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Solitary Osseous Plasmacytoma: Contribution of Imaging: A Case Report

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Abstract **Case Report**

Solitary Osseous Plasmacytoma (SOP) is a rare lesion characterized by a localized accumulation of neoplastic monoclonal plasma cells, without evidence of systemic myelomatosis. It represents 5% of all plasma cell tumors. Its diagnosis relies on three essential elements: radiology, immunohistological examination, and biological investigation. Imaging plays a significant role in all stages of managing osseous plasmacytoma. It aids in detecting and confirming the isolated nature of the lesion, guiding potential biopsy procedures, assessing local tumor extension in pre-therapeutic evaluations, and ensuring monitoring during disease progression. Treatment is primarily based on radiotherapy. Prognosis depends on its progression to multiple myeloma, necessitating regular follow-up of patients with this lesion. This study illustrates a clinical case of a 55-year-old man, discussing the clinical, radiological, and histological aspects of these lesions. ***Objective***: The primary objective is to illustrate the radiological aspect and specify the role of imaging in the diagnosis of solitary osseous plasmacytoma.

Keywords: Solitary Osseous Plasmacytoma, myelomatosis, plasma cell tumors.

INTRODUCTION

Plasma cell neoplasms account for 1 to 2% of all human neoplasms, with various clinical forms, including solitary plasmacytoma. Solitary plasmacytoma can occur in either bone (SOP) or soft tissues (SPE). The osseous form is the most common, predominantly affecting the axial skeleton, particularly the vertebrae. The diagnostic approach to solitary osseous plasmacytoma (SOP) must be rigorous, involving hematologists, radiologists, and pathologists. Imaging modalities help detect tumors, suggest diagnoses, specify their unique characteristics, evaluate treatment response, and ensure post-therapeutic follow-up. SOP treatment primarily relies on radiotherapy, with limited and controversial roles for other therapeutic modalities. Prognosis is influenced by progression to multiple myeloma, justifying precise imaging evaluation of bone lesions, prognostic factor investigation, and rigorous surveillance.

CASE REPORT

A 45-year-old patient, with no notable medical history, presented with a sternal swelling evolving over two years. Clinical examination revealed a mass adjacent to the sternal bone. A chest X-ray showed a lytic lesion of the sternal bone (Figure 1). Thoracic computed tomography (CT) revealed the presence of locally infiltrating lytic process of the sternal manubrium, associated with bilateral subclavian adenopathies without other bone lesions (Figure 2,3). A surgical biopsy via midline sternal incision was performed under local anesthesia, histological examination confirmed the diagnosis of malignant plasmacytoma. Laboratory and radiological assessments were conducted: standard blood tests, protein electrophoresis, and urine Bence-Jones protein test. This laboratory workup was normal, ruling out multiple myeloma and confirming the diagnosis of solitary osseous plasmacytoma. To date, with a two-year follow-up, there have been no recurrences or transformations into multiple myeloma.

