107

CIRCULATING THYROGLOBULIN IN PATIENTS WITH THYROID CANCER WHO HAVE HAD THYROIDECTOMY.
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In order to follow the patients who have had thyroidectomy for differentiated thyroid cancer, we have measured circulating Tg by RIA using "Tg-free" human plasma. This modified RIA allows measurement of Tg at lower concentration by eliminating non-specific effects of human plasma. All normal subjects had detectable Tg levels with a mean of 17.5ng/ml ranging from 4 to 35ng/ml. Tg levels were determined in 80 patients who had undergone thyroidectomy. Of 19 patients with total thyroidectomy, 10 patients had undetectable Tg values and 5 patients with metastatic thyroid cancer had high Tg levels (range 65-270ng/ml). Four patients had detectable Tg levels but didn't show recurrent signs of carcinoma.

In 61 patients with partial thyroidectomy, 23 patients had elevated Tg levels ranging from 40-300ng/ml, 10 of whom had recurrent or metastatic thyroid cancer but 13 showed no evidence of active carcinoma. Of 20 patients on thyroid replacement following partial thyroidectomy, 17 patients had normal Tg levels. On the other hand, in 41 patients without thyroid medication, 20 patients had elevated Tg values.

We conclude that postoperative high Tg levels reflect thyroid carcinoma recurrence and Tg secretion might be suppressed by thyroid replacement.

108

A COMBINATION METHOD OF HUMAN SERUM THYROGLOBULIN AND THYROID SCINTIGRAPHY FOR DIFFRENTIAL DIAGNOSIS OF THYROID NODULES.
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There is no good method for diagnostic evaluation of patients with thyroid nodules. The purpose of this study is to improve it by adopting combination of human serum thyroglobulin and thyroid scintigraphy. Human thyroglobulin(HTG) levels in sera from all the following patients were measured and both Tc-99m and Tl-201 thyroid scintigraphies were carried out for 14 of 25 patients with well differentiated thyroid cancer(TC), 11 of 12 with follicular adenoma(FA), 5 of 8 with nodular goiter(NG) and 9 of 16 with cyst(C). The Tl-201 scintigraphies of all patients with TC and FA showed hot nodules. Most of the Tc-99m scintigraphies of them showed cold nodules. Both Tc-99m and Tl-201 scintigraphies of all patients with C and NG demonstrated cold nodules except one patients with NG whose scans both showed hot nodules. HTG levels in sera from all patients with TC,FA,NG and C varied. It was found that HTG levels in sera from patients with FA and metastatic TC elevated and that HTG levels in sera from patients with non metastatic TC were normal. These results suggest that thyroid nodules with both cold Tc-99m and Tl-201 scintigraphies are NG or C regardless of HTG levels in serum and that among thyroid nodules with hot Tl-201 scintigraphy, those with normal HTG levels in serum are non-metastatic TC and those with elevated HTG are FA or metastatic TC.

109

QUALITY CONTROL OF IN VITRO THYROID FUNCTION TESTS.
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We reported previously that interkit and interlaboratory variations in in vitro thyroid function tests were unexpectedly great and there was a need for good quality control of kits and improved performances in assay laboratories. Present survey was aimed to evaluate if hormone assays by clinical assay laboratories were improved in the accuracy and precision by comparing the data in 1980 with those in 1979. Aseptic serum pools(2 hyperthyroid;2 euthyroid;1 hypothyroid;1 pregnancy) were prepared and aliquots of the same specimens were sent to 8 assay facilities for estimations of T_3,T_4,T3U and TSH once a week over six weeks. The sample bottles were numbered differently in each case. Accuracy and precision of the values from each companies were analysed with coefficients of variations(CV) of all data of each component assayed by the same kit. With regard to T_3,T_4 and T3U determinations, much improvement was observed in all laboratories in 1980 but CV for TSH assay were still more than 10% in each institute. It is concluded that T3,T_4, and T3U estimations were improved but there was a need for better performances in TSH assay in the participating laboratories;and it is useful for them to take part in periodic studies in order to obtain an unbiased evaluation of their performances.

110

RADIORECEPTOR ASSAY OF TSH USING TRITON-SOLUBILIZED RECEPTOR AND ITS CLINICAL APPLICATION.
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Radioreceptor assay of TSH was established using the TSH receptor solubilized in 10 mM Tris/HCl, 50 mM NaCl, pH 7.4, containing 0.5% Triton X-100 from human thyroid plasma membranes. To 100µl solubilized receptors (150µg protein), 50µl receptor-purified I-125-TSH and 50µl unlabeled TSH (Thytropar^R) or IgG (1mg) were added, and the mixture was incubated for 1 hr at 25°C. Separation of the bound and free hormone was performed by PEG precipitation. A standard curve was obtained ranging from 100µU/ml to 100mU/ml TSH, with the only cross reactivity to crude hCG (0.03%). Scatchard analysis revealed a high affinity site of $K_a=1.1\times10^9 M^{-1}$. TSH-binding inhibitor immunoglobulins (TBII) were detected in 19 (75%) out of 28 patients with Graves' disease and in 3 patients with Hashimoto's disease. The detectability of TBII in Graves' patients was higher than that in the assay using membrane receptor. Thus the assay was considered useful for studying the nature of both the TSH receptor and its antibodies.