

## Analysis of Variants in Meningioma, Retrospective Study at a Tertiary Care Centre

Trsn Lakshmi<sup>1\*</sup>, T.Raamakoteswari<sup>2</sup>

<sup>1</sup> III Year Post graduate, <sup>2</sup> Assistant professor, Dept. of Pathology, Kurnool Medical college, Kurnool, Andhrapradesh, India

Corresponding Author: Trsn Lakshmi

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### Abstract:

**Aims and objectives-**To study the incidence of meningiomas and its pattern of variation in histopathology in relation to WHO grading system

**Materials & Methods-**It is a retrospective study for a period of 3 yrs done in the department of pathology, Kurnool medical college, Kurnool. 62 cases were analysed during 2016 to 2019 period.

**Observation & results-**Common age group of presentation was between 41-50 yrs with M:F ratio being 1:1.8. Most common variant was Meningothelial and least common was anaplastic. Common site of presentation was intracranial with 67% and remaining intraspinal. Most of the tumors belonged to WHO grade I.

**Conclusion-** Meningiomas exhibit a wide variation in histological appearance, a key factor in determining grade of the tumor which is a prognostic factor and it demands an accurate microscopic diagnosis.

**Keywords:** Meningiomas, CNS Tumors, TRSN Lakshmi

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### I. Introduction

Meningiomas, as implicated by the name are derived from meningothelial cells which are nothing but a specialized group of arachnoid cap cells in the villi and stroma of choroid plexus. Around 1/3<sup>rd</sup> of the primary CNS neoplasms are reported to be this noteworthy group of tumors.

Location of meningiomas is predominantly intraspinal presented mainly in the middle age group people and very rarely in childhood. Marked female dominance is noted in these tumors probably attributed to the hormonal profiles in women.

The intra cranial tumors are most frequent in the falx (parasagittal areas, sphenoid ridge, parasellar region). In the spinal cord meningiomas occur in thoracic, cervical, lumbar regions in order of descending frequency.

Meningiomas exhibit a wide range of pattern variation in histomorphology which in fact reflects both epithelial and mesenchymal histologic potential of the arachnoid cells. Some of the patterns tend to show aggressive nature clinicopathologically and therefore are graded into I, II, III by the recent WHO system. This particular grading requires an accurate histopathological diagnosis for further management attributed to their prognostic significance.

### II. Aims & Objectives

To study various patterns of presentations histologically in meningiomas. To study and analyse the incidence of various types in relation to age, gender, site of distribution, grade according to WHO 2016 classification.

### III. Materials & Methods

This is a retrospective study conducted in the department of pathology, Kurnool medical college, Kurnool.

Totally 62 cases of meningiomas were reviewed and examined during the period of 2016 to 2019. All the specimens were thoroughly grossed, sectioned, and stained with H & E. Cases were reported taking into consideration all the clinicoradiological features in relation to age, sex, duration, site, symptoms in addition to the histomorphological features and WHO grading system.

### IV. Observation and Results

In our study 62 cases of meningiomas were studied and reported in which 40 were females and 22 were males with absolute female predominance (table 1). Common age group of presentation was found to be 5<sup>th</sup> decade with 24 cases in between 41 and 50 years age. No case was reported in the childhood (table 2).

Intra spinal tumors were less common compared to intracranial with common site of presentaion being intrathoracic in spinal region and intracranially parasagittal, sphenoid ridge were common locations.

Most common variant reported in the present study is meningotheelial meningioma with a total of 28 casses reported. Next predominant variant is psammomatous meningioma with 11 cases among 62 accounting for 17% followed the transitional variant with 10 cases accounting for 16% .Next in order are fibrous variant with 4 cases, microcystic variant with 3 casses, atypical and metaplstic with 2 cases each. An each case of angiomatous, anaplastic meningeoma was reported(table3).

