this complication has been described primarily in neonates and infants,[1] such additional verification of the position of the catheter may be particularly important in these groups. It is not clear whether imaging would be appropriate for confirmation of location in adults — and if so, what type of imaging — given this single case report.

Practitioners should always be mindful of toxicity when infiltrating local anesthetic. Torri argues against the use of bupivacaine because of its potential toxicity. The most conservative estimate for a toxic dose of bupivacaine without epinephrine is 2 mg per kilogram of body weight. In an adult weighing 70 kg, the maximum dose for a 0.25% concentration is 60 ml, and the maximum for a 0.5% concentration is 30 ml. Local infiltration with such doses has been reported to be safe and to result in acceptable blood levels.[2,3] Markedly smaller amounts than this should be required for local analgesia for the procedure, and lidocaine with epinephrine is always an option if the practitioner prefers to avoid bupivacaine. Although plain lidocaine may last sufficiently long to complete femoral venous catheterization in the majority of cases, we have frequently observed insufficient duration of analgesia in particularly challenging cases and in instances in which learners are receiving instruction. These factors should be taken into account when selecting the appropriate local anesthetic.

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Diagnosis of Poorly Differentiated Thyroid Cancer with Radioiodine Scanning after Thyrotropin Alfa Stimulation

TO THE EDITOR: Poorly differentiated thyroid cancers are rare and can be difficult for surgeons, endocrinologists, and pathologists to identify.[1] These cancers fall into two main histologic categories: insular and other (large cell). Most, but not all, stain with thyroglobulin or thyroid transcription factor 1; those that do not represent particular diagnostic challenges.[1-3] We describe a 60-year-old man who presented with bilateral cervical lymphadenopathy and an enlarged thyroid. Biopsy specimens of cervical nodes and the thyroid gland showed features of poorly differentiated adenocarcinoma of unknown primary origin — possibly pulmonary, colorectal, pancreatic, or thyroidal. Immunostaining for thyroglobulin and thyroid transcription factor 1 was negative. The level of serum thyroglobulin at initial presentation was 800 ng per milliliter. No tumor was found outside the neck with diagnostic imaging, including integrated positron-emission tomography and computed tomography (PET–CT) performed after the administration of ^{18}F-fluorodeoxyglucose. Ultrasonography showed multiple intrathyroidal tumor masses. The patient was unsuccessfully treated with chemotherapy for poorly differentiated adenocarcinoma, which could not be resected because of the extent of the tumor and local invasion.

Since thyrotropin levels were normal, diagnosis of potentially radioiodine-concentrating poorly differentiated thyroid cancer was possible only after stimulation with thyrotropin alfa. After two daily intramuscular injections of 0.9 mg of thyrotropin alfa, thyrotropin levels increased to 91 U per liter and the patient was given 3 mCi of radioiodine orally. A whole-body radioiodine scan obtained 48 hours later showed intense radioiodine uptake in the upper right thyroid lobe, corresponding to a region of normal thyroid tissue identified on ultrasonography and PET–CT. The scan also showed less intense uptake in the lower right lobe and in most of the left lobe, which according to the ultrasonographic and PET–CT findings, were composed entirely of tumor, with a heterogeneous, centrally necrotic tumor on the

