Intracranial Meningioma with Extra Cranial Extension into the Frontal Sinuses: A Case Report

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ABSTRACT

Extracranial meningioma is an infrequent tumour, habitually found in the head and neck area. Afore surgical removal and histopathological examination, this diagnosis is rarely well-thought-out. Our case study reports this sporadic incident in a 57 yr old lady with an intracranial meningioma with extra cranial extension. MRI scan brain showed a well-circumscribed lesion in the right frontal lobe with extension in the frontal sinus as well. Histopathological examination showed meningothelial meningioma. Rt frontal craniotomy and tumor resection was done. Postoperatively, patient was well and came for follow up. She was ameliorated in her condition.

Key words: Meningioma, Sinonasal tract, Paranasal sinuses, Extracranial extension

Introduction

Meningioma is an all-around perceived tumor of the central nervous system, it rarely shows up as an extracranial tumor optionally outspreading into the paranasal sinuses. Meningiomas emerge from arachnoid cap cells that surrounds the brain, they are progressively developing and are generally not associated with significant cerebral edema. They manifest themselves by the pressure effects on circumscribing neural structures.1

Out of all intracranial meningiomas, almost 20% may have an extracranial/extraspinal extension with reporting orbital cavity as the commonest site of extracranial meningiomas. However, when the soft tissues, middle ear, orbit are precluded, the rate drops to under 1%.2

The exact pathological mechanism of meningioma is not confirmed in the literature. However, two principle mechanisms for meningiomas extending into the sinonasal tract with CNS connection have been proposed: (1) the meningioma’s may have arised in an extracranial site and spreaded secondarily into the cranial cavity, or (2) the meningiomas may have originated inside the cranial cavity and ruptured through the foramina and crevices, so that the extracranial (sinonasal tract) augmentations might be the primary expression of the intracranial tumor.

Although in various cases, the presence of meningioma was initially proposed on radiographic examination.3 However, this diagnosis is rarely considered before surgical resection and histopathological examination.4

Treatment relies on the degree/size and site of the tumor. Surgical removal seems to be the best treatment modality to control the lesion.4

Case Report

We report a case of an intracranial meningioma with extracranial extension into the frontal sinuses of a 57-year-old-woman. Symptomatology included Headache, Vomiting,
altered conscious level off and on for past 2 months. MRI scan brain showed a well-circumscribed lesion in the right frontal lobe (Figure 1 and 2) with extension in the frontal sinus as well. Rt frontal craniotomy and tumor resection was done. Histopathology showed meningothelial meningioma. Postoperatively, the patient was well and came for follow up. She was ameliorated in her condition.

Arachnoid cells, lining the inner aspect of arachnoid membrane, emerge from neural crest and are therefore ectodermal or neuroectodermal in origin. Different mechanisms suggest the development of intracranial and extracranial meningiomas from neural crest tissues however there are several mechanisms explaining the origin of extracranial meningiomas i.e displacement of pacchionian bodies or their entrapment in an extracranial location during development, trauma leading to displacement of arachnoid cells or origin from undifferentiated mesenchymal cells.

Subsequently, by one method or another, arachnoid cells give rise to meningiomas in the sinonasal tract. Clinicopathologically, they are usually split into four groups, based on the mechanism of development of extracranial meningiomas.

1. Direct extension of a primary intracranial meningioma through adjoining structures.
2. Intracranial meningioma leading to extracranial metastasis.
3. Extracranial growth from arachnoid cell clusters in the cranial nerve sheaths on their exit through foramina.
4. Extracranial meningioma without any clear demonstrable.

Various reports in the literature support these mechanisms.

Prognosis of intracranial meningioma is generally favourable but rarely can be aggressive, when occurring as a malignant meningioma. Good prognosis has been related to increased level of progesterone receptor immunoexpression.

The differential diagnosis of sinonasal tract meningiomas include a number of benign and malignant neoplasms, incorporating epithelial, neurogenic, vascular, and mesenchymal tissue tumors.

The most successful outcome of treatment can be achieved by comprehensive surgical resection involving removal of affected bones, muscles, dura and intracranial and extracranial components. Radiation therapy has been associated with low rate of recurrence and in certain meningiomas improvement in patient survival has been suggested with radiotherapy.

Conclusion

In summation, sinonasal tract meningiomas are scarce lesions. The clinical expression, radiographic findings, and histologic features do not predict the clinical outcome, but with comprehensive surgical excision, have a good prognosis.
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References