

showed significantly higher than in normal thyroid tissue around carcinoma, cervical muscle and thyroid adenoma.

Recently, in order to localize the incorporation sites of $^{197}\text{HgCl}_2$ in human thyroid carcinoma, both normal and carcinoma tissues biopsied from surgery were incubated in vitro in $^{203}\text{HgCl}_2$, fixed either by glutaraldehyde-osmium or freeze-drying and embedded in Epon, sectioned and either wet-or dry-mounted for both LM and EM radioautography for both soluble and insoluble forms.

Light microscopically, soluble Hg was observed to localize diffusely in nucleolus and cytoplasm of

normal follicular and carcinoma cells intensely than insoluble Hg. Electron microscopically, soluble and insoluble Hg was observed diffusely in ER, mitochondria and cytoplasmic matrix. In general, soluble Hg concentration was more than insoluble Hg and incorporation of carcinoma was more than normal thyroid tissue.

From these results, it was concluded that most Hg concentrated in carcinoma or normal thyroid tissues was soluble form and that insoluble form might be combined with some protein in ER, mitochondria and cytoplasmic matrix.

Evaluation of ^{67}Ga -citrate Scan for Nonfunctional Thyroid Nodule

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Thirty patients with nonfunctional thyroid nodules were investigated by ^{67}Ga -citrate, to evaluate the diagnostic efficacy of thyroid cancer. The scintigrams were taken with gamma-camera at forty-eight hours after injection of 2 mCi of ^{67}Ga -citrate. Positive scans were found in 8 out of 23 patients with thyroid cancer, all of 5 patients with undifferentiated carcinoma (100%), 2 out of 14 with papillary adenocarcinoma (14%) and one out of 4 with follicular adenocarcinoma (25%). In 7 patients with benign lesion, one with chronic

thyroiditis and one with subacute thyroiditis showed positive scans. In the one patient with undifferentiated carcinoma, which showed to positive accumulation, no uptake of ^{67}Ga -citrate was found at repeated scan after radiation therapy.

Although ^{67}Ga -citrate thyroid scan was less valuable for diagnosis of thyroid cancer, its clinical application was considered to be the diagnosis of undifferentiated carcinoma, and the evaluation of radiotherapy effect.

Studies on the Radioreceptor Assay of TSH

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Thyroid Stimulating Immunoglobulins; TSI have been detected in patients with Graves' disease and Hashimoto's thyroiditis by using radioreceptor assay of TSH. In untreated Graves' patients TSI levels correlated well with thyroid $^{99\text{m}}\text{Tc}$ uptake at 30 min and grades of epithelial hyperplasia of thyroid follicles. These correlations were much better than with LATS activity. There were many patients who had high TSI levels without detectable LATS activity and in these patients close correlation was observed between

TSI levels and LATS-Protector activity.

In these Graves' patients treated with MMI, T_3 suppression test was performed and there were some Graves' patients whose thyroid $^{99\text{m}}\text{Tc}$ uptake were suppressible by T_3 administration, together with detectable levels of TSI and LATS-Protector. Moreover there was a discrepancy between TSI levels and circulating T_3, T_4 concentrations.

In conclusion, about the pathogenetic mechanisms present in Graves' disease TSI would be a candidate but not determined at present.