Iodine-131 Whole-Body Scan for Post-Surgical Follow-up of Differentiated Thyroid Carcinoma

TO THE EDITOR: In reference to the article published by Ronga et al. (*1*), we have followed 153 patients for 10 yr after surgical and radioiodine treatment of differentiated thyroid carcinoma. Like Ronga et al., we used ^{131}I whole-body scan (WBS) and serum thyroglobulin (Tg) measurements with an immunoradiometric (IRMA) method employing two monoclonal antibodies (International Cis-France) in the follow-up of these patients. Our findings agreed with the conclusion of Ronga et al. in that neither Tg levels nor WBS alone can determine the existence of metastases with absolute accuracy. At the same time, treatment with thyroid hormone therapy decrease Tg levels in some patients with functioning metastases (40% of our cases) under critical values (maximum value expected in patients without functioning thyroid tissue). These Tg levels increased to pathologic values after withdrawal of thyroid therapy. However, we did not find the same results presented by Dr. Ronga et al. in patients of Group 1 (absence of clinical, hormonal, or scintigraphic evidence of thyroid activity). Our Tg values (under critical value) did not change after suspension of thyroid hormone therapy. Ronga's observations indicate that in 10/14 patients, Tg values increased significantly to pathologic values after suspension of thyroid hormone therapy.

We believe that this fact could indicate cross-reactions of the antibodies utilized by Ronga et al. with circulatory products out of Tg.

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Geography and The Human Brain: Representing the Cortex on Flat Paper

TO THE EDITOR: In the November issue of *The Journal of Nuclear Medicine*, Lamoureux et al. describe a method for two-dimensional representation of three-dimensional brain SPECT data (*1*). Our earlier work in this field led to a similar method that we, however, believe does offer some advantage to the one described in the recent article (*2,3*).

In geography, numerous standard techniques exist to represent spherical surfaces on flat paper (*4*). The reason for the diversity of methods resides in a problem which is basic to all map projections: no projection can at the same time maintain angles, surfaces, and lengths. Any given projection therefore should be looked upon as a trade-off between the preservation to some degree of some of these features. However, the preservation properties of each projection can be defined with mathematical accuracy. Visually, this information may be presented by the projection of circles of unit radius, so-called indicatrices, spread over the datum surface. This information allows the user to choose the projection that is suited best for each specific application.

For the problem at hand—representing the brain's cortex—for instance, the preservation of surfaces is of some priority, as this characteristic would permit easy visual comparison of, for example, the extent of infarcted areas. Therefore, we choose a normal conical projection with intersecting circles at 27.5° and 62.5°. This projection indeed offers an acceptable trade-off, minimizing both area and angle distortions.

In our method, which is described in more detail elsewhere (*3*), cortical activity is integrated along the radii of a sphere inscribed in the data cube, starting from a center point that is selected interactively. For each pixel on the projective surface (the final map), the computer then calculates the coordinates of the corresponding element of the datum sphere and puts the contents of the latter into the former. The result is one single map that presents the whole cortex.

Because their "equatorial map" admittedly introduces surface distortions towards the "poles," Lamoureux et al. introduce a second type of map, which they call "hemispheric." However, it is easy to realize that this type of map also produces surface distortions, located this time at the "equator." Thus, Lamoureux et al. end up with a set of three maps per patient, each with its own distortions. We believe that this gets short of the primary reason to use mapping techniques: to display the three dimensional data in a comprehensive way, so that the eye of the observer catches the relevant features in one view. On the other hand, integrating the information comprised in three different maps is likely to require mental gymnastics of its own.

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