



## THYROID NODULES

### WHAT IS THE STUDY ABOUT?

Thyroid nodules are extremely common in adults. With the increased use of imaging tests, some studies suggest that thyroid nodules occur in up to half of the population. The concern about thyroid nodules surrounds the possibility of thyroid cancer, with studies reporting that ~5% of thyroid nodules are cancer. The fine needle aspiration biopsy is the best way to determine if a nodule is a cancer. Since most of the thyroid nodules are not cancer, it is important to determine which nodules should undergo a biopsy. Guidelines developed by the American Thyroid Association indicate that the best way to initially evaluate thyroid nodules is to perform an ultrasound examination of the thyroid. This study examines what ultrasound features are most helpful in selecting which nodules should be biopsied and which nodules are more likely to be benign (non-cancerous).

**THE FULL ARTICLE TITLE:** Popowicz B, Klencki M, Lewinski A, Slowinska-Kiencka D. The usefulness of sonographic features in selection of thyroid nodules for biopsy in relation to the nodule's size. *Eur J Endocrinol* 2009;161:103–11.

### WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to determine what ultrasound features of thyroid nodules were important in distinguishing between benign nodules and thyroid cancer.

### WHO WAS STUDIED?

The study group was 672 patients with 1141 thyroid nodules (some had multiple nodules) who underwent thyroid surgery at the Medical University of Lodz in Poland.

### HOW WAS THE STUDY DONE?

The records of the patients were reviewed. Based on the pathology after the surgery, the nodules were classified as either benign or cancer. All patients had ultrasound examinations before surgery. The ultrasound features that were examined included: 1) nodule shape, 2) nodule echogenicity—the nodule appeared as bright as, less bright or brighter than the surrounding normal thyroid tissue,

3) whether the nodule was solid or cystic or both and 4) blood flow pattern through the nodule. They also examined whether the number of nodules and whether nodule size (small, <15 mm compared to large, ≥15 mm) had any bearing on the likelihood that a nodule was cancer or not.

### WHAT WERE THE RESULTS OF THE STUDY?

There were 96 cancers in these patients. Cancers were more often less bright than the surrounding normal thyroid tissue, were the only nodule in the thyroid, contained small calcifications and had a greater height to width compared to benign nodules. These features were particularly true in patients with small as opposed to large nodules. The blood flow pattern through the nodule did not help in distinguishing between benign and cancers in small thyroid nodules.

### HOW DOES THIS COMPARE WITH OTHER STUDIES?

Multiple other studies have looked at the ultrasound characteristics of benign and cancerous thyroid nodules. Most have shown an increased risk of cancer in thyroid nodules that are less bright than the surrounding tissue, have small calcium deposits in them, and have irregular margins. Some also have shown that nodules that are taller than wide and show increased blood flow within the nodule increase the risk for cancer.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Clinicians should use the various ultrasound features to select which thyroid nodules should have a fine-needle aspiration biopsy. In particular, biopsy should be considered if the nodule is less bright, has small calcifications and is taller than wide regardless of nodule size.

— Glenn Braunstein, MD

### ATA THYROID BROCHURE LINKS

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

Thyroid cancer: [http://thyroid.org/patients/patient\\_brochures/cancer\\_of\\_thyroid.html](http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.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 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:** 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.