CASE REPORT

Unveiling Recurrent Solitary Plasmacytoma: A Case Report of Left Mastoid Manifestation and Therapeutic Insights

Fabiha Shakeel[1], Laraib Khan[1], Hafsa Rais[2*], Bilal Ahmed[1] and Nasir Ali[1]

[1]*Aga Khan University Hospital, Karachi, Pakistan*

[2]*Sindh Institute of Urology and Transplantation (SIUT), Karachi, Pakistan*

ABSTRACT

Solitary plasmacytoma is an uncommon plasma cell neoplasm characterized by localized disease without systemic myeloma features. Despite effective local treatment, a subset of patients develops recurrence or metachronous lesions. We report the case of a 26-year-old male previously treated for solitary bone plasmacytoma of the acetabulum who presented seven years later with progressive swelling in the left mastoid region. Imaging demonstrated a destructive solitary mastoid lesion, and biopsy confirmed recurrent plasmacytoma with CD138 and CD38 positivity. Bone marrow examination remained normal, excluding systemic progression. The patient was treated with definitive radiotherapy of 50 Gy in 25 fractions, achieving significant radiological response and complete symptom resolution. This case highlights the potential for late recurrence, the value of comprehensive imaging and histopathologic confirmation, and the effectiveness of radiotherapy. It underscores the importance of long-term surveillance and a multidisciplinary approach in managing recurrent solitary plasmacytoma.

Keywords: *Recurrent solitary plasmacytoma, hematological malignancy, plasma cell neoplasm, radiotherapy, multidisciplinary approach.*

INTRODUCTION

Plasmacytoma is a rare hematological malignancy characterized by a localized proliferation of monoclonal plasma cells in bone or soft tissue, in the absence of systemic features of multiple myeloma [1]. It is classified into two major subtypes: solitary bone plasmacytoma (SBP) and solitary extramedullary plasmacytoma (SEP), depending on whether the lesion originates within bone or soft tissues [2]. SBP accounts for less than 5% of all plasma cell neoplasms and typically presents as a single lytic lesion with minimal or no bone marrow involvement [3, 4].

Diagnosis is based on clinical, radiological, and pathological findings demonstrating a solitary lesion composed of monoclonal plasma cells, normal bone marrow (<10% plasma cells), absence of additional skeletal lesions on imaging, and no end-organ damage attributable to plasma cell proliferation [5]. While solitary plasmacytoma may remain localized for years, a subset of patients experiences recurrence or progression to multiple myeloma, highlighting the importance of long-term surveillance and individualized management strategies [6].

Here, we report a rare case of recurrent solitary plasmacytoma involving the left mastoid region in a young male previously treated for solitary bone plasmacytoma of the acetabulum. The case underscores the diagnostic approach, therapeutic management, and the clinical relevance of recurrence in solitary plasmacytoma.

**Corresponding author:* *Hafsa Rais, Sindh Institute of Urology and Transplantation (SIUT), Karachi, Pakistan. Email: drhafsarais@gmail.com*

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CASE REPORT

We present the case of a 26-year-old male, with known history of thalassemia minor and hypertension who was diagnosed with biopsy-proven right acetabulum solitary bone plasmacytoma back in 2016, treated with radiation therapy and systemic therapy, followed by active surveillance. In 2023, he presented with a three-month history of progressive swelling over the left posterior auricular region, associated with decreased hearing, vertigo, and gait imbalance. There was no history of systemic symptoms such as bone pain, weight loss, or fever. On examination, a 3x3 cm firm, non-tender swelling was noted over the left mastoid region, with postauricular fullness. Magnetic Resonance Imaging (MRI) revealed a large, destructive, enhancing lesion involving the left mastoid bone. Positron emission tomography (PET/CT) scan revealed a solitary hypermetabolic destructive lesion involving the left mastoid (SUVmax 15.1) with no other skeletal lesions detected (**Fig. 1**).

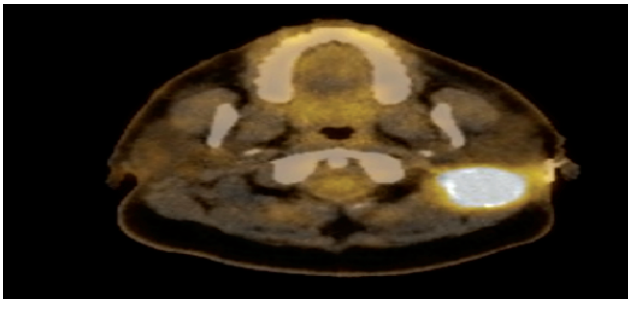

Fig. (1): A well marginated FDG avid solitary lesion in left mastoid/posterior auricular lesion of SUV max 15.1 measuring 61 x 37mm.

