CASE REPORT ASIAN JOURNAL OF MEDICAL SCIENCES

A rare case of meningioma with extracalvarial extension: A Case report

Jolly Sinha[1], Vivek Kumar Kankane[2], Avdhesh Shukla[3], Avinash Sharma[4]

[1]Senior Resident, [2]Associate Professor, [3,4]Professor, Department of Neurosurgery, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India

Submission: 27-06-2023 Revision: 28-08-2023 Publication: 01-10-2023

ABSTRACT

Meningioma is a common primary tumor of the central nervous system. Here, we describe a case of meningioma en plaque with intracranial mass with osteolysis with extracalvarial extension. The patient was a 54 years male who presented to us with a rapidly growing mass in the left frontal region. On magnetic resonance imaging brain, the mass was avid heterogeneously enhancing extra-axial lesion in the left frontal lobe with surrounding cerebrospinal fluid cleft with an erosion of overlying frontal calvaria on the left side with an extracranial component. Simpson's grade 1 excision was carried out. Histopathology showed a meningothelial meningioma with low tumor cell proliferation but with infiltration into the bone and angioinvasion. The patient was taken for radiotherapy. The patient recovered well in the post-operative period.

Key words: Meningioma; Osteolysis; Extracranial extension

Access this article online

Website: http://nepjol.info/index.php/AJMS

DOI: 10.3126/ajms.v14i10.56124

E-ISSN: 2091-0576

P-ISSN: 2467-9100

INTRODUCTION

Meningiomas are the second most common central nervous system neoplasm in adults and account for 15–20% of all primary brain tumors.[1,2] Although most meningiomas are benign, approximately 10% demonstrate a more aggressive clinical behavior and are classified as non-benign meningiomas.[2] However, extracranial extension of the intracranial meningioma is unusual, and mostly accompanied by the osteolytic change of the skull. Extracranial meningiomas are 1–2% of all meningioma, and the majority have a secondary extension of the primary intracranial tumors and accompanies the osteolytic change of the skull.[3,4]

We report here a case of meningioma en plaque (MEP) with extracalvarial extension.

Figure 1: The swelling in the left frontal region

Address for Correspondence:
Dr. Avdhesh Shukla, Professor, Department of Neurosurgery, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India.
Mobile: 91+8318100530. **E-mail:** sinhajolly.gsvm@gmail.com

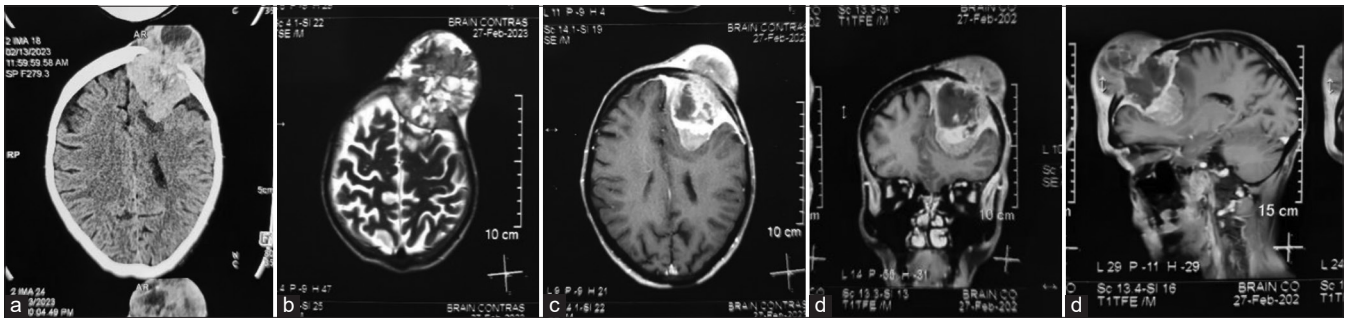

Figure 2: Pre-operative images: (a) Non-contrast computed tomography head showing the lesion, (b) Magnetic resonance imaging (MRI) brain T2-weighted image showing heterogeneously hyperintense lesion, (c-e) showing contrast-enhanced MRI images in axial, coronal and sagittal views

