



THYROID CANCER

Small bright spots with comet-tails noted on ultrasound may be indicative of cancer when occurring in the solid portion of a thyroid nodule

BACKGROUND

The best imaging method for evaluation of thyroid nodules is ultrasound. According to the American Thyroid Association guidelines, all patients with thyroid nodules should undergo ultrasound evaluation to evaluate their cancer risk and decide whether a thyroid biopsy is indicated. Several thyroid nodule features noted on ultrasound are suggestive of thyroid cancer. For example, up to 95% of thyroid nodules with small bright spots known as microcalcifications are cancerous. However, not all small bright spots noted on ultrasound represent microcalcifications. In particular, small bright spots with a feature known as a comet tail are usually associated with a benign thyroid nodule. However, the significance of the small bright spots with comet-tail is not completely evaluated. The goal of this study was to evaluate the frequency and types of bright spots with comet-tail present in cancerous and non-cancerous thyroid nodules removed surgically.

THE FULL ARTICLE TITLE

Wu H et al 2018 Echogenic foci with comet-tail artifact in resected thyroid nodules: not an absolute predictor of benign disease. PLoS One 13:e0191505. PMID: 29352286.

SUMMARY OF THE STUDY

The study included 556 patients who underwent thyroid surgery at a single institution in China between January and September 2016, and had complete data available. Indications for thyroid surgery included abnormal results on ultrasound-guided thyroid biopsy, ultrasound findings suspicious for cancer, or local pressure symptoms clinically.

All patients underwent routine thyroid ultrasound prior to the surgery. A total of 962 thyroid nodules were identified in the 556 study patients. Among these, 71 thyroid nodules were noted to have bright spots with comet-tail with 46 of these nodules being cancerous and 25 being

benign. Most cancerous nodules represented papillary thyroid cancer, with one follicular thyroid cancer and one medullary thyroid cancer noted.

The bright spots with comet-tail noted on ultrasound were divided into three groups: type 1, located in the cystic portion of a thyroid nodule; type 2, intermediate type, located at the margin of a solid portion with the comet-tail in the cystic portion of a nodule or vice versa; and type 3, both the bright spot and comet-tail located in the solid portion of the nodule. If the thyroid nodules showed more than one type of bright spots, the predominant type was recorded. The shape of the comet-tail was classified into two types: a typical appearance of a reverse triangle or a fine linear bright area.

None of the cancerous thyroid nodules had the type I bright spots with comet-tail located in the cystic portion of a nodule. Bright spots with comet-tail associated with a solid portion of a nodule (types 2 and 3) were present in all cancerous nodules, and in most (18 of 25) non-cancerous thyroid nodules. There was no significant difference between cancerous and non-cancerous thyroid nodules regarding the shape of the bright spots with a classic triangular or a linear comet-tail.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Small bright spots with comet-tail noted on ultrasound may predict a non-cancerous thyroid nodule when located freely in the cystic portion of the nodule, however, they may be associated with thyroid cancer when located in the solid portion of the nodule. These findings support the recommendation to use a combination rather than isolated features noted on ultrasound to evaluate the cancer risk of thyroid nodules.

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THYROID CANCER, continued

ATA THYROID BROCHURE LINKS

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

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

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), ~5–10% are cancerous (malignant).

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.

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.

Thyroid 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.

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 thyroid cancer: the second most common type of thyroid cancer.

Medullary thyroid cancer: a relatively rare type of thyroid cancer that often runs in families. Medullary cancer arises from the C-cells in the thyroid.

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