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FEBRUARY 1961

Superimposed Optical and Gamma-Ray Scanner Images

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Whole-body gamma-ray scanning has been used for some time to locate functioning thyroid tissue in patients suspected of metastatic thyroid disease. The patient is given a tracer dose of ^{131}I and at 24-96 hr later is scanned to detect any lesions that may take up the isotope. When the gamma-ray image shows an area that concentrates ^{131}I , the site of the uptake should be located as accurately as possible. One method is to superimpose the gamma-ray

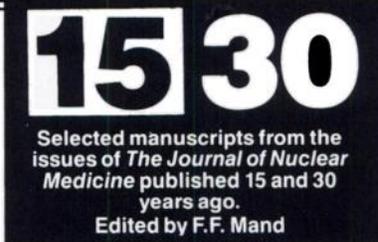


image of an X-ray radiograph, as reported by West. The area of iodine concentration is thereby located with respect to the X-ray anatomy of the patient. However, this procedure increases the radiation dose received. Therefore, we have built an apparatus that automatically superimposes an optical photograph of the patient on the gamma-ray image.

The gamma-ray scanner used for this purpose employs ten scintillation counters mounted in a lead shield that moves over the patient. Each counter is connected to a glow lamp, which flashes with every count detected. As the counters move slowly over the patient, a moving image of the glow lamp is projected onto photographic film. The pattern of radioactivity is reproduced as a pattern of dots on the film. We have added a telephoto lens and mirror system to this, which allows photographing the patient on the same film. Magnification and location of the photographic image are such that it coincides exactly with the size and location of the gamma-ray image. ■

FEBRUARY 1976

Inadvertent Iodine-131 Therapy for Hyperthyroidism in the First Trimester of Pregnancy

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Although it is well known that [^{131}I] sodium iodide therapy after the 12th week of pregnancy may result in an hyperthyroid child, clinical data regarding such administration are lacking. This information would be useful, since inadvertent administration is most likely to occur early in pregnancy. As thyroid consultants, we are contacted 3-4 times each year by anxious physicians who have administered ^{131}I for hyperthyroidism only to discover subsequently that the patient was a few weeks pregnant. The advisability of therapeutic abortion is the primary concern. The literature is surprisingly silent on this point.

Letters of inquiry (963) were sent to members of the American Thyroid Association and the Endocrine Society, who were selected based on their likelihood of treating thyroid patients. The physicians were asked:

1. How many of their thyroid patients had received therapeutic doses of ^{131}I during the first trimester of pregnancy?
2. How many of these patients were advised to seek a therapeutic abortion?
3. How many of these patients carried to term under observation?
4. Of the deliveries, how many babies were observed with fetal abnormalities upon birth?

For the babies with abnormalities, the physicians were further asked to provide:

1. The estimated week of pregnancy of the ^{131}I administration.
2. Urine pregnancy test results (if performed).
3. The date and dosage of ^{131}I therapy.
4. Thyroid function tests results (if performed) in hyperthyroid infants, the age at which hyperthyroidism was diagnosed, indications of mental deficiencies (if any), and the child's current age.

Of the 963 physicians surveyed, 517 (54%) responded. A total of 237 patients inadvertently treated with ^{131}I while pregnant were reported by 116/517 physicians.

When this survey was planned, we assumed that by this time everyone admin-

istering ^{131}I therapy would routinely perform a pregnancy test for patients of child-bearing age. Therefore, we did not request this information. However, 22 physicians offered comments indicating that our expectations were incorrect. For example, one physician said that he administered ^{131}I therapy upon the request of the attending physician and was not a participant in the patient's clinical evaluation. Another physician indicated he was not concerned with pregnancy testing because it was his understanding that the fetal thyroid does not concentrate ^{131}I in the first trimester, and that after the first trimester the diagnosis of pregnancy should be obvious.

The survey data suggest that the majority of physicians do not recommend therapeutic abortion for pregnant patients who inadvertently receive ^{131}I therapy in the first trimester. This conservative approach seems justified by the finding that the rate of fetal and neonatal abnormalities was no greater than that reported for uncomplicated pregnancies. Of perhaps greater concern was the discovery that urine pregnancy tests are still not performed routinely, even in major medical centers. ■