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Tl-201 CHLORIDE SCINTIGRAPHY IN PARATHYROID TUMOR. M.Fukunaga, T.Fujita, Y.Yonekura, S.Dokoh, I.Yamamoto, R.Morita and K.Torizuka. Dept. of Radiology and Nuclear Medicine, Kyoto University of Medicine, Kyoto.

Although it is important to identify the site of a parathyroid tumor pre-operatively, it is often difficult to locate the involved glands even intra-operatively. In order to study the pre-operative localization of parathyroid tumor, a Tl-201 chloride (Tl) scan was performed on 11 patients with primary hyperparathyroidism.

Serial imaging was obtained over the neck and mediastinum from 5 to 60 min. after the administration of Tl 2mCi. In addition, thyroid scintigraphy with Tc-99m pertechnetate or I-123 was done to define the outer contour of the thyroid gland.

Four patients showed the abnormal accumulation of Tl in the extra-thyroidal region. These patients had the high serum parathyroid hormone level (more than 2.8 ng/ml). Intra-operatively an enlarged parathyroid gland, weighing 1.0 to 10.5 g, was found and resected. Serum calcium concentration fell to the normal range within the 2nd post-operative day.

The maximal accumulation of Tl to parathyroid gland in patients and normal rats was observed at 2 min. after the administration. The uptake disappeared, as time goes on. These results suggested that accumulation of Tl to parathyroid tumor was due to an increased regional blood flow to the tumor rather than to the specific uptake by tumor cells themselves.

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COMPARISON BETWEEN Tl-201-CHLORIDE AND GA-67-CITRATE USED IN THYROID SCINTIGRAPHY. O.Senga, S.Kumeda, G.Kaneko, T.Iwasa, M.Miyakawa, M.Makiuchi and R.Furihata. Second Department of Surgery, Shinshu University, Matsumoto.

In the diagnosis of thyroid tumors, thyroid scintigraphy is one of the most important procedures. Recently some reports have stated that Tl-201-chloride (Tl-201) is a very useful agent for thyroid scintigraphy. We presented a report about thyroid scintigraphy using Tl-201 at last year's conference. Ga-67-citrate (Ga-67) is also used as a tumor affinity agent. This time we performed thyroid scintigraphy using Tl-201 and Ga-67, and compared these two agents. With Tl-201 scintigraphy, differentiated carcinoma of the thyroid and low-differentiated type of adenoma almost all showed positive figures, but anaplastic carcinomas were all negative. On the other hand, Ga-67 showed little affinity for differentiated carcinomas and low-differentiated type of adenomas but that it showed a strong affinity for anaplastic carcinomas. From the above mentioned results, thyroid tumors which showed positive figures with Tl-201 scintigraphy and negative figures with Ga-67 scintigraphy were suspected to be differentiated carcinomas or low-differentiated type of adenomas. The tumors which showed positive figures with Ga-67 scintigraphy were all malignant, and furthermore anaplastic carcinomas were suspected if the Tl-201 scintigraphy showed negative figures. Ga-67 scintigraphy is a very useful procedure for diagnosing anaplastic carcinoma, finding distant metastasis and determining the area of irradiation.

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DIFFERENTIAL DIAGNOSIS OF NODULAR GOITER USING SCINTIGRAPHY WITH I-131 AND Tl-201 CHLORIDE. K.Tsutsui, K.Sato, K.Shimizu and S.Watanabe. Department of Internal Medicine Cancer Center Niigata Hospital, Radiology.

Clinical findings on I-131 and Tl-201 thyroid scintigraphy in 47 cases with nodular goiters which were confirmed by surgery were discussed in this paper. The significant findings (p 0.01) of malignant goiter on I-131 scintigraphy were 1) filling defect without enlarged lobe, 2) completely no uptake in cold area and 3) sharp margin of filling defect. On the other hand, the finding of convex margin of cold area were observed significantly in benign goiters. In cases of malignant goiter, high uptake of Tl-201 was observed significantly contrast with low uptake or filling defect in benign goiter (p 0.01). In 8 out of 11 cases, metastatic lesions showed positive uptake of Tl-201. With above mentioned findings, the accurate diagnosis which were in 22 of 25 malignant cases and in 16 of 20 benign cases were possible totally in 84.4%. In 3 cases of malignant goiter associated with cyst formation, with multinodular goiter and with Hashimoto' thyroiditis, diagnosis were failed because of atypical findings on scintigraphy. Tl-201 thyroid scintiscanning was effective to diagnose cyst, metastasis, small cancer, deeply developed cancer, Hashimoto' thyroiditis and functioning adenoma.

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DIAGNOSTIC USEFULNESS OF THYROID SCINTIGRAPHY WITH THE COMBINED USE OF I-131 AND PERTECHNETATE M.Kumano, O.Ishida, T.Hamada, K.Tamura, F.Tsuchiya and T.Shimokobe. Department of Radiology, Kinki University School of Medicine, Osaka.

In 82 patients with various kinds of thyroid diseases (Hashimoto's thyroiditis 12, Cyst 9, Adenomatous goiter 16, Follicular adenoma 16 and Carcinoma 29 cases) confirmed by surgery, dynamic scintigraphy with pertechnetate was performed for comparison with an image obtained at 24 hr after administration of I-131.

Those tumor lesions which appeared cold with I-131 showed up quite differently on the pertechnetate scan, appearing warm or hot. This was particularly true in cases of follicular adenoma and follicular carcinoma (21/82 cases).

Using RI angiography, early accumulation of pertechnetate at the location of follicular adenoma and follicular carcinoma seems to indicate hypervascularity in tumor involved lesions.

In cases where diagnosis is difficult using I-131 alone, pertechnetate dynamic scintigraphy makes it possible to improve diagnostic accuracy in the presence of solitary thyroid nodules.