Plenary Session

Diagnosis of Cold Thyroid Nodule with $^{201}$TI Scintigraphy
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$^{201}$TI-chloride scintigraphy was performed in 45 patients with cold thyroid nodule.

$^{201}$TI scintigram was positive in 17 of 18 thyroid cancer (94.4%), 8 of 20 adenoma (40.0%), 1 of 2 adenomatous goiter (50.0%) and all of 5 chronic thyroiditis (100.0%). Seventeen lesions with positive $^{201}$TI concentration in thyroid cancer were all cellular. The metastatic cervical lymphnodes in two cases and the metastatic lung lesions in one case were visualized by $^{201}$TI.

In one thyroid cancer with negative $^{201}$TI concentration the lesion was mostly occupied by degenerative cysts.

All of the eight positive lesions with adenoma were of cellular type, whereas out of 12 negative with adenoma 10 lesions were found to have either cyst formation and/or colloid degeneration.

One of two adenomatous goiter was negative with $^{201}$TI which also had cyst formation.

All of five cases with chronic thyroiditis were positive with $^{201}$TI and had not any cyst formation or degeneration.

When the cold nodule was demonstrated to be positive with $^{201}$TI, a statistical chance of the lesion being a cellular type was 100.0% and a risk of its malignancy was 54.8%. On the other hand, the nodule with negative $^{201}$TI concentration had a 14.3% chance of cellularity and a 7.1% risk of malignancy. $^{201}$TI scintigraphy is of use in the differential diagnosis of the cold thyroid nodule.

Metabolism of Thyroxine in Various Diseases
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It has been reported that in addition to conversion of T4 to T3, monodeiodination of T4 produces reverse T3 (rT3), and T3 or rT3 can be deiodinated to produce 3′-T2, 3,5′-T2, 3′, 5′-T2. Recently we have developed sensitive radioimmunoassays for measurement of rT3 and 3,3′-T2 in unextracted serum using ANS to inhibit binding to serum proteins. Sensitivity, specificity and reproducibility were satisfactory in the assays. Using these assays and TetrasorbR and T3–RIA kitR of Dainabot, serum levels of T4, T3, rT3 and 3,3′-T2 were measured in various thyroidal and nonthyroidal diseases, i.e. untreated Graves’ disease, Graves’ disease during therapy, Graves’ disease in remission, untreated hypothyroidism, T4-treated hypothyroidism, cord blood, pregnancy, starvation, anorexia nervosa, chronic hepatitis, liver cirrhosis, diabetes mellitus, steroid therapy and other chronic nonthyroidal illness. In all of the above diseases, serum concentrations of some of the T4-metabolites differed greatly from the normal range calculated from normal subjects (29 male, 20 female). In kinetic studies performed in starved rabbits, increase in serum rT3 concentration was