

EXTRA-THYROIDAL NECK RADIOACTIVITY

When thyroidal clearance rates are being measured for research purposes, it is very important to correct accurately for the contribution to the neck counts derived from extra-thyroidal radioactivity. When a thyroidal uptake is required purely for clinical purposes, this is not so important because the range of variation of normal uptakes is quite large. Therefore, very few thyroid clinics throughout the world have taken the trouble to set up the procedures for accurately measuring thyroidal clearance rate as a routine diagnostic test.

Hilditch *et al* (1) have recently drawn attention to the importance of this problem and have afforded a method of solution based on radioisotope scanning. In 1955 Oddie, Meschan and Wortham (2) also drew attention to this problem, having the same criticisms of the results of Myant, Corbett, Honour and Pochin (3) and Berson, Yalow, Sorrentino and Roswit (4) that have been stated again by Hilditch *et al* (1). Oddie *et al* (2) afforded a solution through the study of normal, Lugol's treated and athyroid patients. Both Oddie *et al* (2) and Hilditch *et al* (1) found that the fraction of extra-thyroidal neck radioactivity, expressed as a fraction of the radioiodine remaining in the body and not in the thyroid, is not constant and does not fall as rapidly as the plasma radioiodine.

The numerical agreement between the two studies is remarkable. Hilditch *et al* (1) found that the fraction of extra-thyroidal whole-body radioiodine that was seen by the collimated counter in the neck 30 min after injection was some 81% of its value 3 min after injection. For the same quantity Oddie *et al* (2) found a value of 90%, but they made proper correction for the renal excretion occurring during the first 30 min. This would have the effect of raising the value over that given by Hilditch *et al* (1). The amount of renally excreted radioiodine would be expected to be about 5-10% at 30 min, and this would bring the two values into agreement, considering the errors involved in each technique.

While both methods give essentially the same re-

sults, and each thus affords an accurate correction for extra-thyroidal neck radioactivity, it would appear that the method of Oddie *et al* (1,5) is preferable. This is because their method involves only the use of a thyroid counter and does not require the use of a scanner. Accurate correction can thus be made with simpler equipment, and the renal clearance of radioiodine is taken into account properly. This method of measuring radioiodine clearance is in use in about six centers throughout the world, and its ready application in a busy routine thyroid clinic is amply demonstrated by the fact that in the Royal North Shore Hospital some 6,000 clearance rates are measured by this method each year.

JOHN MYHILL
 Institute of Medical Research
 Royal North Shore Hospital of Sydney
 and Department of Surgery
 The University of Sydney
 Sydney, Australia

REFERENCES

1. HILDITCH, T. E., GILLESPIE, F. C., SHIMMIMS, J., HARDEN, R. MCG. AND ALEXANDER, W. D.: A study of extra thyroidal neck radioactivity using a radioisotope scanner. *J. Nucl. Med.* **8**:810, 1967.
2. ODDIE, T. H., MESCHAN, I. AND WORTHAM, J.: Thyroid function assay with radioiodine. 1. Physical basis of study of early phase of iodine metabolism and iodine uptake. *J. Clin. Invest.* **34**:95, 1955.
3. MYANT, N. B., CORBETT, B. D., HONOUR, A. J. AND POCHIN, E. E.: Distribution of radioiodine in man. *Clin. Sci.* **9**:405, 1950.
4. BERSON, S. A., YALOW, R. S., SORRENTINO, J. AND ROSWIT, B.: The determination of thyroidal and renal plasma I¹³¹ clearance rates as a routine diagnostic test of thyroid function. *J. Clin. Invest.* **31**:141, 1952.
5. ODDIE, T. H., MESCHAN, I. AND WORTHAM, J.: Thyroid function assay with radioiodine. 2. Routine calculation of thyroidal and renal rate factors. *J. Clin. Invest.* **34**:106, 1955.