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INCIDENTAL UPTAKE OF 18F-FLUOROCHOLINE IN THE NECK: A NOVEL PET TRACER FOR PARATHYROID ADENOMA?

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BACKGROUND-AIM

18F-Fluorocholine (FCH) is being employed as a tumor imaging probe for PET, primarily in patients with prostate cancer. A 82-year-old man underwent 18F-FCH PET/CT for biochemical recurrence of prostate cancer two years after radical prostatectomy (serum PSA 0.8 ng/mL during androgen-deprivation therapy). FCH PET/CT was negative for recurrent prostate cancer, but a focus of increased uptake was incidentally observed adjacent to the left lower pole of the thyroid.

METHODS

On the basis of the incidental FCH PET/CT finding described above, the patient was assessed for possible hyperparathyroidism, by complete blood chemistry (serum calcium and phosphorus, PTH and vitamin D3 25-OH). Parathyroid scintigraphy with 99mTc-sestamibi (MIBI) was also performed, based on early and delayed planar imaging of the neck and chest, with SPECT/CT imaging acquired immediately after early planar imaging; neck ultrasonography, with subsequent fine-needle aspiration cytology were subsequently performed.

RESULTS

Serum PTH was 79 pg/L (normal range 10-65), calcium ion in serum was 1.35 mmol/L (1.13-1.32) and vitamin D3 25-OH was 40.50 ng/mL (normal value >30). Parathyroid scintigraphy with MIBI confirmed the PET/CT findings and ultrasonography revealed an enlarged lower left parathyroid gland (8x15x18 mm), whose cytology was consistent with parathyroid adenoma.

CONCLUSION

The advantages of a PET tracer instead of MIBI for localizing hyperfunctioning parathyroid glands include better spatial resolution (which allows detection of smaller lesions) and a shorter scanning time, which has so far been exploited using [11C]methionine. Occasional reports on the use of FCH suggest that this agent is an additional favourable tracer for PET imaging in patients with hyperparathyroidism. This conclusion should be confirmed by more systematic comparative studies with reference to conventional MIBI scintigraphy.