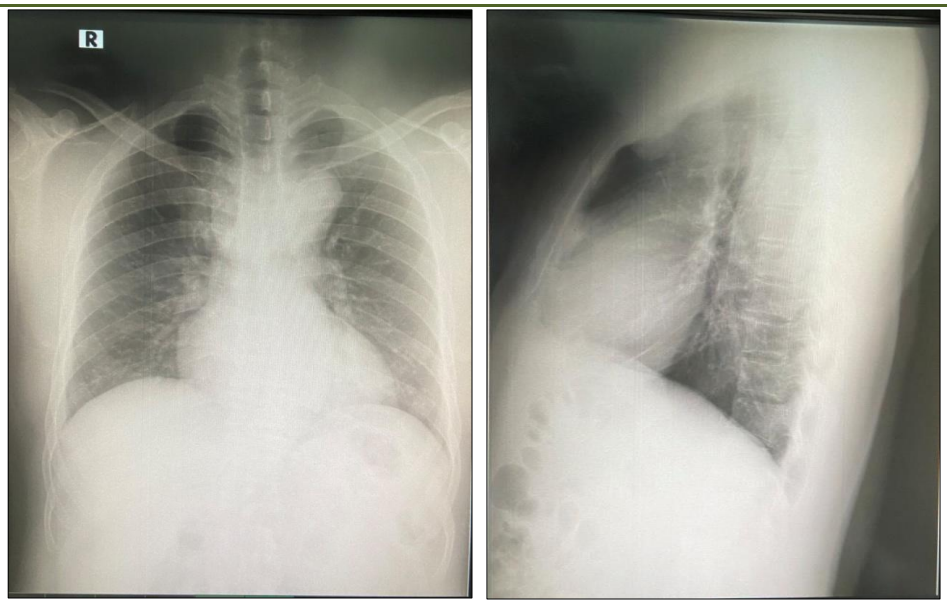

Figure 1: Anteroposterior and lateral chest radiograph showing lytic lesion adjacent to the sternal bone

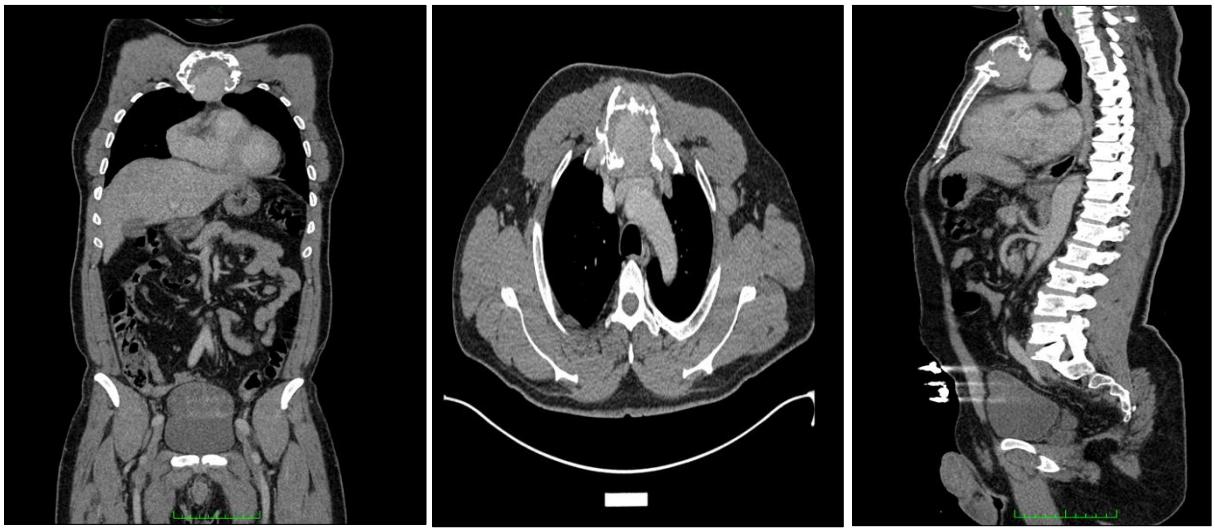

Figure 2: Thoraco-abdominopelvic computed tomography (parenchymal window): Locally infiltrating lytic process of the sternal manubrium

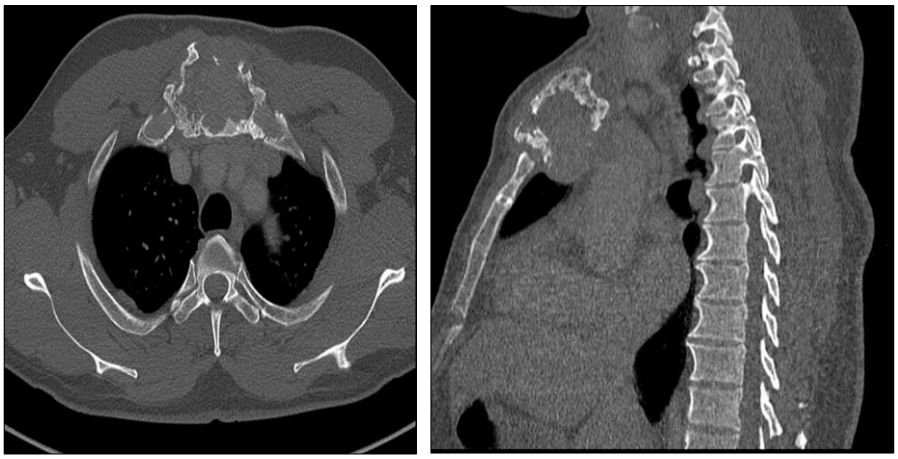

Figure 2: Thoraco-abdominopelvic computed tomography (bone window): Aggressive osteolysis of the sternal manubrium