Histopathological examination of the biopsy specimen showed sheets of mature and immature plasma cells with eccentric nuclei and abundant eosinophilic

cytoplasm. Immunohistochemistry demonstrated strong positivity for CD138 and CD38, confirming the diagnosis of recurrent solitary plasmacytoma. Bone marrow aspiration and trephine biopsy showed normal hematopoietic elements with no clonal plasma cell infiltration, excluding multiple myeloma. Laboratory investigations demonstrated normal serum calcium, renal function, and hemoglobin levels. Serum protein electrophoresis revealed a faint monoclonal IgG lambda band. The serum free light chain assay showed kappa 19.4 mg/L, lambda 48.4 mg/L, with a kappa/lambda ratio of 0.40, consistent with localized monoclonal gammopathy. The patient received definitive radiation therapy, with a total dose of 50Gy in 25 fractions to the left mastoid region over five weeks. Treatment was well-tolerated, and follow-up MRI after completion of therapy showed significant regression of the lesion and resolution of symptoms. The patient remains clinically and radiologically disease-free at six months of follow-up.

DISCUSSION

Solitary plasmacytoma (SP) is a distinct plasma cell neoplasm characterized by a single, localized lesion in the absence of systemic myeloma features. Despite optimal local treatment, a proportion of patients eventually experience disease recurrence—either at the original site, in a new anatomical location as a metachronous lesion, or through progression to multiple myeloma [6, 7]. When recurrence occurs, it often poses diagnostic challenges, particularly in determining whether the finding represents a true localized relapse or an early step toward systemic transformation.

The reported risk of recurrence or progression to multiple myeloma varies across studies, with estimates indicating that nearly 50-60% of patients with solitary bone plasmacytoma may progress within 10 years. Consequently, long-term and structured follow-up using serum protein electrophoresis, immunofixation, and advanced imaging modalities plays a critical role in timely identification of relapse or systemic evolution. According to the NCCN guidelines, radiation therapy (RT) continues to be the cornerstone of treatment for SP, with recommended doses of 40-50 Gy in 20-25 fractions achieving local control rates exceeding 80% [8]. In the present case, the patient received 50 Gy to the left mastoid region and demonstrated an encouraging early response. The known radiosensitivity of plasmacytomas supports the effectiveness of achieving durable local control when RT fields adequately cover the entire lesion with appropriate margins. For patients presenting with recurrent solitary plasmacytoma, systemic therapy becomes an important consideration. Agents such as bortezomib-based regimens may be particularly useful, especially in younger individuals or those with biological features suggestive of higher risk [9]. Furthermore, autologous stem cell transplantation (ASCT), following induction systemic therapy, has shown favorable outcomes in prolonging progression-free survival in carefully selected recurrent or high-risk cases [10, 11].

Overall, this case highlights the need for clinicians to remain vigilant for the possibility of recurrence even after an initial complete response. It also underscores the value of coordinated multidisciplinary management involving radiation oncology, hematology, and diagnostic imaging teams to ensure optimal evaluation, treatment planning, and long-term surveillance.

CONCLUSION

Solitary plasmacytoma remains a rare and challenging plasma cell neoplasm, usually managed with definitive radiation therapy. However, recurrence of solitary plasmacytoma, as demonstrated in this case, underscores the importance of vigilant, long-term surveillance and consideration of systemic therapy in selected patients. Larger studies are needed to refine management strategies for recurrent or high-risk cases. This report highlights the significance of a multidisciplinary approach incorporating imaging, histopathology, and individualized therapy to optimize outcomes and prevent disease progression.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient (or their parents/legal guardians/next-of-kin) for publication of the details of their medical case and any accompanying images.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

Fabiha Shakeel: Manuscript writing & Editing.
Laraib Khan: Review and editing.
Bilal Ahmed: Draft and writing.
Hafsa Rais: Manuscript writing and editing.
Nasir Ali: Review and Conceptualization
All authors reviewed and approved the final version of the manuscript.

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