152

CRITERIA OF MALIGNANT NODULAR GOITER USED TL-201 SCINTIGRAPHY. K.Suzuki,M.Mashimo, K.Nishimura,T.Miyamae[1],J.Ishii[2],and T.shibata[3].1)Dep. of Radiology.2)4th.Dep. of Internal Medicine.3)2nd.Pathology.Saitama Medical School,Saitama.

We studied 106 nodular goiter patients who were performed both Tl-201 thyroid scan and pathological study.They were classified into 3 groups by histological type;26 cases of malignant(M) group,46 cases of benign non-cyst(NC) group and 32 cases of cyst(C) group.Tl-201scan was performed at 10 min. (Early scan-E)and 3hr.(Delayed scan-D)after I.V. injection.At the same time,radioactivity was recorded on computer.We counted Tumor/Non tumor ratio by Hisada et al[(T-B)/(N-B),B=background].The ratios in E vs.D and E vs.D^2 were evaluated at corelation of histological types.Furthermore,we compared these results with image diagnosis result on 47 cases of nodular goiter excluded C group(M 17,NC 30).The summary results are; 1.By the use of the criteria as above quotation,diagnosis result,especially specificity and accuracy,improved compared the case of image diagnosis.2.If the criteria of M-group is E>1 and E<$(2D^2+5)/7$;sensitivity=76.9%,specificity=92.5%,accuaracy=88.7% 3.In the M-group,disappearance ratio(D/E) showed difference between each pathological types. Follicular ca.=1.18±0.29,Mixed ca.= 1.27±0.29,Papillary ca.=1.54±0.37.

153

DIFFERENTIAL DIAGNOSIS OF THYROID TUMORS BY Tl-201-CHLORIDE DYNAMIC STUDY. K.Kanegawa,K.Sugimura,K.Yamasaki,T.Tanaka, T.Hamada,R.Matsui,Y.Inoue,Y.Kanzawa, S.Nishiyama and M.Kono. Kobe University School of Medicine,Kobe.

In other to find the useful indeces for the differential diagnosis of the thyroid tumors, a dynamic Tl-201 scan using a new method of data analysis was performed in 23 patients with clinically diagnosis of 4 adenomas, histologically proven thyroid nodules consist of 7 adenomas and 12 cancers. After injection of 2 mCi of Tl-201 chloride, a computer acquisition for 60 minutes was performed using a gamma-camera system. Time activity curves obtained on both of the nodules and contralateral normal thyroid tissue were analyzed and following parameters were obtained: T max; T 1/2; distribution index (DI, a ratio of peak counts on nodules and normal thyroid tissue); and perfusion curve(PC, a calculated curve indicating a ratio of activity on nodule and normal thyroid tissue). T max and T 1/2 showed no significant difference. PC was generally descending in adenoma while ascending in cancer, but there were several equivocal cases. DI was significantly higher in patients with adenoma, and appeared useful for differential diagnosis of thyroid nodules.

154

CLINICAL USEFULNESS OF DYNAMIC STUDY IN THALLIUM-201 THYROID SCINTIGRAPHY — MECHANISM OF THALLIUM-201 ACCUMULATION IN THYROID GLAND —

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We reported that a mechanism of thallium-201 accumulation in thyroid nodules depends on the Na^+, K^+-ATPase activity of thyroid gland.

In our study 91 patients with goiter were scintigraphed with thallium-201 chloride and then we determined Na^+, K^+-ATPase activity in the tumor portion and normal one from surgically resected thyroid glands. The initial accumulation of Tl-201 in thyroid nodule was analysed from biochemical and physiological aspects. In this study radionuclide accumulation in Tl-201 scintigraphy was closely correlated with Na^+, K^+-ATPase activity in thyroid nodules.

Thyroid tissue blood flow was measured by the hydrogen gas clearance method during thyroid operation under general anesthesia. Tissue blood flow of papillary carcinoma was only half the blood flow of an ordinary thyroid gland . Blood flows of follicular adenoma was the similar flow of normal thyroid gland. Time activity curve of follicular adenoma was a steep slope, but one of papillary carcinoma was a gentle slope in Tl-201 dynamic study. Wash out of time activity curve was based on tissue blood flow of thyroid nodule was proposed.

155

CLINICAL EVALUATION OF THALLIUM-201 SCAN IN DETECTION OF METASTATIC LESIONS OF THYROID CARCINOMA,ESPECIALLY NECK,MEDIASTINUM, AND LUNG LESIONS.

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To an attempt to define efficacy of Thallium(Tl)-201 scan in detection of metastatic lesions of thyroid carcinoma,following analysis were performed. In 68 patients not received any treatment,results of evaluation of lymph node mstastasis by Tl-201 scan were compared with confirmed stages by operation. Sensitivity,specificity,and accuracy was 63.6%,95.8%,75.0%,respectively. In 51 patients with metastatic lesions who received surgical removal of primary tumor or ablation of thyroid tissue by radioiodine ,combined scan of Tl-201 and I-131(tracer dose) was done . Sensitivity of combined scan was 89.1% in neck or mediastinum lesions, and 91.7% in lung lesions, while 67.4.% and 66.7% with Tl-201 scan alone and 73.7% and 66.7% with I-131 scan alone. It was concluded combined scan of Tl-201 and I-131 was useful in detection of metastatic lesions of thyroid cancer. Adding the measurement of thyroglobulin to combined scan, sensitivity elevated up to 100%.