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 $\times$ 23 mm left thyroid nodule. A benign tumor of the thyroid (oncocytic adenoma of thyroid) was diagnosed after left lobosthectomy.

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 uptake was observed in a left thyroid nodule (Fig. 1) that measured 26 $\times$ 23 mm and appeared hypodense on CT. A benign tumor of the thyroid (oncocytic adenoma of the thyroid) was diagnosed after left lobosthectomy.

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.

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.
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

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