Clinical THYROIDOLOGY
AMERICAN THYROID ASSOCIATION FOUNDED 1923

INEXPERIENCE, CYSTIC NODULES, AND MACROCALCIFICATIONS OFTEN RESULT IN INADEQUATE THYROID BIOPSY SPECIMENS

Choi SH, Han KH, Yoon JH, Moon HJ, Son EJ, Youk JH, Kim EK, Kwak JY. **Factors affecting inadequate sampling of ultrasound-guided fine-needle aspiration biopsy of thyroid nodules.** Clin Endocrinol (Oxf) 2011;74:776-82. doi: 10.1111/j.1365-2265.2011.04011.x.

SUMMARY

BACKGROUND

Inadequate samples are reported in 1% to 20% of thyroid fine-needle aspiration biopsies (FNAB). The purpose of this study was to evaluate the ultrasound features and clinical factors that contribute to inadequate sampling.

METHODS

FNAB was performed using a 23-gauge needle; usually two punctures were made in the nodule of interest. An adequate specimen was classified as having a minimum of six groups of cells with more than 10 cells per group. Malignant ultrasound features were marked hypoechogenicity, irregular margins, microcalcifications, and a taller than wider shape; a positive ultrasound had at least one of these features.

RESULTS

Of 4077 FNAB performed between April 2008 and December 2008, a total of 654 (16.1%) were categorized as inadequate. With regard to nodule size, the rate of inadequate samples was 21.2% for nodules <5 mm, 15.3% for those 5 to 9.9 mm, 14.2% for those 10 to 19.9 mm, and 18.0% for those >20 mm. The rate of inadequate sampling was 23.6% of nodules with dominant cysts as compared with 15.6% for solid nodules. With regard to calcifications, nodules with macrocalcification showed a significantly higher rate of inadequate sampling (21.3%) than those in the microcalcification group (11.9%) or those without calcification (15.6%). Hypoechogenicity, irregular margins, and taller-than-wide shape were not associated with the rate of inadequate sampling.

Experienced doctors were those performing >300 FNAB/year and inexperienced did fewer than that. The rate of inadequate sampling was significantly higher for those less experienced 25.8% (51 of 198) than for the more experienced, 15.6% (603 of 3879). Cyst dominance and macrocalcification were independent factors that predisposed to inadequate samples for experienced physicians in multivariate analysis, but none of the ultrasonographic factors was significant in the inexperienced group.

CONCLUSIONS

Cyst dominance and macrocalcifications in thyroid nodules and inexperience of the performing doctor were factors associated with high rates of inadequate samples of FNAB in thyroid nodules.

COMMENTARY

Getting a report that the FNAB was inadequate is frustrating for both the patient and the physician who does the biopsy. Unfortunately, this happens more in teaching hospitals, where trainees perform some of the procedures, than may be the case when a physician with considerable experience does it without a trainee. The ATA guideline recommends that a repeat FNAB be performed when the result is inadequate (1). In the current study, the result was considered inadequate even when there was abundant colloid. In such an instance, the Bethesda conference suggested that this result should be considered benign even without six groups of follicular cells (2). This would have reduced the number in the inadequate category in this Korean study. In my experience there are some stubborn nodules that just do not yield sufficient material for diagnosis, even with a third FNAB. Also, as noted in this study, nodules <5 mm are more likely to give an inadequate result. Most of these small

continued on next page

nodules can be watched, unless there are a variety of criteria indicating that they are malignant.

As noted in a Clinical Thyroidology article in August 2011, a possible maneuver to avoid unnecessary surgery in such an instance is to perform a positron-emission tomography–computed tomography (PET/CT) scan, provided the nodule is >1.5 cm (3). If the PET/CT scan is negative, the possibility of malignancy is very small. If it is positive, the possibility of malignancy rises to 62%. As one letter writer noted, this is a very expensive diagnostic test, but it is still cheaper than surgery.

— Jerome M. Hershman, MD

References

1. Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, Mazzaferri EL, McIver B, Pacini F, Schlumberger M, et al. Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. Thyroid 2009;19:1167-214.
2. Frable WJ, Sidawy, MK, DeMay, RM, et al. Diagnostic terminology and morphologic criteria for cytologic diagnosis of thyroid lesions: a synopsis of the National Cancer Institute Thyroid Fine-Needle Aspiration State of the Science Conference. Diagn Cytopathol 2008;36:425-37.
3. Giovanella L, Suriano S, Maffioli M, Ceriani L. FDG-positron emission tomography/computed tomography (PET/CT) scanning in thyroid nodules with nondiagnostic cytology. Clin Endocrinol (Oxf) 2011;74:644-8.