



## THYROID NODULES

### Microcalcifications and intranodular macrocalcifications are often found on preoperative ultrasounds of papillary thyroid carcinoma

#### BACKGROUND

Thyroid nodules are commonly seen in adults (2%-6% of patients on palpation, up to 50% on ultrasound). It is generally recommended that ultrasound examination be part of the evaluation for possible cancer in all thyroid nodules. While the diagnosis of thyroid cancer requires a fine needle biopsy and/or thyroid surgery, certain characteristics of nodules on ultrasound are associated with thyroid cancer. However, ultrasound by itself is not sufficient to diagnose a thyroid cancer. The presence of small amounts of calcifications in thyroid nodules (microcalcifications) on ultrasound is highly specific for papillary cancer. Large amounts of calcifications (macrocalcifications) at one point suggested that a thyroid nodule was benign but this now has shown not to be the case. The current study was done to look at a large number of thyroid nodules to determine which patterns of calcification are predictive of thyroid cancer as confirmed at surgery.

#### THE FULL ARTICLE TITLE

Kim BK et al. Relationship between patterns of calcification in thyroid nodules and histopathologic findings. *Endocrine J.* October 6, 2012 [Epub ahead of print] EJ12-0294.

#### SUMMARY OF THE STUDY

A total of 1431 thyroid nodules in 1078 patients were evaluated following thyroid surgery at a single institution. Preoperative thyroid ultrasounds were performed in all cases. Calcifications were characterized as microcalcification, annular-like peripheral calcification, crescent-like

calcification, intranodular macrocalcification or a calcified spot. The average size of a nodule was 1.2 cm and 91.1% of the nodules removed were thyroid cancers (94.7% papillary cancer). Calcifications were detected in 38.6% of all nodules, 40.2% of cancerous nodules and 22.2% of benign nodules. The only forms of calcification associated with thyroid malignancy were microcalcification and intranodular macrocalcification. The authors concluded that microcalcification (42.9%) and intranodular macrocalcification (26.5%) were found frequently in the preoperative ultrasounds of patients later found at surgery to have thyroid cancer.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Thyroid ultrasound is the best study to initially characterize thyroid nodules. The presence of either microcalcifications or intranodular macrocalcifications on thyroid ultrasound is highly associated with thyroid cancer. These nodules should be considered cancer until proven otherwise and should be targeted for further evaluation with fine needle biopsy and/or surgery.

— Frank Crantz, 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>

Thyroid surgery: <http://www.thyroid.org/why-thyroid-surgery>

#### 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 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)

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## **THYROID NODULES**, continued

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.

**Macrocalcifications:** large flecks of calcium that can be seen either inside a thyroid nodule or in the periphery (so called egg-shell/rim calcifications), usually seen as large bright spots on ultrasonography.

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