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A Rare Case Report of Transistional Meningioma in Tertiary Institute-K.D. Medical College and Research Centre Mathura (U.P)

Dr Anjali[1], Dr Mayank[2], Dr Divya[3], Dr Naman[4]

Abstract: ***A 65-year-old female patient presented with a hard and fixed mass that grew spontaneously on her forehead within one year. There was history of seizures since one and half year with right side upper limb weakness from 10 days admitted in neurosurgery in K.D. Medical College Mathura U.P. reported as transistional meningioma.***

Keywords: Meningioma, forehead, seizure, upper limb, neurosurgery

1. Background

Meningiomas are a diverse set of tumors arising from the meninges, which are the membranous layers surrounding the central nervous system. Most meningiomas grow inward toward the brain as discrete, well-defined, dural-based masses and are spherical or lobulated. The borders between the tumor and the brain are usually smooth and clear because they preserve the histologic structures, such as the tumor capsule, cerebrospinal fluid, arachnoid mater, and pia mater [1]. Considering such a growth pattern, we report a rare case of transitional meningioma.

Transitional meningiomas are also called as mixed meningiomas, and these tumors have transitional between those of meningothelial and fibrous meningioma and they are common tumors with meningothelial, fibrous, psammomatous, and angioblastic meningiomas. 90% of meningiomas are consisting of those five types of meningiomas[2].

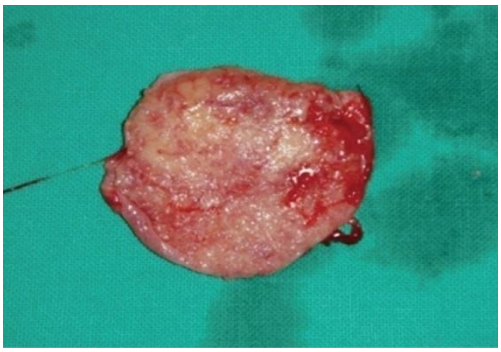
2. Case Report

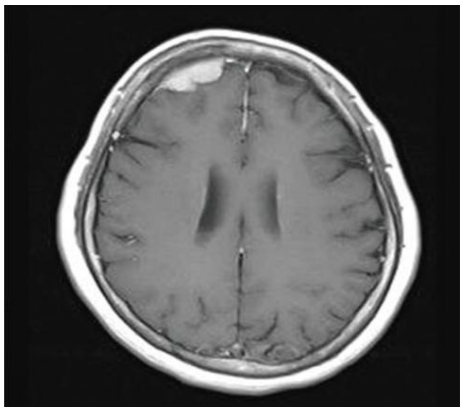
A 65-year-old female patient presented with a hard and fixed mass that grew spontaneously on her forehead within one year. There was history of seizures since one and half year with right side upper limb weakness from 10 days. To determine the character of the tumor-like mass, biopsy was performed on 2.10.19. The pathologist confirmed the mass as a transitional meningioma on 5.10.19.

Computed tomography- Large 7x6x7cm size tumour present on left frontoparital region attached to falx and extending through falx to other side. Tumour was variegated in consistency calcified to fibrous at places and soft at certain places. It was moderate to highly vascular.

Grossly- Received multiple soft tissue mass aggregate measuring 11x10x2cm, weight-85grams, externally grey white to grey brown in colour. On cut section solid grey white with areas of hemmorrhage seen.

Gross appearance

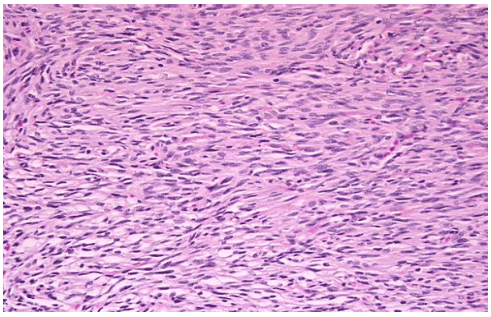




Brain magnetic resonance imaging (T1) showing a soft tissue mass 3.0 cm in size, ovoid and well enhanced under the skull. The mass shows a dural tail sign.

Tissue given in 10 separate cassettes.

Histologically, Microsection reveal polygonal meningothelial cells with delicate round to oval nucleus with inconspicuous nucleoli lightly eosinophilic cytoplasmic border. Cells are arranged in the form of syncytial pattern whorls. Some cells showing fibrous change and arranged in whorls, fascicles and storiform pattern. Good number of pssamoma bodies seen. Some of the cells showing granular eosinophilic cytoplasm with eccentric nucleus. There are presence of dilated and congested blood vessels.



