Giant Solitary Plasmacytoma of Skull: A Case Report

Abstract:
Plasmacytoma is a tumor arising from plasma cell, which mainly grows within soft tissue or within axial skeleton, when it is present as a discreet solitary mass it is called as solitary plasmacytoma & it is rare, we report a 46 years male, presented to us with the complaints of painless swelling in the left front parietal region which is about 8.6x6.5cm in diameter, Magnetic resonance imaging revealed an extra axial mass in fronto parietal region with overlying bone destruction mimicking meningioma with bony erosion, we did frontoparietal craniectomy and complete resection of tumor with bone margin subsequent cranioplasty also done, histopathology of which revealed plasmacytoma, after that we did urinary bence jones protein which was negative.


Introduction:
Plasmacytoma is malignant proliferation of plasma cell, mainly arise from proliferation of a single clone of B lymphocyte, 3% of which present as solitary lesion. The international myeloma working group lists three types of plasmacytoma: solitary plasmacytoma of bones, extramedullary plasmacytoma & multiple plasmacytoma. Solitary plasmacytoma occurs as lytic lesion.

An osteolytic plasmacytoma lesion in skull with no systemic involvement is extremely rare. Multiple myeloma, extramedullary plasmacytoma & solitary bone plasmacytoma all are the three subgroup of plasma cell tumor. We present a case of plasmacytoma present in frontoparietal region.

Case report:
A 77 years male got admitted us with complaints of gradual enlargement of a painless swelling on his vertex for one year, on examination we found a painless mass in left frontoparietal region measuring about 8.5 x 6.4 cm in diameter (Figure- 1), which was firm in consistency, not mobile, fixed with underlying & overlying structure, on general physical examination no other abnormality detected, neurological examination was also normal. He has no significant past medical or surgical illness. On MRI of brain revealed a hypointense extra axial lesion involving the left frontoparietal region measuring about 8 x 6 cm causing mass effect over the brain parenchyma (Figure- 2). On intravenous gadolinium showed strong enhancement of the lesion (Figure-3). CT scan of brain revealed a lytic lesion in left frontoparietal region causing a bone defect (Figure- 4). Magnetic resonance venogram displayed the superior sagittal sinus is compressed by the tumor, complete blood count all are within normal range. Our differential diagnoses were meningioma or metastasis. So we did all metastatic work up eg. thyroid scan, usg of whole abdomen and tumor marker but all were normal, He underwent craniectomy. Peroperative tumor was found to involve the subcutaneous tissue, bone and dura. Tumor was moderately vascular, total removal of tumor with involved bone and part of dura (Figure- 5). Cranioplasty was done. Histopathology revealed plasmacytoma. Postoperative period was uneventful, as there was no other site of lytic lesion and we removed tumor in enbloc, so radiotherapy was not performed.
Fig. 1: Mass over left frontoparietal region

Fig. 2: MRI of brain. T1 Image showing isotense lesion

Fig. 3: Sagittal view & Coronal view of contrast MRI

Fig. 4: CT scan of brain in bone window showing erosion at left frontoparietal region.
Fig.-5: Per-operative photo: After careful dissection of skin and craniectomy tumor found attached with underlying bone and dura and tumor was removed en bloc.

Fig.-6: Post-operative CT scan of brain showing no residual tumor and acceptable cranioplasty.

Table-I

Patients with solitary plasmacytoma of skull received en bloc removal including cranioplasty and duroplasty published in literature.

<table>
<thead>
<tr>
<th>Study</th>
<th>Age &amp; gender</th>
<th>Location of tumor</th>
<th>surgery</th>
<th>cranioplasty</th>
<th>Radio-therapy</th>
<th>Follow up</th>
<th>recurrence</th>
</tr>
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<tbody>
<tr>
<td>Arienta et al., 1987 [7]</td>
<td>64, F</td>
<td>Parietal</td>
<td>GTR</td>
<td>Yes (titanium mesh)</td>
<td>No</td>
<td>3 years</td>
<td>No</td>
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<tr>
<td>Du Preez et al., 1991 [6]</td>
<td>30, F</td>
<td>Frontotemporal</td>
<td>GTR</td>
<td>Yes</td>
<td>No</td>
<td>1.5</td>
<td>No</td>
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<tr>
<td>Barone et al., 1992 [8]</td>
<td>55, F</td>
<td>Frontal</td>
<td>GTR</td>
<td>Yes autograft</td>
<td>No</td>
<td>9 months</td>
<td>No</td>
</tr>
<tr>
<td>Madsuda et al., 1996 [9]</td>
<td>55, F</td>
<td>Temporal</td>
<td>GTR</td>
<td>Yes autograft</td>
<td>Yes</td>
<td>2 years</td>
<td>No</td>
</tr>
<tr>
<td>Tanaka et al., 1998 [10]</td>
<td>55, M</td>
<td>Frontal</td>
<td>GTR</td>
<td>Yes</td>
<td>Yes</td>
<td>7 months</td>
<td>No</td>
</tr>
<tr>
<td>Gürbüz et al., 2013 [11]</td>
<td>63, M</td>
<td>Parietooccipital</td>
<td>GTR</td>
<td>Yes autograft</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mankotia et al., 2017 [12]</td>
<td>36, M</td>
<td>Frontal</td>
<td>GTR</td>
<td>Yes cement</td>
<td>Yes</td>
<td>3 months</td>
<td>No</td>
</tr>
<tr>
<td>Kuo et al., 2018 [4]</td>
<td>40, M</td>
<td>Parietooccipital</td>
<td>GTR</td>
<td>Yes cement</td>
<td>No</td>
<td>1 year</td>
<td>No</td>
</tr>
</tbody>
</table>
Discussion:
Plasma cell tumors are divided into three types: solitary plasmacytoma of bone (SPB), extramedullary plasmacytoma, and multiple myeloma. Multiple myeloma is a systemic disease that involves multiple osteolytic lesions, atypical plasma cells in biopsy, amyloid deposits, and abnormalities in immunoglobulin production, and the others are local forms of plasma cell tumors. According to Bataille and Sany, the diagnostic criteria for SPB include an isolated tumor composed of malignant plasma cells; absence of other lesions on skeletal radiographic survey; absence of plasmacytosis in the bone marrow; absence of anemia, hypercalcemia, or renal involvement; and the others are local forms of plasma cell tumors. Solitary plasmacytomas of bone are mostly involved in the vertebrae and pelvic bones.

We go through published literature [Table:1(4,6-12)] of patients diagnosed as a case of solitary plasmacytoma of skull received en bloc removal of tumor including cranioplasty. All of those patients are histopathologically proven plasmacytoma of skull among them four patients receive only surgery, no post operative radiotherapy or chemotherapy, and four patients received surgery along with post operative radiotherapy, and on follow up among them seven patients had no recurrence except one patient whom post-operative follow up is not available. Radiotherapy is the definitive treatment for solitary plasmacytoma of bone, surgery along with radiotherapy is the treatment of choice based on tumor location and type of removal of tumor, chemotherapy is not needed until there is systemic involvement as like multiple myeloma. If there is gross total resection of tumor incase of isolated local tumor radiotherapy is needed or not is still in query, but as sometimes solitary plasmacytoma is the initial presentation of multiple myeloma regular follow up is necessary in all cases.

Conclusion:
Isolated solitary plasmacytoma is a very rare tumor, en bloc tumor removal with removal of involved bone and dura up to macroscopic healthy margin with cranioplasty and duroplasty is a treatment option as histopathology report reveals margin is free from tumor, so no radiotherapy is required but regular follow up should be carried out.

References: