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RATIONAL, COST-EFFECTIVE WORKUP FOR THYROID NODULES

Textbook algorithms for working up patients with thyroid nodules may be elegant, detailed, and interesting to read, but they have little relevance to office practice. The physician who succumbs to "algorithmitis" will only delay diagnosis and make it more costly; for example, since 90% of thyroid nodules are "cold" and some cancers are "hot" on nuclear scans, these studies add nothing to the diagnostic workup. Furthermore, since only about 1% of nodules are cystic, ultrasound is of little use.

TISSUE DIAGNOSIS CRITICAL

Tissue diagnosis is the critical element in the workup. Needle aspiration or cutting needle biopsy is not only the safest and most cost-effective way to make the diagnosis, but also the most accurate. In skilled hands, the likelihood of obtaining an accurate biopsy specimen is greater than 95%. Referral to a center where such expertise is available will reduce unnecessary surgery, since 80% to 90% of nodules prove to be benign. There is no justification today for the surgical removal of all thyroid nodules, which was the standard of care in this country in the 1920s.

The history and physical examination can raise the index of suspicion. For example, a nodule of many years' duration is more likely to be benign. Previous biopsies or surgery involving other nodules that proved to be benign also points away from malignancy. Patients who received past radiation therapy to the neck will be more concerned about cancer and need reassurance. The incidence of *benign* nodules is higher than normal in this group, but not the incidence of cancer. Although hoarseness, pain on the side of the nodule, or rapid enlargement may be associated with cancer, very often they are not.

Physical examination involves estimation of the size and consistency of the nodule and whether it is fixed. A hard, rapidly enlarging nodule associated with palpable lymph nodes is more consistent with cancer, but malign-

nant nodules may also be soft. Multiple nodules are more likely to be associated with a benign condition such as a multinodular goiter.

The main purpose of thyroid function tests in these patients is to screen for Hashimoto's thyroiditis with thyroid-stimulating hormone and an antimicrosomal antibody titer. If these tests are positive, then treatment with L-thyroxine is indicated; attempts to shrink other types of thyroid nodules with this therapy are generally useless.

LOW RISK OF CANCER

Although most patients with thyroid nodules fear malignancy, the incidence of thyroid cancer is actually low—approximately 2 cases per 100,000 per year. About 4% of the general population has either single or multiple nodules, and the incidence increases with age. Confusion arises from the literature, which indicates a 13% incidence of occult thyroid cancers. These are not palpable *in vivo*, and are usually described as being less than 1.5 cm in diameter. There is no evidence that finding and removing these occult, nonpalpable cancers has any clinical value. The nodules of most concern are found in patients younger than 20 and older than 60 years of age, and in men at any age. Thyroid nodules are six times more common in women than in men.

Even with clinically evident thyroid cancers, the overall mortality is low. Most clinicians recognize that patients who have thyroid nodules face a lower risk from cancer than from unnecessary surgery to remove benign lesions.

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