



THYROID NODULES

Incidental thyroid nodules detected on CT, MRI, or PET-CT scans correlate well with subsequent ultrasound evaluation

BACKGROUND

Thyroid nodules are very common and are present in up to 50% of adults. Neck ultrasound is the best imaging test to evaluate thyroid nodules, because it can detect features that have been proven to predict malignancy. The American Thyroid Association has published evidence-based ultrasound criteria for evaluating thyroid nodules for the possibility of cancer. Those nodules which exhibit concerning ultrasound features can then be evaluated with a thyroid biopsy, while those that do not can be safely followed.

Thyroid nodules are often discovered by the patient noting a lump in the neck or by a provider during a physical exam. However, thyroid nodules are also frequently detected by other imaging tests such as computerized tomography (CT scan), magnetic resonance imaging (MRI scan) and positron-emission tomography-CT (PET-CT) that are done to evaluate problems other than the thyroid. When a nodule is discovered by an imaging test done for another reason, it is called an incidental thyroid nodules. It is not clear whether these imaging tests can accurately predict thyroid cancer by themselves without the need for a neck ultrasound. The American College of Radiology (ACR) recently published recommendations that use age, nodule size and specific imaging features to determine which incidental thyroid nodules need further evaluation with neck ultrasound and which do not. However, the accuracy of these guidelines has not been thoroughly studied.

The aims of the present study are to a) evaluate whether the size of thyroid nodules discovered on CT, MRI or PET-CT correlate with measurements at subsequent ultrasound and b) to determine the impact of applying the ACR recommendations on thyroid nodule outcomes.

THE FULL ARTICLE TITLE

Ní Mhuirheartaigh JM et al. Correlation between the size of incidental thyroid nodules detected on CT, MRI or PET-CT and subsequent ultrasound *Clin Imaging* 2016;40:1162-6.

SUMMARY OF THE STUDY

This study examined 307 patients who had had a thyroid

ultrasound over a two year period because an incidental thyroid nodule was previously found (within 6 months) on CT, MRI or PET-CT. Nodule size was compared between the image and subsequent thyroid ultrasound. The authors also determined the number of cases of thyroid cancer that would have missed if the ACR recommendations had been followed from the outset.

Of the 307 patients included, 229 had thyroid nodules discovered on CT scan, 69 on MRI scan and 9 on PET-CT scan. The average nodule size from all imaging studies was 15.6 mm. The average nodule size of the same nodules when measured by ultrasound was 17.5 mm indicating a tendency for other imaging studies to underestimate nodule size. If the ACR recommendations were applied, ultrasound would not have been recommended for 151 patients (49.2%). Applying the ACR recommendations would have decreased the number of ultrasounds by 24% of the total study group and only a single cancer would have been missed.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study addresses a common clinical problem. Incidental thyroid nodules are commonly identified on imaging studies done for other reasons than thyroid problems, but recommending further ultrasound evaluation for each one would be very expensive, may lead to increased patient anxiety and may be unnecessary. The investigators found that CT, MRI or PET-CT are more likely to underestimate the size of a thyroid nodule as compared with ultrasound. However, the size difference does not appear to be clinically significant. More importantly, this study shows that using the ACR recommendations effectively identifies most cases of thyroid cancer while reducing the number of unnecessary thyroid ultrasounds. Physicians now have a means of determining which incidental nodules identified on non-ultrasound imaging need to be further evaluated with an ultrasound and which do not.

— Phillip Segal, MD

ATA THYROID BROCHURE LINKS

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



THYROID NODULES, continued

ABBREVIATIONS & DEFINITIONS

Positron-Emission-Tomography (PET) scans: a nuclear medicine imaging test that uses a small amount of radiolabeled glucose to identify cancer. Since cancer cells are more active than normal cells, the cancer cells take up more of the radiolabeled glucose and show up on the PET scan. PET scans are frequently combined with CT scans to accurately identify where the cancer is located.

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.

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.

