I. Thyroid and Access or Thyroid

Thyroid Scintigraphy Using ^{201}Tl-chloride

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A prospective study of thyroid scintigraphy obtained with both ^{201}Tl-chloride and Na^{131}I has been performed in 41 patients of nodular thyroid diseases. 14 benign adenomas; 14 adenocarcinomas; 2 malignant lymphomas; 1 metastatic carcinoma; 3 cysts; 4 Hashimoto's diseases and 1 tuberculosis. Some cases were scanned with ^{67}Ga-citrate, too.

In 13 cases of 14 adenomas and 13 cases of 14 carcinomas, ^{201}Tl thyroid scan showed accumulation in accordance with cold nodules of ^{131}I thyroid scan. Therefore differential diagnosis between adenoma and carcinoma may be impossible by ^{201}Tl-scan alone. ^{201}Tl-chloride scans were apt to show markedly increased accumulation in follicular adenomas. Detection of follicular thyroid adenoma less than 1 cm may be possible.

In addition to abnormal accumulation of ^{201}Tl-chloride at the primary lesion, ^{201}Tl-chloride scans showed increased accumulation in recurrrnce and distant metastasis of thyroid cancer in 75(6/8), and the accumulation degree of ^{201}Tl-chloride in metastasis was greater than that of Na^{131}I and ^{67}Ga-citrate. A significant advantage of ^{201}Tl-chloride imaging is that we can carry out ^{201}Tl scintigraphy without ceasing the administration of thyroid hormone in patients of thyroid cancer.

In primary malignant lymphomas of thyroid gland increased accumulation was observed by both ^{201}Tl-chloride and ^{67}Ga-citrate scans. Differential diagnosis between adenocarcinoma and malignant lymphoma may be possible by using them.

Clinical Evaluation of Thallium-201 Chloride: Thyroid Uptake in the Thyroid Diseases

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Previously we observed marked thyroid uptake of Tl-201 chloride in patients with goiter (J Nucl Med, 24(12),1977). In the present studies we report our results of thyroid uptake of Tl-201 chloride in the various thyroid diseases. The 30 patients with thyroid diseases including Graves' disease, Plummer's disease, simple goiter, subacute thyroiditis, chronic thyroiditis, nontoxic nodular goiter, primary hypothyroidism, secondary hypothyroidism, was used in this studies. The 5 patients without thyroid disorder was also used for control studies. One mCi of Tl-201 chloride was given intravenously by bolus injection and storage of counts was storted 2,3,5,10,20,25,30, 60,120 and 180 minutes later for thyroid imaging and uptake. The instrument was a gamma camera with a collimator having 10,000 parallel holes for studies; collimator-to-patient distance was 6 cm. The following results was obtained by this studies. (1) Tl-201 chloride was useful for thyroid imaging agent in patients with goiter. (2) Good correlation was observed between thyroid uptake of Tl-201 chloride and thyroid weight estimated by method of Allen et al. (3) Disappearance rate of Tl-201 chloride from thyroid gland was delayed in the patients with chronic thyroiditis and nontoxic nodular goiter. (4) It is possible that differentiate toxic nodular goiter from nontoxic nodular goiter