Interesting image

A false positive finding on the PET of somatostatin receptor due to a chondromyxoid fibroma

Un resultado falso positivo de PET de receptores de somatostatina debido a un fibroma condromixoide

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A 38-year-old male patient with increased serum chromogranin-A value (150 U/L; normal value < 90 U/L) underwent somatostatin receptor PET/CT with 68Ga-DOTATOC searching for the presence of a neuroendocrine tumor.

Somatostatin receptor PET was performed after i.v. administration of 185 MBq of 68Ga-DOTATOC. Whole-body scan was obtained 60 min after the radiopharmaceutical administration. PET/CT images showed an area of moderately increased uptake in the left thoracic region corresponding to a bone abnormality of the fifth left rib at axial CT (B) and fused PET/CT images (C). The costal lesion appeared as loculated with a sharp sclerotic margin at CT image.

Fig. 1. Maximum-intensity projection PET image (A) showing a focal area of moderately increased uptake of 68Ga-DOTATOC in the left thoracic region, corresponding to a bone abnormality of the fifth left rib at axial CT (B) and fused PET/CT images (C). The costal lesion appeared as loculated with a sharp sclerotic margin at CT image.
radiopharmaceutical uptake (maximum standardized uptake value: 5) corresponding to a bone abnormality of the fifth left rib (Fig. 1). No other areas of abnormal increased radiopharmaceutical uptake were detected in the rest of the body.

Based on these imaging findings, the patient underwent biopsy which demonstrated the presence of a chondromyxoid fibroma (Fig. 2).

Chondromyxoid fibromas are benign tumors which are found most frequently in the metaphyses of long bones. They comprise less than 1% of primary bone neoplasms and display a hypermetabolic appearance on 18F-FDG PET imaging. Oftentimes, they are misdiagnosed as chondrosarcomas and are excised due to concern for malignancy.1,2

Somatostatin receptor PET/CT using different radiopharmaceuticals such as 68Ga-DOTATOC, 68Ga-DOTANOC or 68Ga-DOTATE is a diagnostic imaging method which has been demonstrated to be very accurate in the diagnosis of neuroendocrine tumours.2 Nevertheless cases of false negative and false positive findings of this method should be taken into account. False positive findings may be due mainly to inflammatory diseases because inflammatory cells overexpress somatostatin receptors on their cell surface.3 On the other hand, non-neuroendocrine tumours may also overexpress somatostatin receptors giving false positive findings at somatostatin receptor PET/CT.2 Somatostatin receptor PET/CT may be not recommended in patients with a suspicious neuroendocrine tumour based on the mere detection of increased serum chromogranin-A value, due to the limited number of true positive findings in this scenario. Conversely, the probability of true positive findings using this imaging method increases when positive conventional imaging in association with clinical/biochemical findings is present.2

In the case described we demonstrated a false positive finding at somatostatin receptor PET/CT due to a costal chondromyxoid fibroma incidentally detected by this imaging method.

References