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Case
Study

Improving Clinical Confidence with SPECT•CT

Parathyroid localization at Halifax Health

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Improving Clinical Confidence with SPECT•CT

Parathyroid Localization at Halifax Health



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Patients with primary hyperparathyroidism can benefit from preoperative parathyroid localization. The better the visualization the technique offers, the more confidence a radiologist can have in his or her reporting. This can lead to better preoperative planning for the surgeon and, potentially, shorter surgical procedure times.

At Halifax Health in East Central Florida, radiologists and technologists use a number of different approaches to parathyroid localization, depending on the case. Recently, however, they have noticed that SPECT•CT in particular can offer significant benefits—and now preferentially use SPECT•CT versus SPECT only.

Halifax Health recently selected a Symbia® T SPECT•CT system, where technologists are scanning an average of eight patients a day and sometimes as many as 15. Halifax Health is also running two SPECT systems. “There are a number of different ways to perform parathyroid localization tests,” says Thomas Yuschok, MD, Chief of Nuclear Radiology. “Our protocol has remained stable for many years; however, a negative parathyroid localization doesn’t necessarily mean there isn’t a parathyroid adenoma.”

A recent case involving a 74-year-old female patient highlights Dr. Yuschok’s point. The patient presented with a markedly elevated PTH (parathyroid hormone) level of 475 and significantly elevated serum calcium of 18.9. Her physician suspected parathyroid adenoma and ordered imaging to confirm diagnosis and provide preprocedural planning.

“We have found that SPECT•CT increases our ability to recognize and localize abnormalities in the parathyroid region,” says Dr. Yuschok. “In fact in this specific case, SPECT images of the patient indicated an area of intense uptake within the thyroid gland. The CT images

demonstrated a thin interface between the mass and the thyroid, however, confirming that the mass is extra-thyroidal, most likely a large parathyroid adenoma. So if you didn’t have the CT images, you might think it’s arising from the thyroid gland. It’s only when you have the SPECT•CT images that you can see it’s actually parathyroid.”

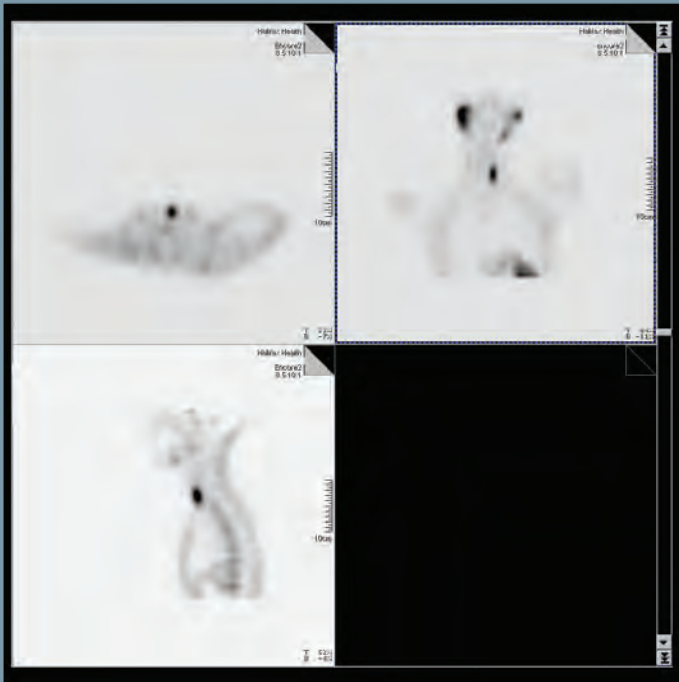
In this patient case, not only did the Symbia T SPECT•CT system help confirm diagnosis; it also enabled better surgical planning for treatment. “With a PTH that high, even if the scan was negative, the primary doctor would likely recommend dissection anyway,” says Dr. Yuschok. “But with our results, the surgeons knew what to expect when they went in and did the surgery.”

The combination of SPECT and CT can, in fact, provide useful anatomic information like this, leading to improved reporting confidence. Better diagnostic confidence can improve preoperative planning, enabling the potential for smaller incisions, a limited dissection field, shorter operative time, and faster postoperative recovery.

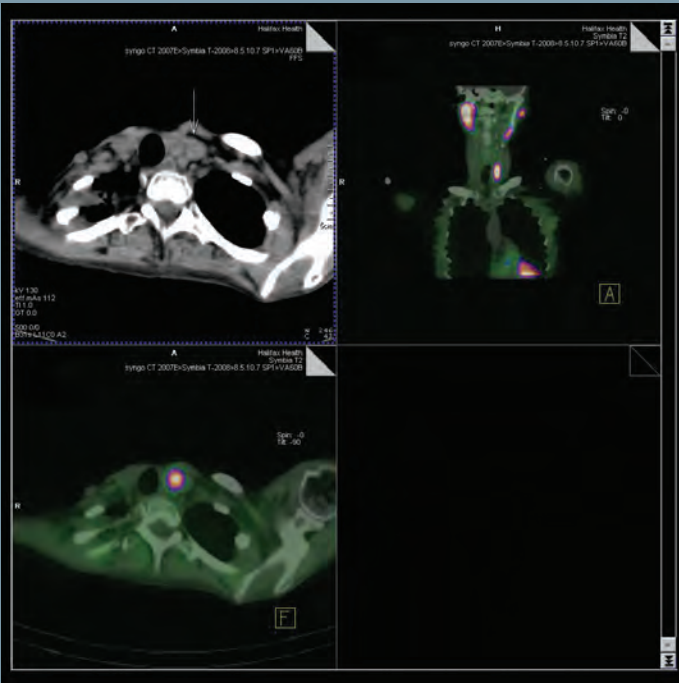
Prior to the addition of the Symbia T SPECT•CT system, Halifax Health ran SPECT-only systems. The change, however, went smoothly for radiologists, technologists, and referring physicians. “Siemens provided a lot of excellent on-site training,” says Andrea Huffman, Nuclear Medicine coordinator. “By far, the biggest challenge was learning the new modality. But with the help of Siemens, it was a very smooth transition.”

“Our biggest surprise was how much acceptance there has been for SPECT•CT from our radiologists and even our podiatrists and orthopedic surgeons—they absolutely love it,” says Dr. Yuschok. “The system increases the confidence of localization. Parathyroid localization with the addition of SPECT•CT is a very good test.”

A 74-year-old female patient presented with elevated parathyroid hormone level and significant elevated calcium score. Suspected parathyroid adenoma.



SPECT-only study



SPECT•CT study



“Parathyroid localization imaging protocols have evolved over the years. A protocol that uses two radiopharmaceuticals is most common. One agent preferentially localizes to the thyroid and the other localizes to metabolic tissue, such as the thyroid and parathyroid. A metabolic area that is not thyroid is inferred to represent parathyroid tissue in patients that have biochemical evidence of primary hyperparathyroidism. The addition of SPECT•CT data to this protocol provides additional specificity and localization, therefore increasing diagnostic confidence.”

Dr. Thomas Yuschok, Chief of Nuclear Radiology, Halifax Health Medical Center

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