

TUMOR SCINTIGRAPHY WITH Tl-201-CHLORIDE

— COMPARISON WITH Ga-67-CITRATE —

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Tumor scintigraphy with Tl-201-chloride was studied in 54 cases, consisting of 37 of primary lung cancer, and 17 of other various intrathoracic lesions (metastatic lung cancer: 2 cases, esophageal cancer: 6 cases, sarcoidosis: 5 cases, each one case of malignant lymphoma, malignant thymoma, tuberculosis and pleuritis).

Scintigraphy was performed 10, 30 and 60 minutes and 24 hours after intravenous injection of 2 mCi of Tl-201-chloride. In all cases, scintigraphy with Ga-67-citrate was carried out for the comparison with Tl-201-chloride. Scintigraphic findings were classified as: (++) marked accumulation in the tumor, (+) slight~moderate, (-) negative.

The obtained results were as follows.

1) The positive rate and degree of accumulation of Tl-201 were lower than those of Ga-67 in primary lung cancers. Tl-201: (++) 9/37(24%), (+) 19/37(51%), total positive rate 28/37(76%), Ga-67: (++) 18/37(49%), (+) 13/37(35%), total positive rate 31/37(84%). But the positive rate of Tl-201 was similar to Ga-67 in primary lung cancers except those adjacent to the heart.

2) The positive rate of Tl-201 for metastatic lesions in cervix and hilus was similar to, but in mediastinum lower than that of Ga-67.

3) Among all 5 cases of pulmonary sarcoidosis which showed marked accumulation of Ga-67, only one case showed slight accumulation of Tl-201.

4) One of the merits of tumor scintigraphy with Tl-201 was that the tumor image could be obtained within one hour after injection.

Diagnostic Significance of ²⁰¹Tl-chloride Scintigraphy on Thyroid Tumors

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²⁰¹Tl-chloride (²⁰¹Tl-cl) was originally developed as a myocardial scanning agent, but it was found that it has an affinity to various malignant tumors. Recently many reports have stated that ²⁰¹Tl-cl is a very useful agent in the diagnoses of thyroid tumors. This time we tried ²⁰¹Tl-cl scintigraphy and got qualitative diagnoses of thyroid tumors.

Among the 82 cases of thyroid tumors on whom we performed ²⁰¹Tl-cl scintigraphy, we examined 54 cases which were given confident diagnoses. Of 16 cases of thyroid carcinoma, 13 cases were positive (81.3%). 3 cases among the 13 showed an accumulation in the cervical lymphnodes and the mediastinal lymphnodes. Concerning the histological types, there were 13 cases of papillary adenocarcinoma, 2 cases of follicular adenocarcinoma, and 1 case of anaplastic carcinoma. In the 3 cases of negative scanning, 2 cases showed almost complete cystic degeneration and 1 case was an anaplastic carcinoma. Of 35 cases of thyroid adenoma, 8 cases were positive (23.5%). They involved 5 cases of tubular adenoma and 3 cases of trabecular adenoma. 10 cases of colloid adenoma and 16 cases of thyroid cysts were all negative. Of 4 cases of adenomatous goiter, 1 case was positive. In comparison, cases of hyperthyroidism and chronic thyroiditis were all positive, and cases of subacute thyroiditis were all negative.

As to the uptake ratio of ²⁰¹Tl-cl into the thyroid carcinoma and adenoma tissues, it was observed that the carcinoma tissue absorbed 2.65 times as much as normal thyroid tissue, tubular adenoma absorbed 5.45 times as much, trabecular adenoma absorbed 5.67 times as much, but colloid adenoma absorbed 1.65 times as much as normal thyroid tissue.

²⁰¹Tl-cl scintigraphy is not always a useful method for determining whether thyroid tumors are benign or malignant, but it showed valuable information for the cases in which operations were indicated.