



THYROID NODULES

Risk of thyroid cancer based on thyroid ultrasound findings

BACKGROUND

Thyroid nodules are very common. With the increased use of thyroid ultrasound, some studies suggest that thyroid nodules occur in >50% of the population. Studies report on possibility of thyroid cancer in about 5% of thyroid nodules. Fine needle aspiration biopsy (FNAB) is the best way to find out whether a thyroid nodule is cancerous or benign. Since most of the thyroid nodules are not cancer, it is important to know which nodules should undergo biopsy. This study examines what ultrasound features are most helpful in selecting which nodules are more likely to be cancerous and should be biopsied and which nodules are non-cancerous.

THE FULL ARTICLE TITLE

Smith-Bindman R. et al. Risk of thyroid cancer based on thyroid ultrasound imaging characteristics: results of a population-based study. *JAMA Intern Med.* August 26, 2013. [Epub ahead of print]. doi: 10.1001/jamainternmed.2013.9245.

SUMMARY OF THE STUDY

Between January 2000 and March 30, 2005, records of 11,618 thyroid ultrasound exams performed for any reason in 8806 patients (some had multiple nodules) were reviewed.

Different ultrasound features such as nodule size, microcalcification, solid feature (vs cystic), coarse calcifications, texture of the gland, blood flow within the nodule, the edges of the nodule and shape (more tall than wide) were evaluated and recorded in all cases. A total of 96 patients diagnosed with cancer were matched for age, sex and year of ultrasonography with 369 controls with benign thyroid nodules.

On average, 1 case of thyroid cancer was found for every 111 ultrasound exams performed. Thyroid nodules were found in 97% of patients with thyroid cancer and in 56% of without thyroid cancer. Microcalcifications were found in 38% of cancerous nodules and only in 5% of benign, non-cancerous nodules. The risk of cancer increased with the size of nodule. Data analysis of this study showed that only 3 ultrasound features were related with the risk of cancer: microcalcification, nodule size greater than 2 cm, and solid form.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that ultrasound features of microcalcifications, solid nodule and size larger than 2 cm can be used to identify patients at high risk for thyroid cancer. In contrast, other studies have shown that ultrasound features such as coarse calcifications, more tall than wide, irregular borders and increased blood flow within the nodule can be helpful to identify thyroid cancer. Currently, the American Thyroid Association guidelines recommends to perform a FNAB of solid nodules >1 cm and nodules >0.5 cm only when they have suspicious features detected by ultrasound.

Some authors suggest that hypoechoic, solid nodules larger than 1 to 1.5 cm with macrocalcifications should be biopsied and spongiform nodules and cysts need no biopsy.

— Jamshid Farahiti, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: <http://www.thyroid.org/cancer-of-the-thyroid-gland>

Thyroid Nodules: <http://www.thyroid.org/what-are-thyroid-nodules>

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 NODULES, continued

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.

Microcalcifications: Small flecks of calcium within a thyroid nodule, usually seen as small bright spots on ultrasonography. These are frequently seen in nodules containing papillary thyroid cancer.

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