DISCUSSION

Plasma cell tumors represent 1 to 2% of all human neoplasms. Among cranial extremity plasma cell tumors, multiple myeloma, extramedullary plasmacytoma, and SOP are distinguished. The latter is rare, accounting for only 4% [2]. Solitary plasmacytoma is a malignant tumor derived from a single clone of more or less differentiated B lymphocytes without diffuse medullary invasion, distinguishing it from multiple myeloma [5]. The most common sites for SOP are long bones and vertebrae. Sternal localization is extremely rare, representing only 4.4% of SOP cases [8, 9]. Several criteria are necessary to diagnose solitary plasmacytoma: absence of anemia, normal phosphocalcic balance, normal renal function, normal marrow cytology in at least two different sites, and absence of other lesions on skeletal radiographs or MRI [5]. In SOP, the average age (around 50 years) is always about 10 years younger than that of multiple myeloma [6]. Sex distribution shows a clear male predominance in SOP and equal involvement of both sexes in multiple myeloma [6, 5]. Clinically, the disease presents with bone pain, paresthesia or anesthesia, bleeding, or swelling [8]. Radiologically, the lesion shows no specificity [8], it appears as a well-defined radiolucent image, with or without cortical destruction [9]. SOP is often confused with benign lesions like ameloblastoma, or with osteomyelitis or granuloma. Malignancy is rarely considered for this lesion [10]. CT scans refine the radiological image and study tumor extension. Magnetic resonance imaging, more effective in medullary exploration, finely assesses tumor boundaries [11], offering greater precision for local treatment (surgery, radiotherapy). SOP tumor locations are similar to multiple myeloma [12]. The unique nature of the lesion defining SOP can be confirmed by radiological assessment. However, this remains insufficient. 5% of confirmed multiple myelomas with malignant plasmacytoma on bone marrow biopsy have only one visible radiological localization at the time of initial diagnosis [13]. Bone scintigraphy can detect infra-radiological hyperfixation zones for further radiological exploration [14]. In all cases, biopsy must prove the malignant plasmacytic nature of the tumor. Besides histological confirmation of malignant plasma cell proliferation, diagnosing SOP requires the absence of medullary dissemination [8, 9]. Therapeutically, external radiotherapy at a dose of 40 to 50 Gy is the standard treatment for SOP, either exclusively or after surgery primarily for diagnostic purposes. It achieves a local control rate of over 90% with analgesic effects as well [15, 16]. Adding chemotherapy is not recommended. Predictors of local recurrence are insufficient radiotherapy doses and tumor size [17]. Therefore, surveillance must be meticulous and prolonged, based on clinical examination, radiological tests, erythrocyte sedimentation rate (ESR), protein immunoelectrophoresis, and bone marrow examination [7].

CONCLUSION

SOP is a highly aggressive malignant tumor. While its definitive diagnosis relies on histology and ruling out multiple myeloma, imaging is crucial from clinical suspicion to post-therapeutic follow-up and plays a significant role in the diagnostic approach. Treatment primarily involves external radiotherapy, which is highly effective. However, the risk of recurrence or transformation into multiple myeloma always exists, highlighting the importance of prolonged surveillance.

