TI-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 School 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 a parathyroid tumor, a TI-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.


Clinical findings on I-131 and TI-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 convexed margin of cold area were observed significantly in benign goiters. In cases of malignant goiter, high uptake of TI-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 TI-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 multinodal goiter and with Hashimoto's thyroiditis, diagnosis were failed because of atypic findings on scintigraphy. TI-201 thyroid scintiscanning was effective to diagnose cyst, metastasis, small cancer, deeply developed cancer, Hashimoto's thyroiditis and functioning adenoma.

DIAGNOSTIC USEFULNESS OF THYROID SCINTIGRAPHY WITH THE COMBINED USE OF I-131 AND PERTECHNETATE. K. Munac, O. Ishida, T. Hamada, K. Tamura, F. Teuchiva and i. 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. The images in cases which showed positive figures with Ga-67 scintigraphy were also malignant, and furthermore anaplastic carcinomas were suspected if the TI-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.