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Oncocytic Adenoma of Thyroid Incidentally Detected by ^{18}F-Fluorocholine PET/CT

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A 58-old-man underwent ^{18}F-fluorocholine PET/CT for restaging of prostate cancer because of a rising level of prostate-specific antigen.^{18}F-fluorocholine showed no significant tracer uptake at the site of the prostatectomy or the pelvic lymph nodes. Incidental high tracer uptake was observed in a 26 × 23 mm left thyroid nodule. A benign tumor of the thyroid (oncocytic adenoma of thyroid) was diagnosed after left loboisthmectomy.

Key Words: ^{18}F-fluorocholine; thyroid; adenoma; incidentaloma; prostate cancer

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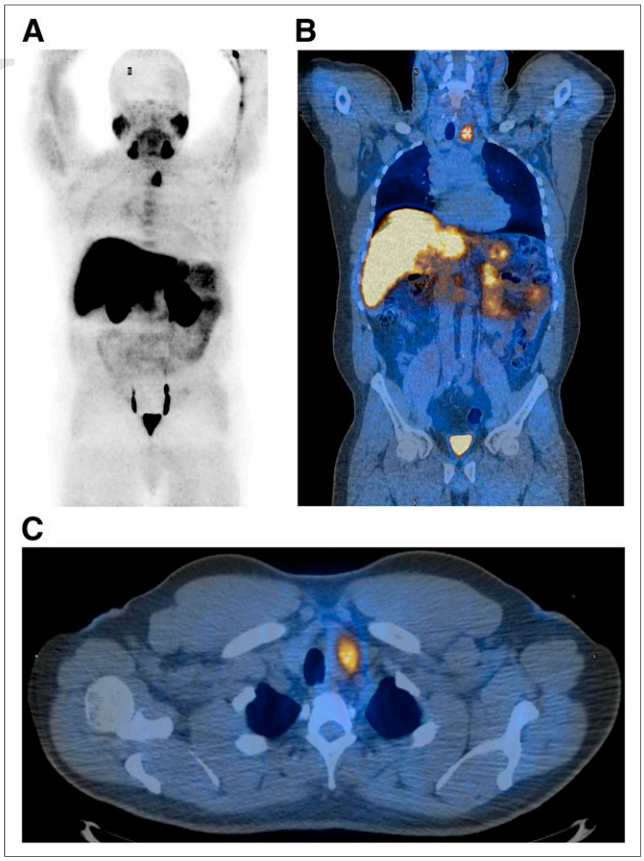
This case report illustrates that oncocytic thyroid adenoma should be considered in the differential diagnosis of a thyroid nodule with high uptake of ^{18}F-fluorocholine, even though thyroid cancer is the first consideration.

CASE REPORT

A 58-y-old-man underwent ^{18}F-fluorocholine PET/CT for restaging of prostate cancer because of a rising level of prostate-specific antigen. One year previously, the patient had been diagnosed with prostate cancer (Gleason, 4 + 3; prostate-specific antigen, 5 ng/mL; T2N0M0). He underwent surgery (total prostatectomy and lymph node dissection). Prostate-specific antigen was detectable after surgery (0.19 ng/mL after surgery and 1.85 ng/mL 6 mo later). The conventional work-up (abdominal CT, hepatic MR imaging, and bone scintigraphy) showed no suspect pelvic node involvement and no bone or hepatic metastases. ^{18}F-fluorocholine showed no significant tracer uptake at the site of the prostatectomy or the pelvic lymph nodes. An incidental focus of high [**Fig. 1**] uptake was observed in a left thyroid nodule (Fig. 1) that measured 26 × 23 mm and appeared hypodense on CT. A benign tumor of the thyroid (oncocytic adenoma of the thyroid) was diagnosed after left loboisthmectomy.

DISCUSSION

Functional choline PET/CT imaging for prostate cancer is used in the assessment of recurrent disease that is occult on routine imaging, particularly if there is a rising level of prostate-specific antigen. Incidental detection of disease on ^{18}F-choline PET/CT has been reported, such as parathyroid adenoma (*1*), thyroid lymphoma (*2*), thyroiditis, thyroid carcinoma, or Hürthle cell adenoma.



RGB

FIGURE 1. Maximum-intensity-projection (A) and fused ^{18}F-fluorocholine PET/CT images in coronal (B) and transaxial (C) views show focus of high uptake in left thyroid nodule.

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Incidental detection of thyroid disease on ^{18}F-FDG PET/CT is well documented. A 34.8% risk of malignancy associated with incidental focally increased thyroid uptake on ^{18}F-FDG PET/CT has been reported in a review (*3*) but the risk of malignancy associated with incidentally detected thyroid uptake on ^{18}F-fluorocholine PET/CT has not, to our knowledge, been reported. Oncocytic adenoma is a rare type of benign thyroid tumor comprising more than 75% oncocytic cells.

CONCLUSION

This case report highlights that cell membrane choline metabolism as assessed by^{18}F-fluorocholine PET is not specific to prostate cancer and that a high tracer uptake can also occur in benign diseases. Oncocytic thyroid adenoma should be considered in the differential diagnosis of a thyroid nodule with high uptake of ^{18}F-fluorocholine, even though thyroid cancer is the first consideration.

DISCLOSURE

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Quak E, Lheureux S, Reznik Y, Bardet S, Aide N. F18-choline, a novel PET tracer for parathyroid adenoma? *J Clin Endocrinol Metab.* 2013;98:3111–3112.
2. Eccles A, Challapalli A, Khan S, Barwick T, Mangar S. Thyroid lymphoma incidentally detected by ^{18}F-fluorocholine (FCH) PET/CT. *Clin Nucl Med.* 2013;38:755–757.
3. Soelberg KK, Bonnema SJ, Brix TH, et al. Risk of malignancy in thyroid incidentalomas detected by ^{18}F-fluorodeoxyglucose positron emission tomography; a systematic review. *Thyroid.* 2012;22;918–925.

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