precipitate is washed by buffer solution and it is centrifuged twice. The precipitate is counted.

b) Calculation

B/B_0

Where B is counting rate and B_0 is counting rate at the insulin level zero.

B/B_0 is obtained by the standard curve made by the standard insulin and the insulin level of the material is calculated.

c) Insulin level of the normal individuals.

The insulin level at the fasting time measured by this method is 35.2 ± 4.0 ($\mu\mu/\text{ml}$). The level is 125.2 ± 8.4 ($\mu\mu/\text{ml}$) at one hour after ingestion of 50g of glucose, 80.2 ± 14.7 ($\mu\mu/\text{ml}$) at two hours and 44.6 ± 7.4 ($\mu\mu/\text{ml}$) at three hours.

It is found that the standard deviation of the blood sugar level is large in the same patients.

This method is simpler and easier than the original method.

Immunoassay of Human Growth Hormone with a Double Antibody Method

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The present report describes a double antibody procedure for radioimmunoassay of human growth hormone (HGH) utilizing ^{125}I human growth hormone tracer. All dilutions were made with veronal buffer, pH 8.6, containing 0.5% bovine serum albumin. Anti human growth hormone serum was obtained from guinea pig which received five weekly

subcutaneous injections of 1 mg HGH (Raben) emulsified in complete Freund's adjuvant. The appropriate dilution of antiserum (1:100000) was that which binds about 20-40% ^{125}I -HGH added when no unlabelled growth hormone is present.

Anti guinea pig gamma globulin serum was obtained from rabbit and dilution of 1:2 was