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Histomorphological spectrum & who grading of meningioma at tertiary care center

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Abstract
Introduction: Meningiomas are most common primary intracranial neoplasm and predominantly benign tumors. Meningioma is characterised by increased number and growth of normal meningothelial cells. There was WHO grading, WHO I- Benign meningioma, WHO II -Atypical meningioma, WHO III- Malignant meningioma.
Aims and objectives: To study the histomorphological variants of meningiomas, the incidence of age, gender & anatomical location of meningioma, and to grade meningiomas according to WHO grading system.
Materials and methods: The study comprised of 50 cases received in department of surgical Pathology, B.J. Medical College, Ahmedabad during period of one year. Case history were studied in detail with respect to presenting symptoms, site, age and sex distribution.
Results: In our study, a total 50 cases of meningiomas were studied, in which meningiomas were most common in the age group between 30-50yrs. In the study of 50 cases, male and female ratio were **1:4**. So, meningiomas were more common in female patients. Among all other histological variants of meningiomas, 47 cases from intracranial origin, 3 cases from spinal origin. So intracranial (parietal lobe) meningiomas cases were more common which comprises 15 cases. Majority of cases presented with complains of headache. Most common histological subtype was found to be Meningothelial meningioma which consist of 16 cases. According to the World Health Organization (WHO) grading, WHO grade I consists of 45 cases, WHO grade II consists of 3 cases of meningioma, among them three cases were of atypical meningioma, WHO grade III consists of two cases. Most meningioma were benign in WHO grade I.
Conclusion: Meningiomas are most common intracranial neoplasm comprises about one fourth of all primary tumors of the central nervous system. Meningiomas are predominantly benign tumors. The histological subtype of meningioma and grading determines management and patient's prognosis. Grade I meningiomas are curable by surgical resection and prognosis depends on complete removal of tumor. Grade II meningiomas show aggressive clinical behaviour with increased rate of recurrence. Grade III meningiomas are capable of malignant clinical behaviour and distant metastasis.

Keywords: Meningioma, histomorphological, who

Introduction
Meningioma comprises about one fourth of all primary tumors of the central nervous system. Meningiomas are most common primary intracranial neoplasm and predominantly benign tumors. Meningioma is characterised by increased number and growth of normal meningothelial cells. It is benign slow growing tumor. Arise from the Arachnoid cap cell, penetrating in inner dura at the venous sinus. There was WHO grading, WHO I- Benign meningioma, WHO II -Atypical meningioma, WHO III- Malignant meningioma.

Aims & objectives
1. To study the histomorphological variants of meningiomas.
2. To study the incidence of age, gender & anatomical location of meningioma.
3. To grade meningiomas according to WHO grading system.

Material & method
The study comprised of 50 cases received in department of surgical Pathology, B.J. Medical College, Ahmedabad during period of one year. Case history were studied in detail with respect to presenting symptoms, site, age and sex distribution. Specimen were fixed in 10%

buffered formalin followed by routine paraffin processing. Staining was done with routine hematoxylin and eosin stain. Mounting was done with DPX (distyrene, plasticiser and xylene,). Prepared slides were examined under microscope. Reporting and diagnosis with grading of meningiomas were done as per WHO criteria.

Results

In our study, a total 50 cases of meningiomas were studied, in which meningiomas were most common in the age group between 30-50yrs.

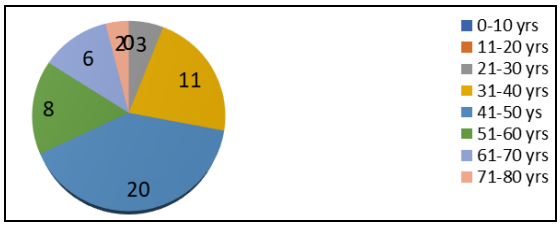

Fig 1: Age group wise distribution of the cases in the study

In the study of 50 cases, male and female ratio were 1:4. So, meningiomas were more common in female patients.

Table 2: Gender wise distribution of the cases in the study

Gender	No. of cases	Persentage(%)
Female	**40**	**80%**
Male	10	20%

Among all other histological variants of meningiomas, 47 cases from intracranial origin, 3 cases from spinal origin. So intracranial (parietal lobe) meningiomas cases were more common which comprises 15 cases.

Table 3: Location wise distribution of the cases in the study

Location	No. of cases	Persentage
INTRACRANIAL	**47**	**94%**
Parital region	**15**	**30%**
Sphenoidal wing	5	10%
Parasagital	5	10%
Cerebral convexity	6	12%
Olfactory groove	3	6%
Foramen magnum	4	8%
Tentorium cerebelli	1	2%
Cerebellopontine angle	5	10%
Near the sella	3	6%
SPINAL	**3**	**6%**
TOTAL	**50**	**100%**

In our study, majority of cases presented with complains of headache.

