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CLINICAL DIAGNOSIS OF THYROID DISEASES USING Tc-99m AND Tl-201 SCINTIGRAPHY. T. Kuwauchi, S. Iwata, A. Takasu, T. Nishimura, K. Sakurai, Y. Nakanishi, H. Matunaga, Department of Otolaryngology, Fujita-Gakuen University Medical School Toyoake Aichi.

In this presentation, we were very interested in the usefulness and validity of thyroid scanning with Tc-99m and Tl-201 for clinical diagnosis of thyroid diseases. Thyroid scanning was performed on 37 cases, 19 cases of malignant tumors, 13 cases of benign tumors, 4 cases of chronic thyroiditis, and a case of adenomatous goiter. In the case of nodules which is cold with Tc-99m and hot with Tl-201, the lesions were observed to be solid tumors such as adenomatous goiter, adenoma and cancer and the higher accumulation of Tl-201 into the nodule in this group may be suggestive of follicular adenoma. In delayed phase tested 1hr later Tl-201, the accumulation into the nodule is more characterized in malignant lesions. Tl-201 was advantageous to evaluate the presence of metastatic tumors in the neck. The cold nodules with both Tc-99m and Tl-201 is benign cystic lesions.

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SONOGRAPHY OF THE SCINTIGRAPHICALLY UNDETECTABLE THYROID NODULES. A. Kuwajima, T. Michigishi, H. Bunko, N. Tonami and K. Hisada Department of Nuclear Medicine, Kanazawa University, Kanazawa.

Sonography and pertechnetate thyroid scintigraphy were performed in 84 patients having thyroid nodules confirmed by operation. Thirty nodules can not be detected by scintigraphy, while, 21 of them can be demonstrated by ultrasound. They consist of 3 papillary adenocarcinomas, 10 follicular adenomas, 3 cysts and 5 nodules of adenomatous goiter. The intrathyroidal location of them are thus: 10 nodules in the upper or lower pole of the gland, 2 in the anterior part of the lobe, 6 in the posterior part of the lobe, one in the isthmus, one in the center of the lobe and multiple in one case. Moreover, 4 nodules can not be detected on palpation. They are 3 follicular adenomas and one nodule of adenomatous goiter. The size of them is from 4 to 6 mm in the diameter.

Sonography of the thyroid gland, we think, becomes an indispensable modality in the detection of the nodules, especially of the palpable but scintigraphically undetectable nodules and of the impalpable nodules associated with diffuse enlargement of the gland.

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DETERMINATION OF SERUM FREE THYROXINE BY RADIOIMMUNOASSAY IN EQUILIBRIUM DIALYSATE. M. Nishikawa, M. Inada, K. Naito, H. Ishii, K. Tanaka, Y. Mashio and H. Imura Second Division of Internal Medicine, Kyoto University School of Medicine. Kyoto

Described here is a direct radioimmunoassay (RIA) for free T₄ determined in the dialysate obtained from equilibrium dialysis of serum. The results are compared with those obtained by the equilibrium dialysis using I-125 as a tracer (Sterling's method) and by Amerlex free T₄ kit provided by Kaken Chemical Co. Ltd.

I-125 T₄ (SA, 5600 Ci/g) was prepared by iodinating 3,5-T₂ using chloramine T and the T₄ antiserum used was that of T-4-RIA-KIT II provided by Dainabot RI Laboratories at the further dilution of 1:200.

The mean free T₄ concentration determined by RIA in equilibrium dialysate was 1.35 ± 0.16 (mean \pm SE, n=6) ng/dl in normal controls: the value was not significantly different from that obtained by Amerlex kit (1.65 ± 0.09 ng/dl), but was significantly lower than that by Sterling's method (2.32 ± 0.13 ng/dl). In non-thyroid illness, serum free T₄ concentrations by the Sterling's method (3.15 ± 0.34 ng/dl) were significantly higher than normal controls, but those by the present method and Amerlex kit were not significantly different from normal controls.

These data suggest the reliability of the direct RIA and Amerlex T₄ kit for determination of serum free T₄.

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STUDIES ON FREE THYROXINE MEASUREMENT WITH AMERLEX FREE T₄ KIT. K. Matsumura, T. Nakagawa, M. Taguchi, N. Shinoda, Department and Clinical lab. of Radiology, Mie University Hospital, Tsu.

Amerlex Free T₄ RIA kit was fundamentally and clinically evaluated. The standard curve covers the range of 0-10.0ng/dl showing steep slope that decreases from 55% to 10% of B/T. Values for B/T in standard curves increases with prolonged incubation time, approaching almost plateau values after incubation time of 60min. The coefficients of variation estimated in three pooled sera from hyperthyroidism, normal and hypothyroidism were less than 16% for intraassay and less than 15% for interassay. Values for free T₄ in sera from hyperthyroidism diluted with various concentration of hormone-free sera were either underestimated or overestimated relative to the expected values. These results were attributed to the concentrations of hormone-free sera by which the unoccupied TBG concentrations of original sera were either increased or decreased, respectively. The free T₄ concentration in 17 adult normals was 0.82 ± 0.21 ng/dl (mean \pm SD). In various diseases and health, the free T₄ concentration measured with RIA correlated well with the free T₄ concentration measured with equilibrium dialysis ($r=0.978$). This correlation was better than that seen between free T₄ index (T₄/Res-O-Mat T₃) and free T₄ concentration with equilibrium dialysis ($r=0.946$).