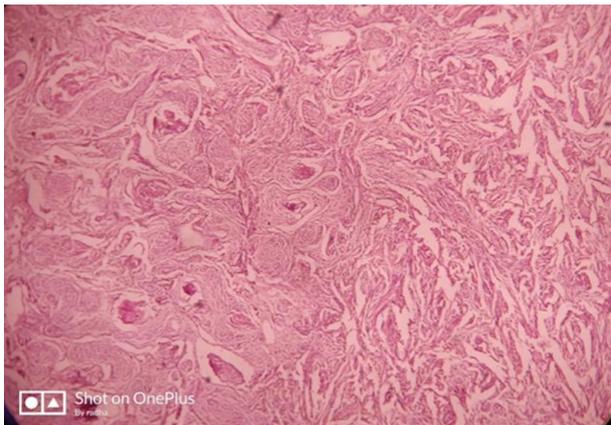
AS per the recent WHO grading, most of the reported cases fell under Grade I followed by Grade II,III(table4).

**Table 1: Gender distribution**

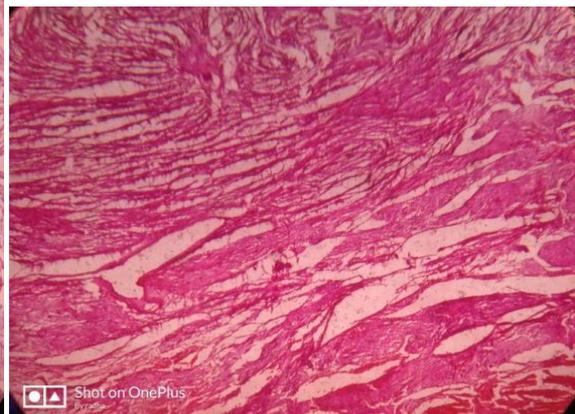
S.no	Gender	No of cases	%
1	Female	40	64.5
2	Male	22	35.5

**Table 2: Age distribution table**

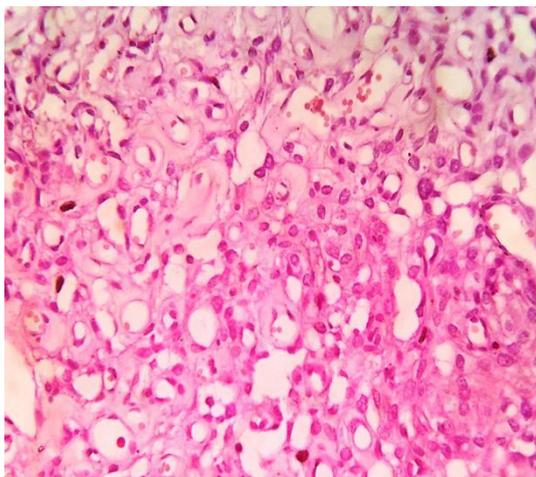
S.no	Age group	No of cases	Percentage
1	1-10	0	0
2	11-20	0	0
3	21-30	6	9%
4	31-40	9	14.5%
5	41-50	24	38.7%
6	51-60	15	24.1%
7	61-70	8	12.9%
8	71-80	0	0