Table 4: presenting complain with duration in meningioma

Presenting Complain	Duration				No. of cases
	0-6 months	6-12 months	12-18 months	18-24 months	
Headache	10	2	1	2	**15**
Seizures	9	0	0	1	10
Decreased vision	0	2	0	0	2
Decreased Hearing	3	0	0	0	3
Tingling & Numbness of limbs	3	1	0	0	4
Weakness	8	0	0	0	8
Alter sensorium	5	0	0	0	5
Vomiting	3	0	0	0	3
Total	41	5	1	3	50

Most common histological subtype was found to be Meningothelial meningioma which consist of 16 cases.

Table 5: Histomorphological pattern of Meningiomas

Histomorphological variants	No. of cases
Meningiothelial Meningioma	**16**
Psammomatous Meningioma	11
Fibroblastic Meningioma	8
Transitional Meningioma	3
Angiomatous Meningioma	5
Metaplastic Meningioma	1
Microcystic Meningioma	1
Atypical Meningioma	3
Anaplastic Meningioma	1
Papillary Meningioma	1
Total	50

According to the World Health Organization (WHO) grading, WHO grade I consists of 45 cases, WHO grade II consists of 3 cases of meningioma, among them three cases were of atypical meningioma, WHO grade III consists of two cases. Most meningioma were benign in WHO grade I.

Table 6: WHO grading of the cases in the study

WHO grading	No. of cases
Grade 1	45
Grade II	3
Grade III	2
Total	50

Discussion

Table 7: Age wise comparison with different studies

Age range	Dr.Sudha Iyengar et al	Abu Khalid Raza et al	Present study
0-10	2	0	0
11-20	4	6	0
21-30	12	2	3
31-40	**27**	**20**	**11**
41-50	**37**	**36**	**20**
51-60	24	15	8
60-71	7	17	6
71-80	4	5	2

Table 8: Gender wise comparison with different studies

Gender	Abu Khalid Raza et al	Dr. Sudha Iyengar et al	Rajashekhar Reddy et al	Niranjan J et al	Presenting study
Female	73.8%	53%	68.4%	64%	80%
Male	26.2%	47%	31.6%	36%	20%

Table 9: Location wise comparison of meningioma with different studies

Location	Abu Khalid Raza et al	Niranjan J et al	Presenting study
Intracranial	90.9%	82.46%	94%
Spinal	9.1%	17.54%	6%

Table 10: Histomorphological variants of meningioma were comparison with different studies.

Study	cases	M M	PM	TM	FM	AM	At M	Pa M	An M	Other
Dr.Sudha Iyengar et al	117	**73**	15	7	9	7	2	4	0	0
Abu Khalid Raza et al	103	**65**	4	16	5	5	4	0	0	4
Niranjan J et al	57	**19**	5	16	5	6	2	0	1	3
Present study	50	**16**	11	3	8	5	3	1	1	2

MM: Meningothelial Meningioma, PM: Psammomatous Meningioma, TM: Transitional Meningioma, FM: Fibroblastic Meningioma, AM: Angiomatous Meningioma, AtM: Atypical Meningioma, An M: Anaplastic Meningioma, PaM: Papillary Meningioma.

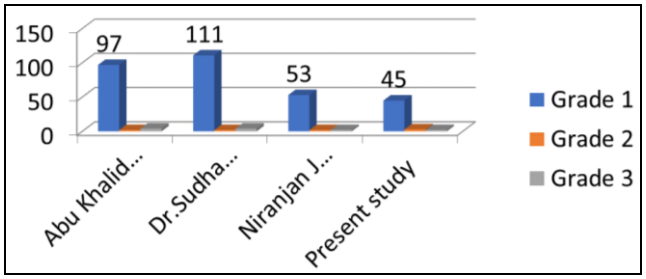

Fig 2: WHO grade for meningioma were compared with different studies.

Meningiomas exhibited a remarkably wide range of clinical presentation and histomorphologic appearances. Most of the Meningiomas were encountered in middle or later adult life with female preponderance. They were more frequently located intracranially. Majority of cases presented with complain of headache. The majority cases were grade I meningioma with meningothelial meningioma as the commonest variant. In grade II meningioma- 3 cases of atypical meningioma. In grade III meningioma- 1 papillary meningioma and 1 anaplastic meningioma.

Conclusion

Maningiomas are most common intracranial neoplasm comprises about one fourth of all primary tumors of the central nervous system. Meningiomas are predominantly benign tumors. The histological subtype of meningioma and grading determines management and patient's prognosis. Grade I meningiomas are curable by surgical resection and prognosis depends on complete removal of tumor. Grade II meningiomas show aggressive clinical behaviour with increased rate of recurrence. Grade III meningiomas are capable of malignant clinical behaviour and distant metastasis.

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Conflict of interest

None

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