REFERENCE

1. Choumi, F., Eddou, H., Sina, M., Moumine, M., & Nassih, M. (2018). Solitary plasmacytoma of the maxilla: report of a case. *Therapeutic Medicine* , *24* (1), 64-66.
2. Bellalah, Z., Slama, A., Ayachi, S., Rammeh, S., Mrad-Daly, K., & Khochtali, H. (2010). Solitary plasmacytoma of the mandible. About two cases. *Odonto-stomatological news* , (250), 145-151.
3. Sabani, H., Fiqhi, K., Arrob, A., & El Khatib, K. (2015). Solitary bone plasmacytoma of the mandible: a clinical case and review of the literature. *Oral Medicine Oral Surgery* , *21* (3), 137-140.
4. Tournier-Rangeard, L., Lapeyre, M., Graff-Caillaud, P., Mege, A., Dolivet, G., Toussaint, B., ... & Peiffert, D. (2006). Radiotherapy for solitary extramedullary plasmacytoma in the head-and-neck region: A dose greater than 45 Gy to the target volume improves the local control. *International Journal of Radiation Oncology* Biology* Physics*, *64*(4), 1013-1017.
5. Ashraf, M. J., Azarpira, N., & Khademi, B. (2013). Anaplastic solitary plasmacytoma of mandible, masquerading as sarcoma. *Pakistan Journal of Medical Sciences*, *29*(3), 872.
6. Bataille, R., Sany, J., & Serre, H. (1981). Plasmocytomes apparemment solitaires des os: aspects cliniques et pronostiques (a propos de 114 cas).
7. Faic¸al Choumi, H. E., Mohamed, S., Mohammed, M., & Mohamed, N. Service de stomatologie, chirurgie maxillo-faciale et chirurgie plastique, Service d'hématologie clinique, Service d'anatomopathologie, Hôpital militaire Moulay Ismail Meknès.
8. Mohammadi, A., Ilkhanizadeh, B., & Ghasemi-Rad, M. (2012). Mandibular plasmocytoma with sun-ray periosteal reaction: A unique presentation. *International journal of surgery case reports*, *3*(7), 296-298.
9. Diakité, A., Nouni, K., Bellefqih, S., Kebdani, T., & Benjaafar, N. (2014). Plasmocytome solitaire osseux: expérience de l'institut national d'oncologie de Rabat (INO). *The Pan African Medical Journal*, *17*.

10. Bourjat, P., Kahn, J. L., & Braun, J. J. (1999). Imagerie des plasmocytomes solitaires maxillo-mandibulaires. *Journal de radiologie (Paris)*, *80*(8), 859-862.
11. Zimmer, W. D., Berquist, T., McLeod, R. A., Sim, F. H., Pritchard, D. J., Shives, T. C., ... & May, G. R. (1985). Bone tumors: magnetic resonance imaging versus computed tomography. *Radiology*, *155*(3), 709-718.
12. Bataille, R., Sany, J., & Serre, H. (1981). Plasmocytomes apparemment solitaires des os: aspects cliniques et pronostiques (a propos de 114 cas).
13. Bataille, R. Le Myélome. EMC Paris. 1987; 14027 B10 (60-14027) B10-4.
14. Collet, H., Laurent, J. C., & Gary, B. G. Place de la scintigraphie osseuse au pyrophosphate de technitium et de la radiographie dans le bilan osseux en carcinologie. J. Radiol., 57, n 8-9, 588-589, 197
15. Tournier-Rangeard, L., Lapeyre, M., Graff-Caillaud, P., Mege, A., Dolivet, G., Toussaint, B., ... & Peiffert, D. (2006). Radiotherapy for solitary extramedullary plasmacytoma in the head-and-neck region: A dose greater than 45 Gy to the target volume improves the local control. *International Journal of Radiation Oncology* Biology* Physics*, *64*(4), 1013-1017.
16. Ammar, C. N. B., Ghorbel, I., Kochbati, L., Gargouri, W., Touati, S., & Maalej, M. (2010). Plasmocytome solitaire extramédullaire de la tête et du cou: à propos de cinq cas. *Cancer/Radiothérapie*, *14*(8), 755-758.
17. Kochbati, L., Romdhane, N. K. B., Mrad, K., Nasr, C., Salah, D. B., Romdhane, K. B., & Maalej, M. (2004). Plasmocytome solitaire osseux: aspects thérapeutiques et évolutifs. *Cancer/Radiothérapie*, *8*(2), 70-74.