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STUDIES ON RADIOASSAYS OF SERUM THYROGLOBULIN. T. Misaki, T. Kosaka, T. Nakajima, Y. Iida, K. Endo, J. Konishi, K. Torizuka and K. Ikekubo.\* Kyoto University School of Medicine. Kyoto. \*Kobe Central Municipal Hospital. Kobe.

Two commercial kits for radioassay of thyroglobulin (Tg), a double-antibody RIA (A) and a solid-phase immunoradiometry (B) were studied in comparison with a double-antibody RIA developed by ourselves (C). Both showed satisfactory results in their reproducibility and stability of radioactive reagents employed. In clinical samples with negligible anti-Tg activity, values obtained from these three assays correlated well each other, though B gave somewhat higher values than A or C at higher range. When determined by an  $^{125}\text{I}$ -Tg binding assay accompanied with A, anti-Tg was positive in as much as 40% of sera from thyroid patients who were negative for "thyroid test" (TRC). To examine effect of such small amount of anti-Tg, we added IgG with high TRC titer to the assay systems. As concentration of the IgG increased, apparent Tg value of A showed biphasic change; initial decline followed by upturn at higher range, whereas that of B showed monotonous decrease.

These data indicate that although radioassays of Tg may be affected by subtle amount of anti-Tg which can not be screened by TRC, the presence of anti-Tg in such amount will not give falsely high values.

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CHANGES IN SERUM THYROGLOBULIN IN PATIENTS WITH THYROID CANCER AFTER TOTAL THYROIDECTOMY. S. Morita, F. Matsuzuka, Y. Hayashi, A. Kobayashi, K. Kuma, H. Tamai<sup>1</sup>, O. Fukino<sup>1</sup>, and S. Nagataki<sup>1</sup>. Kuma Hospital. Department of Psychosomatic Medicine, Faculty of Medicine, Kyushu University<sup>1</sup> and the First Department of Internal Medicine, School of Medicine, Nagasaki University; Japan.

Changes in serum thyroglobulin (Tg) in patients with thyroid cancer or with Graves' disease after total thyroidectomy were observed. Subjects consisted of 19 cases with thyroid cancer, 3 cases with Graves' disease, and 1 case with adenomatous goiter. Serum samples were collected before and 1, 2, 3, 4, 5, 7, 9, 12, 15, and 28 days after operation in these subjects. We measured thyroid hormones (T<sub>4</sub>, FreeT<sub>4</sub>), TSH, and serum Tg in each serum sample and investigated correlations between serum TSH and Tg. Conclusions are as follows: 1) serum Tg in patients with Graves' disease and adenomatous goiter reached to highest values at 1st postoperative day and then decreased gradually. 2) In 7 of 13 cases (54%) recognizing positive trace of  $^{131}\text{I}$ -scintigraphy, serum Tg decreased and increased again. Serum Tg in these 7 cases showed another increase 9 to 12 days after thyroidectomy when serum TSH elevated to about 50 uU/ml. 3) In 6 cases recognizing no trace of  $^{131}\text{I}$ -scintigraphy, serum Tg did not rise at all but decreased sharply.

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THE CLINICAL EVALUATION OF SERUM THYROGLOBULIN CONCENTRATIONS IN FOLLOWING PATIENTS WITH THYROID TUMOR: THE EFFECTS OF VARIOUS FACTORS ON THE SERUM THYROGLOBULIN LEVELS. K. Ikekubo, A. Yamada, T. Hamasaki, S. Bito, T. Ishikawa, T. Akamizu, K. Sawada, T. Ishihara, T. Mori, T. Kousaka, T. Misaki, Y. Iida, K. Endo, J. Konishi and K. Torizuka. Kobe Central Municipal Hospital. Kobe. and Kyoto University School of Medicine. Kyoto.

The effects of endogenous THS, radioiodine ablative treatment, palpation, needle biopsy and thyroidectomy on serum Tg levels were studied in patients with adenoma and differentiated cancer. Serum Tg was measured by a double antibody RIA (Eiken kit). Serum Tg and TSH levels tended to decrease under thyroxine replacement in all 5 patients. Serum Tg and TSH were increased after T<sub>3</sub> withdrawal in 2 thyroidectomized patients with lung metastases. These results that Tg release is controlled by TSH. Serum Tg levels were markedly elevated and remained for several weeks by I-131 therapy. In certain patients significantly higher Tg levels were found immediately after palpation of tumor. Serum Tg levels rose soon after needle biopsy in most (16 of 19) patients and returned to base line 2 wk later. Serum Tg levels increased after thyroidectomy in 3 cases and decreased to reach normal Tg on 10th day, while serum T<sub>3</sub> and T<sub>4</sub> decreased during 1-4 days following surgery and gradually increased to preoperative values. The present study indicate that we should consider the effects of various factors in the Tg evaluation.

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EVALUATION OF SERUM THYROGLOBULIN LEVELS IN POST-TOTAL THYROIDECTOMY PATIENTS WITH METASTASIS FROM THYROID CARCINOMA. K. Kusakabe, S. Kawasaki, M. Maki, S. Nara, M. Hiroe, J. Kurihara, H. Demura, Y. Fujimoto and T. Yamasaki. Tokyo Womens Medical College, Tokyo and National Institute Radiological Science. Chiba.

Serum thyroglobulin (Tg) level was measured using the double antibody radioimmunoassay in twenty-five patients of metastasis from thyroid carcinoma previously submitted to total thyroidectomy and I-131 ablation of residual thyroid tissue. The site of metastasis was lung in 10 cases, bone in 5 cases, bone and lung in 6 cases and lymph node in 4 cases. In six patients the scan was negative, but in these cases the clinical and/or radiological examination revealed the presence of non-functioning metastasis. The normal serum Tg level in the forty-four control subjects was ranged from 1.9 to 35.3 ng/ml (mean ± 2SD).

The serum Tg levels of four without metastasis by initial I-131 therapy were within 5.7 ng/ml in the euthyroid state. Of seventeen cases with metastasis, serum Tg levels were greater than 70 ng/ml in 15 and between 14 to 70 ng/ml in 2. In these two cases, one case had lung metastasis and another had bone metastasis, none showed abnormal X-ray findings. The serum Tg levels were elevated in patients with residual metastasis during hypothyroidism. Measurements of serum Tg level is sensitive in detecting residual metastasis from thyroid carcinoma including negative I-131.