AMERICAN THYROID ASSOCIATION
ATA | Founded 1923

Clinical Thyroidology® for the Public

DECEMBER 2017 | VOLUME 10 | ISSUE 12

THYROID CANCER

The role of ultrasound in predicting thyroid cancer invasiveness

BACKGROUND

Papillary thyroid carcinoma is the most common form of thyroid cancer. Follicular variant of papillary thyroid carcinoma (FVPTC) is one of the subtypes of papillary thyroid carcinoma, which has been classified to three different forms: non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP), invasive encapsulated (iE-FVPTC) and infiltrative FVPTC (I-FVPTC). In contrast to iE-FVPTC, there is no evidence of invasion of thyroid cancer cells into blood vessels or the nodule capsule in NIFTP. The important feature of I-FVPTC is the lack of a complete capsule around the nodule. Each one of these types is associated with a different prognosis; for example NIFTP is a non-invasive tumor without risk of spread outside the thyroid; iE-FVPTC is a low risk cancer and I-FVPTC is the most aggressive variant.

Ultrasound has an important rule in evaluation of thyroid nodules. Different types of thyroid cancer have various characteristics in ultrasound images. In this study the authors reviewed the thyroid ultrasound images that were obtained before thyroid surgery in patients with different types of FVPTC. The goal was to identify certain ultrasound characteristics specific to each subtype of FVPTC, which could potentially predict the type and thus invasiveness of FVPTC before thyroid surgery.

THE FULL ARTICLE TITLE

Hahn SY et al. Role of Ultrasound in Predicting Tumor Invasiveness in Follicular Variant of Papillary Thyroid Carcinoma. Thyroid 2017; 27: 1177-84.

SUMMARY OF THE STUDY

The authors reviewed the thyroid ultrasound images of 151 individuals who had thyroid surgery and were found to have FVPTC. The ultrasounds were done prior to surgery between January-2014 to May-2016. The average age of patients were 49 year old. Two radiologists who were unaware of final diagnosis after thyroid surgery studied the ultrasound images. They used the previously published criteria and divided the thyroid nodules into groups based on the degree of suspicious for thyroid carcinoma (from very low risk for thyroid cancer to high risk). A total of 152 thyroid nodules were found to be FVPTC after surgery; 31.6% were NIFTP, 39.5% were iE-FVPTC and 28.9% were I-FVPTC.

They found that I-FVPTCs were significantly smaller than the other types. While some of the ultrasound characteristics were similar between these cancers, others were different. The thyroid nodules that were found to be I-FVPTC had irregular shape and margin as well as small calcium deposits more often than NIFTP and iE-FVPTC (which were round or oval with regular margin and often with a halo around them).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors concluded that ultrasound could be beneficial to estimate the invasiveness of thyroid nodules before surgery. This could be important because a patient who has a thyroid nodule with highly suspicious features suggestive for an invasive cancer can consider total thyroidectomy; however in the absence of suspicious features, a lobectomy can be performed.

— Shirin Haddady, MD MPH

ATA THYROID BROCHURE LINKS

Papillary and Follicular Thyroid Cancer: https://www.thyroid.org/thyroid-cancer/

Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/

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

THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Follicular variant of papillary thyroid cancer: one of the subtypes of papillary thyroid carcinoma, which has been classified to three different forms: non-invasive follicular thyroid neoplasm with papillary-like nuclear features, invasive encapsulated and infiltrative FVPTC.

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.

Total thyroidectomy: surgery to remove the entire thyroid gland.

Lobectomy: surgery to remove one lobe of the thyroid.