

## The Diagnostic Value of $^{131}\text{I}$ Scanning in Patients with Thyroid Nodule

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Scintiscanning with radioactive iodine ( $^{131}\text{I}$ ) was carried out in 251 patients with the single thyroid nodule (165 adenomas and 86 carcinomas) during the past 3 years. Nodules were loosely classified as being cold, warm or hot on the scan, and the results obtained are summarized as follows:

1) The scintigram of adenoma showed cold nodule in 68.5%, warm nodule in 29.7% and hot nodule in 1.8%, and that of carcinoma showed cold nodule in 88.4% and warm nodule in 11.6%.

The cold nodule predominates in the both of adenoma and carcinoma, but it is more frequently seen in carcinoma than in adenoma. Since no hot nodule is seen in carcinoma, it has no chance of malignancy.

2) The cold nodule which is smaller than 2cm. in diameter was seen in 33.2% of adenoma and in 64.2% of carcinoma. Therefore, if the smaller nodule than 2 cm. in diameter is cold on the scan, the chances of it being malignant are much greater. However, the larger warm nodule has little chance of malignancy.

3) Since the cold nodule at the upper part of the lobe is seen in 42.9% of adenoma and

in 93.9% of carcinoma, and carcinoma is much frequently located at the upper part of the lobe as compared with adenoma, the cold nodule located there is highly suspected as being malignant.

4) In order to clarify the relationship between the findings on the scan and content of iodinated compounds in the nodular tissue, the following studies were performed.

In the studies on in vivo organification of iodide investigated by means of  $^{131}\text{I}$  paper chromatography, organification of iodide was observed to be slightly inhibited in colloid adenoma and to be remarkably inhibited in tubular adenoma as well as papillary carcinoma. No iodinated compounds were observed in trabecular adenoma and anaplastic carcinoma.

Furthermore, thyroglobulin in the nodular tissue was isolated in the analytical ultracentrifuge, and it was revealed that thyroglobulin was decreased according to the grade of undifferentiation of thyroid tumor.

Thus, it appears that the variation of content of iodinated compounds in the nodular tissue displays the findings on the scintigram.

## The Clinical Significance of RI Scanning and its Limitation

### (2) Thyroid Gland

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The differential diagnosis for goiter and thyroid cancer can be easily made by palpation in most cases. Some of them, however, are hard to be diagnosed. Those examples may be found in cases of early-stage cancer, and the cases with advanced adhesion of goiter. Therefore, the effectiveness of thyroid scintigram in diagnosis may be found

in its application to the cases which cannot be differentiated by palpation.

I classify the scintigram of thyroid phyma into the following three types, cold nodule, hypertrophy, and hot nodule. Cold nodule is subdivided furthermore into five types according to its shape of defects or of margins, or whether or not light shadows can be seen on