



POSTERIOR FOSSA MENINGIOMA: A CLINICO-PATHOLOGICAL STUDY

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ABSTRACT

Posterior fossa meningiomas are uncommon lesions that are most often slow-growing neoplasms manifesting in clinically indolent fashion. Posterior fossa meningiomas can be found anywhere in the posterior fossa, and individualized management recommendations depend primarily on size, growth rate, clinical presentation, and location (i.e., surgical accessibility). We review the available data in neurosurgery department with review of histopathology report to analyze clinical profile, management and prognosis.

KEYWORDS : Posterior fossa meningioma

INTRODUCTION

Posterior fossa meningiomas are uncommon lesions that are most often slow-growing neoplasms manifesting in clinically indolent fashion. Based on clinical and radiographic information, the differential diagnosis is relatively straightforward; however, the range of management options can be considerable, including observation, surgery, and radiation in various forms and combinations¹.

Posterior fossa meningiomas can be found anywhere in the posterior fossa, and individualized management recommendations depend primarily on size, growth rate, clinical presentation, and location (i.e., surgical accessibility). Tumors are primarily classified by their anatomic origin along the sub-occipital surface of the cerebellum, lateral (i.e., lateral to the internal auditory meatus) petrous bone, cerebellopontine angle (CPA), petroclival region and clivus, jugular foramen, foramen magnum, pineal region, fourth ventricle, or tentorium^{1,2}.

Posterior fossa meningioma are visualized readily with contrast CT, MRI with gadolinium and arteriography, all attributed to the fact that meningiomas are extra-axial and vascularized. Advances in neuroimaging have made the preoperative diagnosis of meningioma almost certain. We review the available data in neurosurgery department with review of histopathology report to analyze clinical profile, management and prognosis.

MATERIAL AND METHOD:

The present study was retrospective study, based on data retrospectively collected from department of neurosurgery, GR Medical College and group of hospitals (GRMC) from 2010 to 2018. All histopathological confirmed cases were studied. Cases with spinal and extracalvarial meningioma were excluded from study. Preoperative assessment of consciousness level was done according to Glasgow coma score, along with higher mental function, neurological deficit and pupillary asymmetry. Patient with CT/ MRI finding consistent with meningioma were included in this study. On plain CT scan meningiomas appear isodense to slightly hyper dense compared contiguous brain parenchyma.

Calcification may be seen, on contrast enhanced CT meningioma usually enhance homogeneously. MRI brain is method of choice, meningioma appear rounded elongated extra axial masses, attach with dura 2 to 10% of meningioma are cystic and present diagnostic challenge. All patients consistent with meningioma underwent surgical excision of mass. Level of excision was grade according to

Simpson grade excision. Postoperative neurological assessment was done and diagnosis confirmed on histopathology.

RESULT

The study was conducted on 35 patients. There were 17(48.5%) male and 18(51.42%) females. Most common age group was between 41-50 years followed by 31-40 years. Mean age was 42. Most common location was cerebellar convexity followed by tentorial meningioma and cerebellopontine angle meningioma (Table 1).

Table 1: Location wise distribution of Infratentorial meningioma

Location	Number	Percentage
Cerebellar Convexity	17	48.5%
Tentorial	9	25.7%
Cerebello-Pontine	7	20%
Petro-clival	1	2.8%
Foramen Magnum	1	2.8%
Fourth Ventricle	0	0
Total	35	100

Study revealed most common presenting complaints was headache in 30(85.7%)cases; followed by cerebellar syndrome in 22 cases (62.85%), recurrent vomiting in 15 cases (42.85% (Table 2)

Table 2: Presenting complaints in Posterior fossa meningioma case

Clinical Presentation	Number	Percentage
Headache	30	85.7%
Cerebellar syndrome	22	62.85%
Vomiting	15	42.85%
Cranial Neuropathy	7	20%
Visual dysfunction	4	11.4%
Behavioral abnormality	1	2.8%
Sensory-Motor deficit	1	2.8%

All patient underwent surgical excision of lesions; The most common Simpson grade of surgical excision of tumour was grade II in 22 (62.85) followed by grade III in 6 (17.14%) cases, four cases were under went grade IV excision (Table 3).

Simpson Grade	Number	Percentage
I	3	8.5%
II	22	62.85%
III	6	17.14%

IV	4	11.4%
V	0	0

Histopathology grading was done as per WHO classification of CNS tumour. It revealed that most common subtype was meningothelial 45.71% and second most common subtype was fibrous in 10(28.57%) (Table 4).

Table 4: Histopathological distribution of Posterior fossa meningioma

Histopathology	Number	Percentage
Meningothelial	16	45.71
Fibrous	10	28.57
Transitional	7	20.0
Psammatous	0	0
Angiomatous	0	0
Microcystic	0	0
Secretory	0	0
Lymphoplasmocytic	0	0
Metaplastic	0	0
Choroid	0	0
Clear cell	0	0
Atypical	1	2.8%
Capillary	0	0
Rhabdoid	0	0
Anaplastic	1	2.8%
Total	0	0

DISCUSSION

Harvey Cushing was the first to use the term "meningioma" in 1922, although this tumor was known under various names since the 17th century. In 1614, Felix Plater, Professor of Medicine from the University of Basel, made the first report to a lesion that is most comparable with a meningioma. He described the symptoms as well as the autopsy findings of a "noble knight" intracranial tumor, which he described as: "a round fleshy tumor, like an acorn. It was hard and full of holes and was as large as a medium-sized apple. It was covered with its own membrane and was entwined with veins. However, it was free of all connections with the matter of the brain, so much so that when it was removed by hand, it left behind a remarkable cavity"³.

Posterior fossa meningiomas have presented a formidable challenge throughout the history of neurosurgery and many, especially those arising from petroclival region, were considered "inoperable" up until the 1970s. However, with the advent of the operating microscope, CT and MR imaging, microsurgical techniques and the development of various skull base approaches, it became possible to safely resect the majority of posterior fossa meningiomas³.

Posterior fossa meningiomas are uncommon lesions that are most often slow-growing neoplasms manifesting in clinically indolent fashion. The frequency varies from study to study. According to some studies posterior fossa meningioma represents 6-15%. Meningioma of cerebellopontine angle is the most common posterior fossa tumor followed by Foramen magnum meningiomas. Clival meningiomas are less common⁴. Bernstein reported the same percentages: 50% of posterior fossa meningiomas are located in the cerebellopontine angle, 40% occur around the tentorium or cerebellar convexity, 9% are at the clivus, and 6% occur in the vicinity of the foramen magnum⁵. The results of our study slightly different constitute majority are cerebellar convexity (48.5%), followed by tentorial, CP angle meningioma.

The vast majority of intracranial meningiomas (92%) have a benign histology, whereas 8% show atypical or malignant features. For all meningiomas, the most common histopathological subtype is the meningotheliomatous type (63%), followed by transitional (19%), fibrous (13%), and psammomatous (2%) meningiomas⁶. Fewer than

10% of meningiomas are malignant⁷. In the present study, the most common benign histological subtypes among posterior fossa meningiomas were Meningothelial (45.71%), and fibrous (28.57%). WHO grade II and Grade III were found 2.6% cases, but this series contained too small number of cases to draw a pertinent conclusion.

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