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Thyroid Carcinoma Metastatic to Pituitary

TO THE EDITOR: We have treated a patient with metastatic carcinoma of the thyroid who developed panhypopituitarism from a pituitary metastasis while undergoing iodine-131 (^{131}I) therapy. The diagnosis of pituitary deficiency was not established until after thyroxine therapy was reinstituted.

A 44-yr-old male had papillary thyroid carcinoma for at least 25 yr. Multiple surgical procedures, including mediastinal exploration and a tracheostomy for regional recurrence of the disease, were performed. Eight years ago, we saw him for a radioiodine (^{131}I sodium iodide) metastatic survey. That examination did not reveal any abnormal activity. A repeat study 1 yr later showed right mediastinal uptake. He was treated with 180 mCi of ^{131}I. Follow-up images, 6 mo later, showed improvement but persistence of activity in the right mediastinum. Exploration of the chest, 1 yr after this, demonstrated a large mass of metastatic thyroid carcinoma which was surgically removed. He was again treated with ^{131}I (205 mCi). Imaging with the therapeutic dose of ^{131}I revealed abnormal activity in both right and left mediastinal areas, skull, chest wall and left epigastrium.

Sixteen months later, exogenous thyroid medication was discontinued for 6 wk. A therapeutic dose of ^{131}I sodium iodide (250 mCi) was again administered. Prior to the radioiodide therapy, the serum TSH level was 55 mU/ml (normal 0–6.5). Imaging, following ^{131}I treatment, demonstrated multiple small foci in the mediastinum, pelvis, rib cage, and skull (Fig. 1). There was a midline skull lesion. A technetium-99m-diphosphonate bone scan also showed multifocal abnormality involving the skull, ribs, spine, and pelvis. Following this ^{131}I therapy, the patient began to lose weight, feel weak, and become hypotensive and hyponatremic. Thyroxine therapy was reinstituted, but he did not improve. He was admitted to the hospital for further endocrine evaluation. At 30 days after radioiodine therapy, serum cortisol was undetectable (normal = 4–24 μg/dl). Serum LH was 2.7 IU/l (normal for males = 3–20 IU/l). The serum FSH was 2 IU/l (normal for males = 2.5–15 IU/l), and serum testosterone was below 15 ng/dl (normal for males = over 300 ng/dl). Skull radiographs showed an abnormal (demineralized) sella, and a subsequent CT scan revealed a large intrasellar pituitary tumor. The patient was treated medically for secondary adrenal insufficiency and hypogonadism and improved dramatically. Transsphenoidal excision of a pituitary tumor was performed, and the tissue diagnosis was metastatic papillary thyroid carcinoma of the pituitary. About 13 mo later, the patient was given 250 mCi of ^{131}I. However, the mediastinal metastases continued to grow. He succumbed to massive intrathoracic hemorrhage. This case illustrates that papillary carcinoma of the thyroid can metastasize to the pituitary resulting in panhypopituitarism. Symptoms of hypopituitarism may be difficult to separate from those of hypothyroidism, which may be induced in these patients for purposes of ^{131}I therapy.

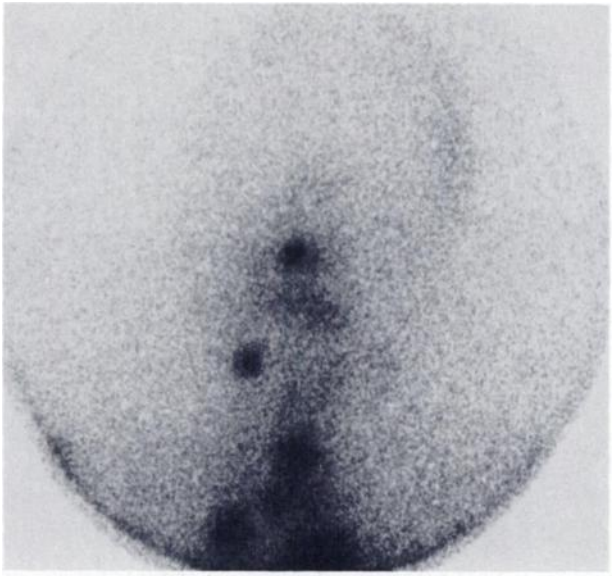

FIGURE 1
Anterior view of head, neck and upper thorax obtained 7 days after administration of therapeutic dose of radiodiodide. Multiple lesions, including one in midline of skull, can be noted

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Use of a Cardiac Phantom for Intersystem Survey

TO THE EDITOR: We were interested to read the paper by Makler et al. (*1*) in which they report their use of the Vanderbilt phantom to establish the variability of ejection fractions measured by a number of hospitals in an interhospital survey.