

# Solitary Plasmacytoma of the Sternum Mimicking Bone Metastasis in a Patient with a History of Breast Cancer Evaluated by F-18-FDG PET/CT

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A 65-year-old woman with a history of breast cancer (stage T2N0M0 treated with left breast conservative therapy 7 years previously followed by hormone therapy) underwent fluorine-18-fluorodeoxyglucose positron emission tomography/computed tomography (F-18-FDG PET/CT) for restaging due to increased serum tumour markers levels (CA15-3, 37 U/ml and CEA, 8 ng/ml). The patient presented thoracic pain before performing F-18-FDG PET/CT. PET/CT demonstrated an area of increased F-18-FDG uptake corresponding to an osteolytic lesion occupying the upper sternum suspicious for bone metastasis (Fig. 1). No other areas of abnormal F-18-FDG uptake were detected in the rest of the body. Based on this PET/CT finding, the patient performed biopsy of the sternal

lesion. Histology demonstrated the presence of a sternal plasmacytoma and the patient was addressed to radiation therapy.

The role of F-18-FDG PET/CT in patients with multiple myeloma is well known [1–4], whereas only some articles evaluated the usefulness of this method in patients with solitary plasmacytomas [5, 6]. In particular, F-18-FDG PET/CT may be useful in demonstrating the evolution of solitary plasmacytomas in multiple myeloma [7].

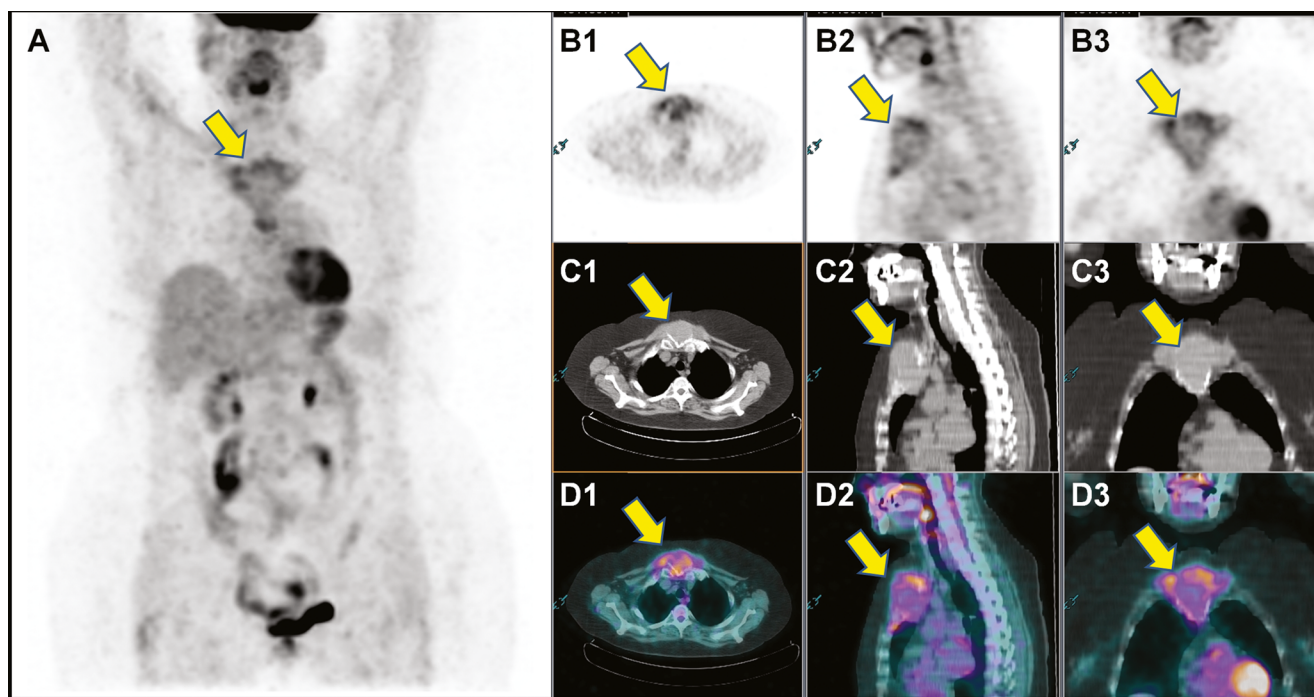
In our case F-18-FDG PET/CT was useful in detecting a solitary plasmacytoma of the sternum mimicking bone metastasis in a patient with history of breast cancer, correctly addressing to further histological evaluation.

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**Fig. 1** A female patient with a history of breast cancer underwent F-18-FDG PET/CT for restaging due to increasing serum tumour marker levels. Whole-body maximum intensity projection (MIP) F-18-FDG PET image (A) showed an area of moderate F-18-FDG uptake in the thoracic region (arrow). F-18-FDG PET (B1–B3), unenhanced CT (C1–C3) and fused PET/CT images (D1–D3), in axial (B1, C1, D1), sagittal (B2, C2, D2) and coronal (B3, C3, D3) projection showed increased

radiopharmaceutical uptake corresponding to an osteolytic lesion of the upper sternum with a maximal standardized uptake value of 4.6, suspicious for a bone metastasis. No other areas of abnormal F-18-FDG uptake were detected in the rest of the body. Based on this PET/CT finding, biopsy of the sternal lesion was performed on the patient. Histology demonstrated the presence of a sternal plasmacytoma and the patient was addressed to radiation therapy

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**Conflict of interest** Giorgio, Treglia, Luca Giovanella, Barbara Muoio and Carmelo Caldarella declare that they have no conflicts of interest.

## References

- Lu YY, Chen JH, Lin WY, Liang JA, Wang HY, Tsai SC, et al. FDG PET or PET/CT for detecting intramedullary and extramedullary lesions in multiple myeloma: a systematic review and meta-analysis. *Clin Nucl Med*. 2012;37:833–7.
- van Lammeren-Venema D, Regelinck JC, Riphagen II, Zweegman S, Hoekstra OS, Zijlstra JM.  $^{18}\text{F}$ -fluoro-deoxyglucose positron emission tomography in assessment of myeloma-related bone disease: a systematic review. *Cancer*. 2012;118:1971–81.
- Caldarella C, Isgrò MA, Treglia I, Treglia G. Is fluorine-18-fluorodeoxyglucose positron emission tomography useful in monitoring the response to treatment in patients with multiple myeloma? *Int J Hematol*. 2012;96:685–91.
- Cocciolillo F, Treglia G, Villani MF, Giordano A. Atypical presentation of plasma cell leukemia secondary to multiple myeloma detected by F-18 FDG PET/CT. *Clin Nucl Med*. 2011;36:e220–3.
- Warsame R, Gertz MA, Lacy MQ, Kyle RA, Buadi F, Dingli D, et al. Trends and outcomes of modern staging of solitary plasmacytoma of bone. *Am J Hematol*. 2012;87:647–51.
- Kim PJ, Hicks RJ, Wirth A, Ryan G, Seymour JF, Prince HM, et al. Impact of  $^{18}\text{F}$ -fluorodeoxyglucose positron emission tomography before and after definitive radiation therapy in patients with apparently solitary plasmacytoma. *Int J Radiat Oncol Biol Phys*. 2009;74:740–6.
- Banzo J, Palomera L, Ubieta MA, Bonafonte E, Rambalde EF, Ayala SM. Evolution of solitary plasmacytoma of the sternum to multiple myeloma with multifocal extramedullary liver involvement. Contribution of  $(^{18}\text{F})\text{F}$ -FDG PET-CT. *Rev Esp Med Nucl Imagen Mol*. 2013;32:328–9.