Clinical THYROIDOLOGY



Core Needle Biopsy Is Useful for Diagnosis of Thyroid Nodules after Previous FNA Biopsy was Nondiagnostic

Samir AE, Vij A, Seale MK, Desai G, Halpern E, Faquin WC, Parangi S, Hahn PF, Daniels GH. Ultrasound-guided percutaneous thyroid nodule core biopsy: clinical utility in patients with prior nondiagnostic fine-needle aspirate. Thyroid 2012;22:461-7. Epub February 3, 2012.

Background

Ultrasound-guided FNA of thyroid nodules is nondiagnostic in 5 to 20% of cases, resulting in uncertainty about the presence of malignancy. Core needle biopsies have been used in other areas, but have not been recommended for thyroid nodules that are nondiagnostic on FNA. The current study explores the clinical utility of combined ultrasound-guided thyroid FNA and core needle biopsy (CB) in patients with prior nondiagnostic FNA.

Methods

Records were reviewed for all patients who had combined FNA and CB from 2006 through 2008 at Massachusetts General Hospital. During this 3-year period, 762 (14%) of FNAs were nondiagnostic. Ninety combined FNAs and CBs were performed in 82 patients with nondiagnostic FNAs. The procedures were performed by staff interventional radiologists. For FNA, 25-gauge needles were used. For CB, 20-gauge 6-cm needles with 10- or 20-mm needle throw were used. Preparation included the administration of 5 to 10 ml of subcutaneous and perithyroidal lidocaine. Four to 6 FNAs and 2 to 4 CBs were performed on each nodule. CB samples were placed in formalin and then embedded into paraffin blocks and cut into 5-mm sections.

Results

Nodules ranged in maximal dimension from 0.6 to 4.4

cm, with a mean of 2 cm, but only three nodules were less than 1 cm. There were no reported complications.

The combined procedure yielded a diagnostic result in 87% of the 90 nodules. Both FNA and CB were diagnostic in 37% of nodules; in 40% of nodules, CB was diagnostic when FNA was not; in 10% of nodules, FNA was diagnostic when CB was not. For the combined procedure, the diagnosis was benign in 40%, follicular lesion of undetermined significance in 10%, follicular neoplasm in 31%, suspicious for malignancy or malignant in 5.5% (all of these were determined to be malignant as judged by surgical pathology), and nondiagnostic in 13%.

Twenty-two of the 28 patients with the diagnosis of follicular neoplasm underwent surgery; 2 were malignant, 18 were benign follicular adenomas, and 2 were nodular Hashimoto's thyroiditis. Of the 13% of patients who had nondiagnostic pathology with the combined procedure, 5 had surgery and had benign pathology; the others had stable nodule size on follow-up.

Conclusions

Combined FNA and CB of thyroid nodules is safe and clinically useful in selected patients when a prior FNA reading is nondiagnostic; it should be considered as an alternative to surgery in patients with two prior nondiagnostic FNAs.

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ANALYSIS AND COMMENTARY • • • • • •

Core needle biopsy of palpable thyroid nodules was performed in the 1950s and 1960s, usually by trained thyroid surgeons, because of the fear of bleeding complications if a large vessel was lacerated (1). The procedure was not adopted by endocrinologists and was fortunately supplanted by FNA in the 1970s. Refinement of the needles to smaller diameters and the use of ultrasound guidance has now made CB more feasible. Potential advantages of CB are that it can provide more tissue and preserve the cellular architecture. Interventional radiologists have the most experience with CB and performed the procedure in this study. Aside from its technical difficulty, CB has not been widely used because earlier comparative studies of FNA and CB showed no diagnostic advantage for CB (2,3).

In the same issue of Thyroid, a paper from a group in Korea compared the use of CB and FNA for evaluation of 149 nodules that were nondiagnostic or follicular lesion of undetermined significance (FLUS) (4). They used an 18-gauge spring-activated needle and lidocaine anesthesia. They reported that the diagnostic sensitivity of CB was higher than that of FNA in the FLUS category, but this was not statistically significant in the 45 patients who had prior nondiagnostic FNA. They noted no major complications of CB, but there were perithyroidal hematomas in 3.6% and mild transient parenchymal edema in 2.3%. They concluded that CB is more useful than repeat FNA in patients with inconclusive diagnostic results.

The pendulum seems to be swinging back to reconsideration of core biopsy for patients with inconclusive diagnostic results. However, the decision to use CB must be based on multiple factors: the suspicion of malignancy on ultrasound and other clinical features, the availability of expertise in performing CB of thyroid nodules, the need to discontinue anticoagulation, and the potential benefit to the patient.

— Jerome M. Hershman, MD

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