Storiform pattern
The tumor was lobulated by intersecting collagenous fibers. Immunohistochemical staining was positive for vimentin and epithelial membrane antigen and negative for pancytokeratin.

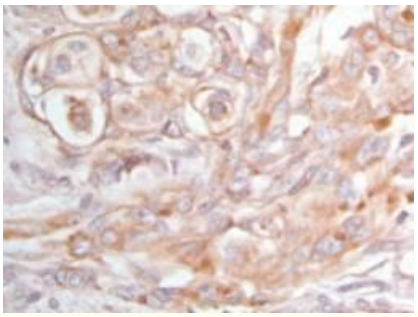
3. Discussion

Meningiomas are estimated to constitute between 13% and 26% of primary intracranial tumors, with an annual incidence rate of approximately 6 per 100, 000 population. They are the most frequently diagnosed primary brain tumor, accounting for 33.8% of all primary brain and central nervous system tumors reported in the United States between 2002 and 2006 [3]. The exact causes of most of these tumors are not known. They result from abnormal patterns of growth that are most likely due to defects in the genetic material. The exact type of genetic defect or mutation has not been conclusively identified in meningiomas. Despite the lack of definitive evidence that clearly isolates possible causes, it has been suggested that meningiomas are associated with traumatic head injury, prolonged inflammation of the meninges following injury, viral infections, radiation, certain genes, Neurofibromatosis type 2, and hormones, particularly sex hormones, including estrogen, progesterone and androgens. Excessive use of cellular phones has also been implicated as a possible cause, but the evidence to conclusively link cell phone use to meningioma development is lacking [3].

The majority of meningiomas are benign, and they are seldom invasive. Wang et al. [1] studied 7, 084 cases of meningiomas and examined the female: male ratio, patient age, subtypes, and locations. The female: male ratio of all types of meningioma is 2.34, while that of transitional meningioma is 2.11. The mean age of among all cases of meningioma is 51.45 years, and that of transitional meningioma is 50.54 years; the age of the patient in this case was 60 years. In their study, there were 323 cases of transitional meningioma among 7, 084 cases, accounting for 4.56% of all meningiomas. There were 3 cases of extracranial meningioma among 7, 084 cases, accounting for 0.04% of the total. Extracranial extension of meningiomas is very rare, and only a few cases have been reported [1].

Panchmatia et al. [4] reported an asymptomatic forehead lump that was initially diagnosed as an osteoid osteoma. CT was suggestive of an exostosis and an enostosis associated with frontal skull thickening. The mass was excised, and its histological features were consistent with intraosseous meningioma [5]. Nadarajan et al. [5] reported a similar case of unusual meningioma. An 82-year-old man was had a large deformity over the frontal area of his scalp. CT and MRI revealed an intracranial mass that extended across the frontal lobes. The mass permeated the skull and extended through the scalp. The histologic finding of the mass suggested a benign meningioma with low mitotic activity [3].

In cases of a protruding mass on the head, clinicians tend to diagnose the tumor as osteoma or lipoma because of their high prevalence. In this case, the manifestation of the mass was more similar to another soft tissue tumor rather than extracranial meningioma. Following excision, pathology and other radiologic studies such as MRI and ultrasonography indicated that the tumor was a meningioma instead of a soft tissue tumor. The high-power view reveals many whorling epithelioid cells and admixed spindle cells. Immunohistochemical staining for epithelial membrane antigen (EMA) disclosed diffuse positivity, which was strongly supportive of meningothelial differentiation. The tumor cells were composed of oval cells with occasional intranuclear inclusion bodies (Fig).



Immunohistochemical staining for EMA showing diffuse positivity, which is strongly supportive of meningothelial differentiation (EMA, ×400).

To diagnose meningioma, initial investigations should include contrast-enhanced CT and MRI. In addition, angiography is a valuable tool that allows the surgeon to elucidate the relationship of the tumor with nearby vascular structures and to determine the vascularity of the tumor [4].

The meningioma in the present case was misdiagnosed as a soft tissue tumor because of its gross manifestation, and MRI study and punch biopsy were excluded. Unfortunately, nonenhanced brain CT cannot present characteristic feature of meningioma and gives little information to diagnose. The mechanism of extracranial extension was not yet established, but there are two possible theories. One is the proliferation of perineural cells or ectopic arachnoid tissue along the cranial nerve, and the other is misplaced embryonic rests of arachnoid cells and multipotent mesenchymal cells [6].

In conclusion, even if a mass on the forehead has an obvious clinical manifestation, thorough imaging studies are required and suspicions about rare tumors should be addressed before surgery.

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