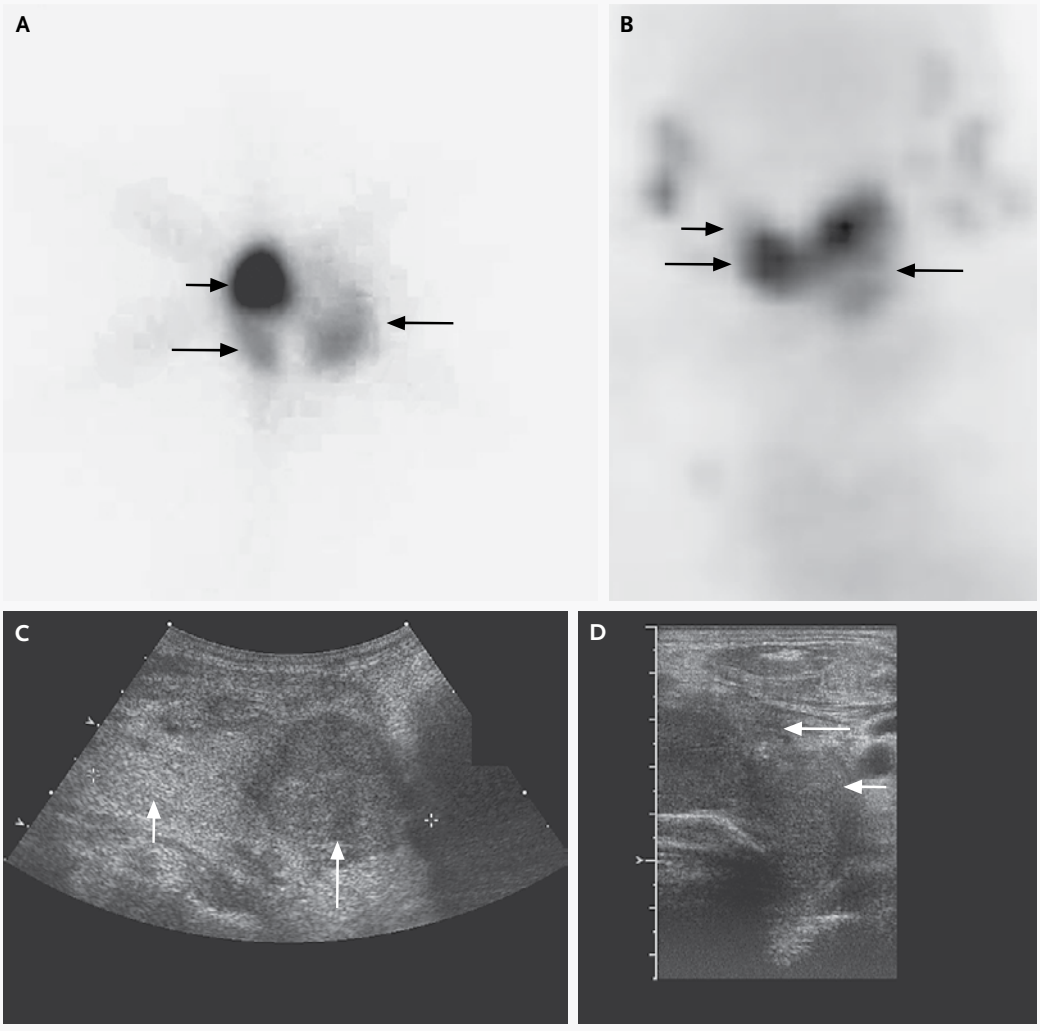

Figure 1. Imaging Studies of the Head and Neck.

A radioiodine scan (Panel A) shows normal thyroid tissue in the upper right lobe (short arrow) and the presence of a tumor in the lower right and left lobes (long arrows). A positron-emission tomographic scan obtained after the administration of ^{18}F-fluorodeoxyglucose (FDG) (Panel B) shows mild uptake in normal thyroid tissue (short arrow) and increased uptake of FDG in the tumor of the lower right and left lobes (long arrows). These findings are consistent with an FDG-avid thyroid cancer partially concentrating radioiodine. An ultrasonogram of the right thyroid lobe (Panel C) shows areas of normal thyroid tissue in the upper right lobe (short arrow) and tumor masses in the lower right lobe (long arrow). An ultrasonogram of the left lobe (Panel D) shows tumor masses in the entire left lobe (short arrow) and strap-muscle invasion (long arrow).

left (Fig. 1). No uptake was seen in the areas of cervical lymphadenopathy. With the diagnosis of poorly differentiated thyroid cancer established, the patient underwent external-beam radiation.

This case shows how stimulation with thyrotropin alfa can be used in a patient with unresectable thyroid cancer to determine the degree of radioiodine concentration in the primary tumor and its metastases. For our patient, this test was critical in establishing the diagnosis of poorly differentiated thyroid cancer, with possible anaplastic transformation of some tumor regions plus metastases that limited the potential usefulness of radioiodine therapy. However, many poorly differentiated thyroid cancers avidly concentrate radioiodine, which has been used successfully to treat

such cancers after thyroid resection.[1,2,4,5] Our approach of using thyrotropin alfa to stimulate tumoral uptake of radioiodine introduces the possibility of using this treatment even in patients with a thyroid gland that cannot be resected, regardless of the reason.

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