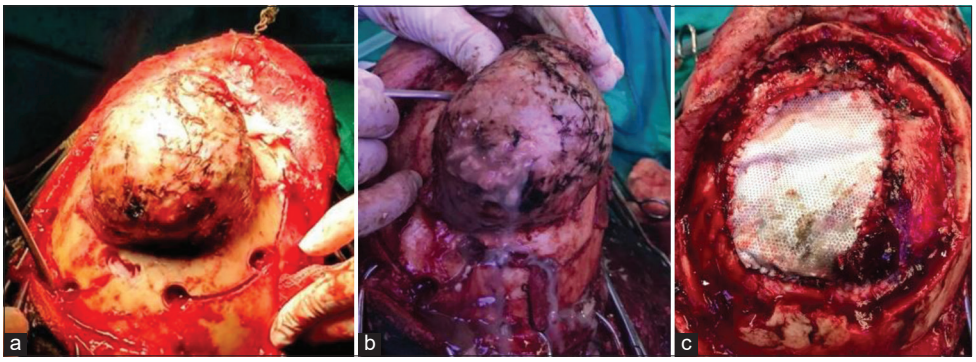

Figure 3: (a-c) Showing intra-operative images.

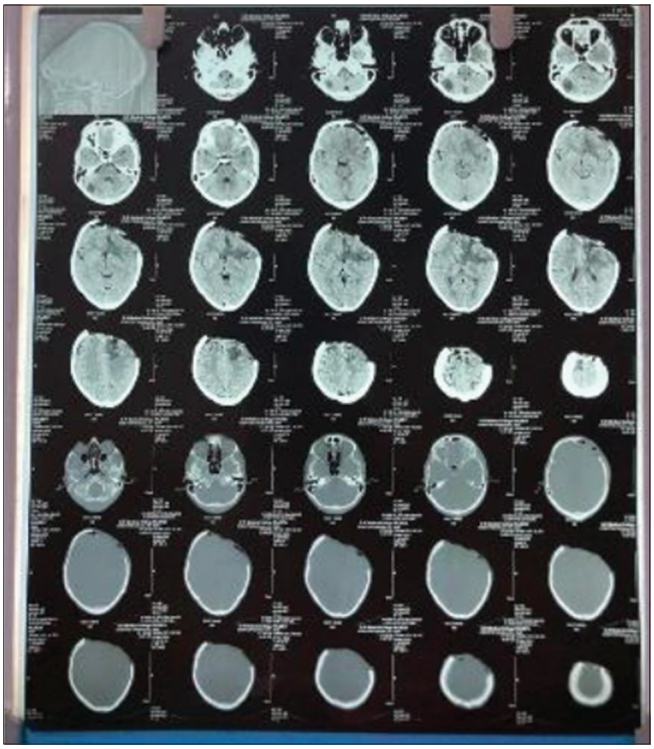

Figure 4: Post-operative non-contrast computed tomography head

CASE REPORT

A 54-year-old male presented with a complaint of swelling over the left side of the forehead for 3 months. The patient

Figure 5: (a and b) Post-operative images of the patient

was positive for frontal release signs. No other neurological deficit was there. The swelling was firm, non-pulsatile, non-transilluminant, and about 8 × 8 cm in size as shown in Figure 1. Bony margins could be palpated around the swelling. Magnetic resonance imaging brain showed a well-defined heterogeneously enhancing extra-axial lesion in the left frontal lobe with surrounding cerebrospinal fluid cleft with the erosion of overlying frontal calvaria on the left side with an extracranial component as shown in Figure 2a-e. Simpson's grade 1 excision was carried out with dural closure using G-patch (Figure 3). Cranioplasty was planned for the next sitting. The post-operative period of the patient was uneventful and histopathological examination of the tumor showed a meningothelial meningioma with low

tumor cell proliferation but with infiltration into the bone and angioinvasion. The patient was taken for radiotherapy. The post-operative NCCT head and postoperative images of the patient are shown in Figures 4 and 5 respectively.

