its defect. Hypertrophy is also classified into three types according to the shape of defect.

I examined our scintigram of past one and a half year, which includes 403 cases of cancer. In adenoma, cold nodule and hypertrophy with light shadows were most frequently found, while, in cancer, phagedenic defect and total defect of hemithyroid were observed many in number.

Regarding the defect from phyma size, it appears clearly when a phyma grows as big as a pigeon or a chicken egg. But, in the case with small adenoma, a defect can hardly be characterized.

Observing in relation to the site of a phyma; a defect can be seen most clearly when a phyma is located at the pole, whereas in the cases in which it is in the center of the thyroid, the recognition of a defect by scintigram is most difficult.

As for its relation to adhesion and infiltration, some difference could be found between the defects of cancer and inflammation origin although both of them are phagedenic. Erroneous diagnosis in both cases mostly occures when palpation cannot be helpful. But this may be very useful method of differential diagnosis for the clinicians without much experience. The diagnosis by palpation may also be corrected by the employment of scintigram.

Studies on Thyroid Scintigram by ^{99m}Tc Pertechnetate

K. Torizuka

Central Clinical Radioisotope Division, Kyoto University Medical School, Kyoto

The present report deals with the applicability of ^{99m}Tc pertechnetate as an agent for thyroid scanning and its metabolic behaviour. ^{99m}Tc pertechnetate obtained by elution with hydrochloric acid from ^{99m}Mo absorbed on an alumina column. Within 30 minutes after the intravenous injection of 1 mCi of ^{99m}Tc pertechnetate, the thyroid uptake reaches its maximum, while after oral administration it requires 3 hours. A clear distinction was observed between hyperthyroidism and euthyroidism or hypothroidism 30 minutes after intravenous injection and ^{131}I uptake 30 minutes and 24 hours after intravenous injection. The thyroid 30 minute-uptake of ^{99m}Tc also correlated well with the ^{131}I-T_3 resin uptake. These uptake tests, therefore, are considered to be useful in the quick diagnosis of hyper- and hypo-or euthyrodism. Suppression tests with triiodothyronine or potassium thiocyanate gave comparable results with those obtained with ^{131}I. Thyroid 24 hour-uptake of ^{131}I varied with the amount of iodine intake, that is; it was decreased when the daily iodine intake over 500 μg. On the other hand, the 30 minute- or 3 hour-uptake of ^{99m}Tc showed almost no variation with changes of iodine intake. ^{99m}Tc pertechnetate produced significantly better thyroid scans with excellent resolution than ^{131}I. The advantages of ^{99m}Tc pertechnetate appear to be due to its physical characteristics; that is, its short half life of six hours and pure gamma emission of 140 KeV.