



THYROID NODULES

Initial ATA risk and subsequent growth helps identify missed cancers in initially benign thyroid nodules

BACKGROUND

Thyroid nodules are common, and it is important to separate those that are benign (noncancerous) from those that are cancerous. Neck ultrasound and thyroid aspiration biopsy are two techniques used to evaluate whether a given thyroid nodule could be a cancer. In 2015 the American Thyroid Association (ATA) published an ultrasound risk stratification system to identify concerning ultrasound features of thyroid nodules, which should be followed by a thyroid biopsy when present. Biopsy cytology results are classified into one of several categories, each of which is linked with a different risk of cancer. Cytology that is suspicious for cancer usually leads to surgery, whereas benign nodules are monitored with periodic neck ultrasound. However, since thyroid biopsy only samples a few cells within a thyroid nodule, there is a possible risk (<5%) of missing a cancer, even when the biopsy is benign. This concern is even more relevant when thyroid nodules grow in size since growth has traditionally been a warning for cancer. However, several recent studies question this assumption and suggest that a benign nodule's growth is not concerning for cancer. The 2015 ATA guidelines recommend repeating a biopsy in a benign nodule only when it grows or develops suspicious ultrasound characteristics.

In this study, the authors evaluate the accuracy of the ATA guidelines in monitoring benign thyroid nodules for growth and indications to repeat a biopsy.

THE FULL ARTICLE TITLE

Maino F et al 2020 Validation of American Thyroid Association ultrasound risk-adapted approach for repeating cytology in benign thyroid nodules. *Thyroid*. Epub 2020 Jul 27. PMID: 32718278.

SUMMARY OF THE STUDY

The authors studied 1010 thyroid nodules with benign cytology from 838 patients attending a single medical

center in Italy (82.1% female and 17.9% male). All of the nodules had a second ultrasound and biopsy after an average follow-up of 3.8 years. They then compared the results from the first ultrasound and biopsy with the second. The repeat biopsy result was again benign in 976 cases (96.6%), while 31 (3.1%) were re-classified as indeterminate, and 3 (0.3%) were suspicious for cancer or cancer. Of the 976 cases with a second benign cytology, 71 eventually had surgery and only 1 of those (1.4%) was cancer. In contrast, 11 of the nodules that were re-classified as indeterminate had surgery, and 6 (54.5%) were cancer. All 3 of the nodules re-classified as suspicious for cancer had surgery and they were all cancer. A total of 69.7% of nodules had low-risk findings on the initial ultrasound, whereas 19.4% had intermediate and 10.9% had high-risk results. While the rate of missed cancer in the whole group of nodules was only 1.0%, it did increase according to the ultrasound risk (0.8% missed cancers in the with low-risk findings on initial ultrasound, 1.2% with intermediate and 3.1% with high-risk results).

Most importantly, when the authors compared nodules that grew over time with those that did not, the risk of missing a cancer was significantly more common in nodules with high-risk ultrasound findings to begin with (6.4%). Only 0.4% of nodules that grew in size were cancerous when the initial ultrasound findings were low-risk.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Overall, it is rare to miss a thyroid cancer when cytology from a thyroid cancer is benign, since it happened only 1.0% of the time in the current study. Even when nodules grow, it is only of concern in those with high-risk findings on the initial ultrasound. A second biopsy may be avoided when a thyroid nodule grows in size as long as it had low-risk results on the initial ultrasound.

— Philip Segal, MD





THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

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

ABBREVIATIONS & DEFINITIONS

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 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 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.

Suspicious thyroid biopsy: this happens when there are atypical cytological features suggestive of, but not diagnostic for malignancy. Surgical removal of the nodule is required for a definitive diagnosis.

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.