



## THYROID NODULES

### Inexperience, cystic nodules and macrocalcifications often result in inadequate thyroid biopsy specimens

#### BACKGROUND

Thyroid nodules are very common. Most patients with thyroid nodules over 1 cm should have a biopsy to determine whether the nodule(s) is benign or cancerous. While the thyroid biopsy is very accurate, occasionally not enough cells are obtained during the biopsy to make a diagnosis – this is termed an inadequate biopsy. Inadequate biopsies are reported in 1% to 20% of thyroid fine-needle aspiration biopsies and can be caused by several factors including the characteristics of the nodule, the method of guidance to perform the biopsy, the technique used to perform the biopsy and the level of skill and experience of the person performing the biopsy. Nodules that are largely cystic and nodules with a lot of blood in them are frequently associated with few cells and inadequate specimens. The purpose of this study was to evaluate the ultrasound features and clinical factors that contribute to inadequate biopsies.

#### THE FULL ARTICLE TITLE

Choi SH et al. Factors affecting inadequate sampling of ultrasound-guided fine-needle aspiration biopsy of thyroid nodules. *Clin Endocrinol (Oxf)* 2011;74:776-82.

#### SUMMARY OF THE STUDY

The medical records of 3,767 patients who underwent a total of 4,077 Ultrasound guided- fine-needle aspiration biopsies were reviewed. Of 4,077 biopsies performed between April 2008 and December 2008, a total of 654 (16.1%) were classified as inadequate. Nodules smaller

than 5 mm, those with a large cystic component and those with large calcium deposits (macrocalcifications) were more likely to return inadequate specimens. Also, the rate of inadequate biopsies was lower when the person performing the biopsy was experienced, as defined as performing >300 biopsies annually.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Getting a report that the biopsy was inadequate is frustrating for both the patient and the physician who does the biopsy. The American Thyroid Association guidelines recommend that a repeat biopsy be performed when the result is inadequate. However, some nodules may continue to yield inadequate results and surgery should be considered. If the nodules are small with no concerning features on ultrasound they can be watched. Another option to avoid surgery is to perform a positron-emission tomography-computed tomography (PET/CT) scan if the nodule is >1.5 cm. If the PET/CT scan is negative, the risk of cancer is very small. Although this test is expensive for diagnosis, it is still cheaper than surgery.

— M. Regina Castro, MD

#### ATA THYROID BROCHURE LINKS

Thyroid Nodules: [http://thyroid.org/patients/patient\\_brochures/nodules.html](http://thyroid.org/patients/patient_brochures/nodules.html)

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## THYROID NODULES, continued

### ABBREVIATIONS & DEFINITIONS

**Thyroid Nodule:** an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

**Thyroid Ultrasound:** a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

**Thyroid Fine Needle Aspiration Biopsy (FNAB):** a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

**Inadequate/Insufficient Biopsy:** this happens when not enough cells are obtained during the biopsy to provide a diagnosis. This occurs in 5-10% of biopsies. This often results in the need to repeat the biopsy.

**Macrocalcifications:** large flecks of calcium that can be seen either inside a thyroid nodule or in the periphery (so called egg-shell/rim calcifications), usually seen as large bright spots on ultrasonography.

**Positron-Emission-Tomography (PET) Scans:** a nuclear medicine imaging test that uses a small amount of radiolabeled glucose to identify cancer. Since cancer cells are more active than normal cells, the cancer cells take up more of the radiolabeled glucose and show up on the PET scan. PET scans are frequently combined with CT scans to accurately identify where the cancer is located.