

scanned just before surgery and the actual weight of the thyroid gland at surgery were compared.

The calculation of the weight was made according to the following two empirical equations.

$$A. \text{ Weight} = K \times S \left(\frac{RL + LL}{2} \right)$$

$$B. \text{ Weight} = K \times \frac{\pi}{6} (RL \times RW^2 + LL \times LW^2)$$

Where: S is surface area in cm^2

: K is a constant

: RL and LL are a long distance of right and left lobe in cm.

: RW and LW are a width of right and left lobe in cm.

There were relatively good mathematical relationship between calculated and actual weight. However, almost a half of total patients revealed positive or negative error over 30% of actual weight. These results indicate that the calculation of thyroid weight using scintigram is not to be valid.

Radionuclide Angiography of the Thyroid

Y. SUZUKI, H. MORI, H. SETO, T. ABURANO and K. HISADA

Department of Nuclear Medicine, School of Medicine, Kanazawa University

Radionuclide study has played an important role in thyroid clinics, however, the differential diagnosis of the thyroid nodules still continues to be a clinical problem. The purpose of this paper is to describe the result of the radionuclide angiography for evaluation of cold thyroid nodules and discuss its clinical usefulness.

A total of 51 patients was studied in this series. The patient is positioned under the detector of the scintillation camera and about 10mCi of ^{99m}Tc -pertechnetate was injected rapidly into the antecubital vein. Five seconds exposed serial images with Polaroid films were obtained for 35 seconds and a scintiphoto of thyroid was taken 3 minutes post-injection. A regular scanning of thyroid was also done with a rectilinear scanner 20 minutes after injection. In 23 patients, all data of the radionuclide angiography was collected onto the magnetic tape through the small computer and flow curves in the area of interests were obtained later.

Of 16 cold nodules with increased activity in the arterial phase, 11 (69%) were carcinoma and 5 (31%) were adenoma. Among the 16 cold nodules with normal activity in the arterial phase, 8 (50%) were carcinoma and 8 (50%) were adenoma. In the carcinoma, different histological tumors showed similar findings, so the differential diagnosis of these tumors was impossible. All of 4 cysts were visualized as cold areas in the arterial phase which were readily differentiated from other lesions.

The differential diagnosis of the thyroid cold nodules with ^{99m}Tc -pertechnetate seems to be difficult, but the thyroid cyst could be ruled out by this method. The use of ^{99m}Tc -pertechnetate to evaluate thyroid function and anatomy has many advantages over the ^{131}I or another radioactive isotope of iodine, so the radionuclide angiography with ^{99m}Tc -pertechnetate might be useful when this technique is used adjunct to other diagnostic studies in thyroid clinics.