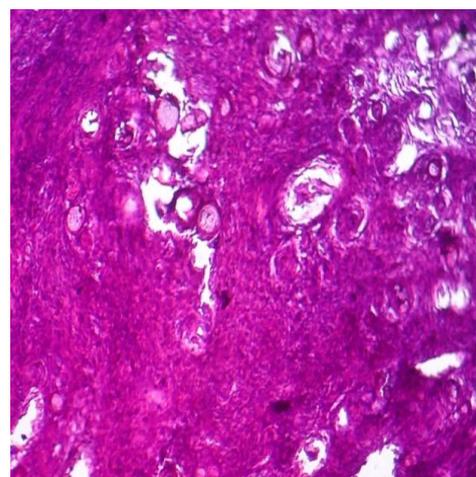
Meningothelial meningioma



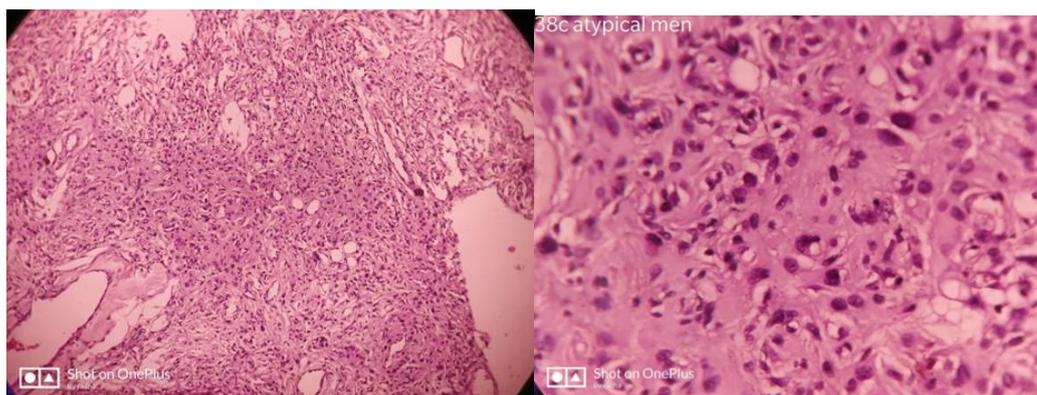
Fibrous meningioma



Angiomatous meningioma



Psammomatous meningioma



## V. Discussion

Meningiomas are a slow growing type of tumors, typically attached to the inner side of dura matter, exhibiting heterogenous pattern distribution.

Meningiomas account for about 24-30 % of primary intra cranial tumors with an annual incidence of 13/1 lakh population. Many small meningiomas are found incidentally in neuro imaging and autopsy findings.

Meningiomas occur most commonly in middle aged people with peak incidence in 6<sup>th</sup> to 7<sup>th</sup> decade. In the present study the peak age of incidence is between 41-50 yrs with female predominance. In Niranjana et al study common age group reported is between 41-50 with 36% of total cases.

In Rajasekhar et al study, distribution of cases showed female predominance with most cases reported in 5<sup>th</sup> decade.

Present study with 62 cases in total composed predominantly meningothelial pattern in histomorphology commonly presented intracranially with benign presentation.

**Table 3:** Site wise distribution:

	Site	No of cases	%	Total
Intra cranial	Para sagittal	15		42
	Sphenoid ridge	11		
	Cerebral convexities	10		
	parasellar	5		
	Olfactory grooves	1		
Intra spinal	cervical	0		20
	thoracic	4		
	lumbar	16		

**Table 4:** Distribution of variants in relation to grade

S.no	Variant	No of cases	%	Grade
1	Meningothelial	28	45.1	Grade I (95.2%)
2	Fibrous	4	6.4	
3	Psammomatous	11	17.7	
4	Transitional	10	16.1	
5	Microcystic	3	4.8	
6	metaplastic	2	3.2	
7	Angiomatous	1	1.6	
8	Atypical	2	3.2	Grade II (3.2%)
9	Anaplastic	1	1.6	Grade III (1.6%)

Most of the tumors belonged to Grade I with psammomatous being next common variant with 17% cases followed by transitional, fibrous, microcystic, angiomatous. 2 cases were reported under Grade II with atypical cytological features as Atypical meningioma and a single case was reported to be an anaplastic variant which mimicked a metastatic deposit but immunohistochemistry later confirmed its origin to be meningothelial and hence reported as an anaplastic meningioma.

## VI. Conclusion

Meningiomas are one of the common intra cranial tumors which have prognostic correlation to histomorphological variance. Hence the grading of tumor is important for further management which is obtained by thorough microscopic examination. As there are wide variations in the pattern distribution of meningiomas repeated statistical studies with revision of classifications is necessary.

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