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RADIOASSAY OF TSH RECEPTOR BLOCKING ANTIBODIES IN HYPOTHYROID PATIENTS. J.Konishi, K.Kasagi, Y.Iida, T.Misaki, T.Nakashima, K.Endo and K.Torizuka. Kyoto University School of Medicine, Kyoto.

To clarify the incidence and the nature of TSH receptor related antibodies in hypothyroid patients, we measured TSH-binding inhibitor immunoglobulins (TBII) in sera of 43 each of patients with goitrous Hashimoto's thyroiditis and primary myxedema, and studied the effect of the patients' IgG on both basal and bovine TSH (0.1mU/ml)-induced cAMP levels in cultured human thyroid adenoma cells.

TBII were detected in 7 (16%) and 9 (21%) patients with Hashimoto's thyroiditis and primary myxedema, respectively. All of TBII-positive IgGs from patients with primary myxedema were inhibitory on cAMP increase induced by TSH and a significant correlation was observed between TBII and the inhibitory activity. On the other hand, the inhibitory activity was observed in 11 of 34 TBII-negative IgG from primary myxedema and 2 of 20 TBII-negative IgG from Hashimoto's thyroiditis. TBII-negative inhibitors were lower in their titer than TBII-positive ones. Blocking type of TBII was also observed in a hypothyroid patient who had been treated for Graves' disease with methimazole. The study revealed the presence of TSH receptor blocking antibodies in goitrous hypothyroid patients as well as in primary myxedema.

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CHANGES IN THYROTROPIN DISPLACING IMMUNOGLOBULINS (TDI) IN SERA OF PATIENTS WITH GRAVES' DISEASE DURING LONG TERM TREATMENT WITH THIONAMIDE DRUGS: EVIDENCE FOR AN INCREASE AT THE TIME OF RECURRENCE. N.Akimoto, H.Uchimura, T.Mitsuhashi, Y.Imai, H.Ikeda and F.Takaku. Third Department of Internal Medicine, University of Tokyo, Tokyo.

We determined TDI's as markers during treatment and follow-up of Graves' patients by using a commercial kit. TDI in sera of 210 Graves' patients, who were followed 0-25 years (21 untreated, 189 under therapy) and 30 in remission assessed by T_3 suppressibility. Nonspecific binding by sera was a little higher than by IgG, albeit negligible. All untreated patients showed positive TDI's. Frequency of positive patients decreased yearly with treatment although 25% of patients remained positive after 6 years of therapy. After that time, TDI were positive in 61% of follow-up patients and drug therapy could not be stopped because of recurrence. TDI were strongly positive in 2 of 30 patients in remission. Changes in TDI were studied in 10 patients at the time of relapse or exacerbation. TDI gradually increased in parallel with increases in serum T_3 and T_4 in 9 of them. After drug therapy was initiated or increased, 5 of 9 patients did not show a decrease in TDI, although T_3 and T_4 were reduced.

These results suggest that drug therapy should be continued in TDI positive patients because it appears that positivity is closely correlated to the activity of Graves' disease in such patients.

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Fundamental study of direct binding of ganglioside in thyroid tissue to 125-I TSH. M.Tanno, H.Yamada, T.Nagashima, A.Yamagata, and K.Chiba. Tokyo Metropolitan Geriatric Hospital, Tokyo.

To determine the specific binding of ganglioside (GLS) to 125-I TSH, GLS were isolated from normal thyroid tissue and direct binding to TSH was studied on thin-layer chromatography (TLC). Comparative study of GLS content and GLS composition were also performed among various thyroid diseases.

GLS content of normal thyroid tissue is about 200ug/dry weight, while those of 3 cases of hyperthyroid were increased to 2.0-2.5 fold above the normal thyroid tissue. By analysis on the two-dimensional TLC, GM3 and GD3 as major component, GM1, GD1a, GD1b and GT1b as minor component were observed in normal thyroid tissue. While GM3 is markedly increased in content and that of GD3 was relatively decreased in hyperthyroidism. By direct binding study of 125-I TSH to GLS by the method of autoradiography, activity of TSH was detected in GLS fraction and lower phase (mainly phospholipids), while radioactivity could not be detected in neutral fraction. In further experiments of binding studies, radioactivity of 125-I TSH could not be detected at any GLS components, but was observed in other components, which had different migration from those of GLS. These evidences suggest that there is possibility of existence of contaminant components in GLS fraction which can bind directly 125-I TSH on the present study.

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THE DETERMINATION OF THE VOLUME OF THE THYROID GLAND BY ULTRASONIC SCANNER. N.Yokoyama, M.Izumi, S.Morita, S.Yamashita, S.Ohtakara, I.Kubo, S.Okamoto, N.Ishikawa*, K.Ito*, N.Matsunaga**, S.Honbo** and S.Nagataki. The First Department of Internal Medicine, the Department of Radiology**, Nagasaki University School of Medicine, Nagasaki, Ito Hospital*, Tokyo.

The accurate estimation of the volumes of the thyroid glands are very important for the evaluation and the management of patients with thyroid disorders. We employed a new excellent ultrasonic scanner (Aloka Co.) to determine the volumes of the thyroid glands and estimated values were compared with their weights obtained at operation. The method of ultrasonic scanning is based on recording cross-sections through the gland at 0.5cm intervals on a film by a multiimaging camera (Sakura Co.). The clear outlines of the thyroid glands on this film were traced, and their volumes were calculated by a computerized digitizer. The weights of the thyroid glands were measured by adding the surgeon's estimate of what had been left to the weight of the thyroid removed surgically. The volumes of the thyroid glands estimated by ultrasonic scanner were well correlated with the their weights obtained at operation ($r=0.99$). This suggests that the determination of the volumes of the thyroid glands by this new ultrasonic scanner is accurate, simple and clinically very useful.