CLINICAL **THYROIDOLOGY** FOR THE **PUBLIC**

A publication of the American Thyroid Association

AMERICAN THYROID ASSOCIATION
FOUNDED 1923
www.thyroid.org

THYROID CANCER

Preoperative ultrasound can help predict recurrence risk in patients with papillary thyroid cancer

BACKGROUND

Papillary thyroid cancer is increasing in incidence, and although it has a generally excellent prognosis, the 10 year recurrence rate is estimated to be 14-26%. The possibility of recurrence can cause anxiety in patients and physicians alike. A recent study suggested that cancerous features on ultrasound prior to thyroid surgery (at the time of diagnosis) carried a worse prognosis, but did not predict recurrence. This study was done to confirm the initial study and to evaluate whether ultrasound characteristics of the thyroid nodule could predict recurrence. If so, they suggest that the pre-operative ultrasound could be utilized to determine treatment and follow-up plans.

THE FULL ARTICLE TITLE

Kim SY et al Association of preoperative US features and recurrence in patients with classic papillary thyroid carcinoma. Radiology. 2015;277(2):574-583.

SUMMARY OF THE STUDY

The records of 2111 patients having thyroid surgery between January 2003 and February 2006 at Yonsei University in Seoul, Korea were reviewed. A total of 515 patients who had classical papillary thyroid cancer measuring 1 cm or larger were included. Small cancers (micropapillary, <1 cm) cancers were excluded, as were other types of lesions or other reasons for surgery.
The 515 patients had an average age of 45.8 years (432 women and 83 men). The size of the primary cancer was approximately 2 cm and 70.5% of the patients had extension of the cancer outside of the thyroid. Also, 62.3 % of the patients had spread of the cancer to the lymph nodes. All patients had a central lymph node dissection at the time of total thyroidectomy. Approximately 22% of the patients also had a lateral neck compartment dissection due to pre-operative identification of abnormal lymph nodes. Further, 84.9% of the patients were treated with radioactive iodine therapy (420 with 30 mCi, 17 patients received 50-200mCi doses). Radioactive iodine therapy was used in this group of patients if there was spread to the lymph node metastases or if there was extension outside of the thryoid. They were followed on average for 93 months (range 12-137 months) with the usual methods of follow-up, including ultrasound, thyroid function testing, thyroglobulin levels with thyroglobulin antibody testing radioactive iodine whole body scans when indicated.

The authors reviewed the pre-operative ultrasound for cancerous findings (darkness, abnormal margins of the nodule, microcalcifications, taller-than-wide shape) and these were compared with the characteristics of the patients, the pathology of the cancer at surgery and the risk of persistent and recurrent cancer. This was done in three different models, taking into account various ways of reviewing the information (pre-operative information, post-operative information, or a combined model).

A total of 56 of the 515 (10.9%) patients had a recurrence. A total of 32 had lateral lymph node recurrence, 7 with thyroid bed recurrence and 5 had both. A total of 8 patients had spread of the cancer outside the neck (3 lung, adrenal gland, brain, liver) and 4 had both local and distant metastatic recurrences. A total of 11 of the patients had persistent cancer (defined by elevated thyroglobulin or whole body scan findings).

Malignant-appearing papillary thyroid cancer on pre-operative ultrasound is significantly associated with higher cancer staging in this study. The more worrisome ultrasound appearance is associated with recurrence in the pre-operative and combined model of analysis in this study. In the pre-operative analysis, the ultrasound findings associated with risk were nodule size, microcalcifications, and taller-than-wide shape.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the findings on pre-operative ultrasound can help predict recurrence rates in addition to the known factors that predict recurrence (extrathyroidal extension, lymph node metastasis, age at diagnosis, pathologic diagnosis or type of cancer, radioactive iodine therapy). This may allow early decision-making regarding risk of recurrence and the level of aggressive treatment. One benefit may be avoiding use of radioactive iodine in patients without cancerous appearance on ultrasound. Another benefit may be identifying the rare patient

AMERICAN THYROID ASSOCIATION®
FOUNDED 1923
www.thyroid.org

THYROID CANCER, continued

who requires even more aggressive therapies and closer follow-up. A careful pre-operative ultrasound may help avoid unnecessary treatment with radioiodine in a patient whose nodule has no worrisome features.

— Julie Hallanger Johnson, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://www.thyroid.org/cancer-of-the-thyroid/

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

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.

Taller-than-wide shape: larger measurement in the anterioposterior measurements than the transverse measurement

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

Lymph node: bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

Cancer recurrence: this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.

Central neck compartment: the central portion of the neck between the hyoid bone above, and the sternum and collar bones below and laterally limited by the carotid arteries.