DISCUSSION

Meningiomas are the most common non-glial intracranial primary tumors.[5] Plaque meningioma refers to a specific macroscopic aspect of the meningioma, due to diffuse dural involvement and usually with extracranial extension.[6] MEP are a rare subtype of meningioma that comprise only 2–9% of all meningiomas. MEP are unique from the more common *en masse* meningiomas and defined by their characteristic "carpet-like" invasion of adjacent bone. The mean age of presentation is in the fifth decade of life. Despite the locally invasive nature, the majority of MEP cases still are classified as the World Health Organization Grade 1 tumors due to a low proliferative index.

CONCLUSION

En plaque meningiomas may present with a variety of symptoms according to their location and degree of bone invasion, requiring a careful diagnostic and treatment approach. While early and aggressive surgical resection is generally accepted as the optimal goal of treatment, these lesions require an individualized approach, with further investigation needed regarding the role of new therapies.

Gross total resection is often difficult due to anatomical constraints and tumor involvement of the adjacent structures. However, in this case, Simpson's grade 1 resection was carried out with cosmetic deformity for which cranioplasty was planned in the follow-up course.

ACKNOWLEDGEMT

None.

REFERENCES

1. Jang SJ, Kim CH, Cheong JH and Kim JM. Extracranial extension of intracranial atypical meningioma en plaque with osteoblastic change of the skull. Korean Neurosurg Soc. 2014;55(4): 205-207.
   https://doi.org/10.3340/jkns.2014.55.4.205
2. Jo K, Park HJ, Nam DH, Lee JI, Kong DS, Park K, et al. Treatment of atypical meningioma. J Clin Neurosci. 2010;17(11): 1362-1366.
   https://doi.org/10.1016/j.jocn.2010.03.036
3. Basu K, Majumdar K, Chatterjee U, Ganguli M and Chatterjee S. En plaque meningioma with angioinvasion. Indian J Pathol Microbiol. 2010;53(2):319-321.
   https://doi.org/10.4103/0377-4929.64306
4. Iglesias ME, Vázquez-Doval J, Idoate MA, Vanaclocha V, Idoate F and Quintanilla E. Intracranial osteolytic meningioma affecting the scalp. J Am Acad Dermatol. 1996;35(4):641-642.
   https://doi.org/10.1016/s0190-9622(96)90700-8
5. Carangelo BR, Muzii FV, Luglietto D, Cellini L, Vaiano A, Gabriele G, et al. Meningioma en plaque A case report. Ann Ital Chir. 2021;92:223.
6. Elder TA, Yokoi H, Chugh AJ, Lagman C, Wu O, Wright CH, et al. En plaque meningiomas: A narrative review. J Neurol Surg B Skull Base. 2021;82(Suppl 3):e33-e44.
   https://doi.org/10.1055/s-0039-3402012

Authors Contribution:
JS- Definition of intellectual content, literature survey, prepared first draft of manuscript, Implementation of study protocol, data collection, data analysis, manuscript preparation and submission of article; **VKK-** Concept, design, clinical protocol, manuscript preparation, editing and revision; **AS-** Review manuscript; **AviS-** Coordination and manuscript revision.

Work attributed to:
Department of Neurosurgery, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India.

Orcid ID:
Jolly Sinha - https://orcid.org/0009-0004-4412-3691
Vivek Kumar Kankane - https://orcid.org/0000-0001-9068-7886
Avdhesh Shukla - https://orcid.org/0000-0003-3583-8332
Avinash Sharma - https://orcid.org/0000-0002-2178-3070

Source of Support: Nil, **Conflicts of Interest:** None declared.