



THYROID NODULES

Can thyroid nodule features on non-contrast CT scans be helpful in the evaluation of thyroid nodules incidentally found on PET/CT scans?

BACKGROUND

Thyroid nodules are commonly found on medical imaging studies, such as Computerized Tomography (CT) scans, 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography/CT (PET/CT) scans, or other imaging studies, which are performed for another reason (ie. the test is ordered without knowledge of the presence of a thyroid nodule). When thyroid nodules are detected on imaging studies performed for another reason, these are referred to as thyroid ‘incidentalomas.’ One of the questions that comes up after detecting a thyroid incidentaloma, is whether the nodule may be a thyroid cancer, and this question often results in additional testing to address the concern. This study was performed to investigate whether, in thyroid incidentalomas detected on PET/CT scan, the detailed features of the nodule on this the imaging study could predict whether the nodule was a cancer or not.

THE FULL ARTICLE TITLE

Kim D et al. Risk stratification of thyroid incidentalomas found on PET/CT: The value of iodine content on noncontrast computed tomography. *Thyroid*. September 3, 2015 [Epub ahead of print].

SUMMARY OF THE STUDY

This patient chart review study was performed at Yonsei University College of Medicine in Korea. The study investigators identified 143 patients from their institution, who had thyroid incidentalomas noted upon PET/CT scans in 2011. Of these 143 patients, 61 were excluded from the study for a variety of reasons. The study included the other 82 patients, who had either a thyroid nodule biopsy or surgery to confirm if thyroid nodules were cancerous or not. The reasons why the PET/CT was originally performed was as follows: determining the stage of a

known cancer (not thyroid, 33 individuals), follow-up of a known cancer (not thyroid, 32 individuals) and health screening exam to look for any cancer (17 individuals). The average size of the 82 thyroid incidentalomas detected on PET/CT scan was 1.6 cm (range 0.5–4.9 cm). PET/CT images are measured in terms of the maximal standardized uptake value ratios and units known as Hounsfield units (HU). In this study, the maximal standardized uptake value ratios were determined of the thyroid nodule compared to liver (T/BSUV). The authors reported that thyroid cancers had higher average T/BSUV measurements compared to benign nodules. In examining their data further, the authors identified a T/BSUV value being >1.5 as being the best cut-off, to distinguish thyroid cancer from thyroid nodules.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors of this study concluded that calculation of the T/BSUV value for thyroid incidentalomas identified on PET/CT could be helpful. It is important to note that this was a study in one institution and data were collected by reviewing charts, such that decisions on management of nodules were not made in real-time, based on the T/BSUV measurements. These findings need to be confirmed in another study. Also, it is important for patients who are found to have thyroid incidentalomas on imaging studies to have a frank discussion with their physician on whether the nodule is likely to be clinically important in their situation, as this may help in decision-making about further testing (if needed).

— Anna Sawka, MD

ATA THYROID BROCHURE LINKS

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

ABBREVIATIONS & DEFINITIONS

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. Most thyroid nodules

are benign, but thyroid cancer may need to be ruled out, depending on the features of the nodule and clinical situation.



THYROID NODULES, continued

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. PET/CT images are measured in terms of the maximal standardized uptake value ratios and units known as Hounsfield units (HU).

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.