



THYROID NODULES

Can a standard scoring system of thyroid ultrasound findings accurately determine the need for a biopsy?

BACKGROUND:

Thyroid nodules are very common. The main concern about a thyroid nodule is whether it is a cancer. Fortunately, ~95% of thyroid nodules are benign (non-cancer). Thyroid biopsy is the best test outside of surgery in determining whether thyroid nodule is cancerous or not. Thyroid ultrasound plays a key role in characterization of thyroid nodules. Selection of thyroid nodules for biopsy is based on their ultrasound characterization. Several ultrasound-based risk stratification systems have been developed to determine which nodules should be referred for biopsy. Most commonly used are classifications from the American Thyroid Association, the American Association of Clinical Endocrinologists, the American College of Radiology Thyroid Imaging Reporting and Data System (ACR-TIRADS), the European Thyroid Association, and the Korean Society of Thyroid Radiology Thyroid Imaging Reporting and Data System (K-TIRADS). The TIRADS system provides points on size, margins, structure/composition, echotexture, calcifications and extension outside of the thyroid and based on that system, biopsy is recommended on a point basis. The goal of this study was to compare the ability of the 5 most widely used ultrasound-based risk-stratification systems to identify nodules that do not need further evaluation with thyroid biopsy without missing cancerous nodules.

THE FULL ARTICLE TITLE

Grani G et al 2019 Reducing the number of unnecessary thyroid biopsies while improving diagnostic accuracy: toward the “right” TIRADS. *J Clin Endocrinol Metab* 104:95–102. PMID: 30299457.

SUMMARY OF THE STUDY

This is a study of 520 nodules in 477 patients that were referred for thyroid biopsy to a single center in Italy. Prior

to biopsy, each nodule was evaluated by two experienced clinicians and classified according to five ultrasound-based risk-stratifications. Final diagnosis was determined based on the results of cell analysis after biopsy or tissue analysis if surgery was done. Small thyroid nodules less than 1 cm were excluded from the analysis. Thyroid nodules with inconclusive diagnosis (non-diagnostic and indeterminate thyroid nodules) were excluded as well. Biopsies that were done for nodules that did not meet criteria for biopsy based on risk-stratification system were considered “unnecessary”. The percentages of “unnecessary” biopsies were compared among risk-stratification systems.

A total of 36 nodules (7.2%) were determined to be cancerous. All ultrasound-based risk stratification systems reduced the number of thyroid biopsies. The greatest reduction (53.4%) was seen with the ACR-TIRADS classification and the least reduction (17%) was with the K-TIRADS. Other classifications were similar to ACR-TIRADS. Based in ultrasound criteria alone, 11 cancers would have been missed by at least one of TIRADS systems and 3 cancers would have been missed by all of the classifications.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The ACR TIRADS classification system helps better to determine the need for thyroid biopsy without significant compromise in accuracy of the cancer diagnosis. These systems are helpful in reducing the number of benign biopsies. Understanding diagnostic tests characteristics may help clinicians to decide which classification system to use. The results should be used with caution since indeterminate nodules were excluded and the findings cannot be universally applied to all the patients.

—Valentina D. Tarasova, M.D.





THYROID NODULES, continued

ATA WEB BROCHURE LINKS:

Thyroid Nodules: <https://www.thyroid.org/thyroid-nodules/>

Fine Needle Aspiration Biopsy of Thyroid Nodules: <https://www.thyroid.org/fna-thyroid-nodules/>

ABBREVIATION AND 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.

Indeterminate thyroid biopsy: this happens a few atypical cells are seen but not enough to be abnormal (atypia of unknown significance (AUS) or follicular lesion of unknown significance (FLUS)) or when the diagnosis is a follicular or hurthle cell lesion. Follicular and hurthle cells are normal cells found in the thyroid. Current analysis of thyroid biopsy results cannot differentiate between follicular or hurthle cell cancer from noncancerous adenomas. This occurs in 15-20% of biopsies and often results in the need for surgery to remove the nodule.

