

ORIGINAL ARTICLE

Histopathological Study of Intracranial Glioma – 50 cases.

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ABSTRACT

BACKGROUND: Objectives of the study was to study the histopathology of intracranial glioma and their incidence in relation to age group, sex and location. **MATERIAL AND METHOD:** The present study was conducted in the department of pathology, Smt. NHL Municipal Medical College, Ahmedabad. The specimens were received either as biopsy or as excised tumor and histomorphological result were recorded. **RESULT:** In present study histopathology of intracranial glioma, Among the 50 cases total cases of astrocytic glioma are 31(62%), Oligodendroglial and mixed glial tumors are 14 (28%), Ependymoma are 2 (4%) and unspecified glioma are 3 (6%). Among 50 case 27 (54%) tumor occur in male and 23 (46%) in female. Total 36 (72%) gliomas are located in supratentorial location and 14(28%) of infratentorial in location. Total 8 cases (16%) are found in pediatric age group, 27 cases (54%) in middle age group, and 15 cases (30%) are found in old age group patients. **CONCLUSION:** Among the intracranial glioma most common is the Astrocytoma followed by oligodendrogloma and ependymoma. Most intracranial glioma are found in middle age group. There is a male predominance of incidence ratio in all histological subtypes of glioma. Supratentorial location is more favorable location than infratentorial location for glioma.

Key words: Astrocytoma, Ependymoma, Glioma, Oligodendrogloma.

INTRODUCTION

Neoplasmas arising from glial tissue are the most common type of intracranial tumours. Diffuse astrocytomas are the most common gliomas accounting for approximately 30% of all primary brain tumours.¹ Oligodendrogliomas are the second largest group of adult gliomas. Oligoastrocytomas consisting of a mixture of oligodendrogloma and astrocytoma cells, are the most common type of mixed gliomas. The classification of gliomas is difficult and controversial. A correct histopathological classification is of crucial importance because different types of gliomas respond differently to different treatments and the patient prognosis varies by subtypes. In contrast to other sites, benign CNS tumours may have potential to become life threatening, so malignant potential of CNS tumours is of two patterns, anatomic and biologic. The

former includes deeply seated lesions that could not be reached by the surgeons, and so may progress until become fatal, while the latter includes aggressive tumours that grow rapidly with resulting neuropil invasion and destruction. Nevertheless, CNS neoplasms do not fit exactly in the general definition of malignancy as they rarely spread outside their primary locations, despite the fact that some tumours tend to seed neuraxis via CSF pathway². Rare gliomas produce diffuse and extensive involvement of the CNS that is called gliomatosis cerebri.³ The surgical diagnosis of gliomatosis cerebri requires the correlation of MRI and biopsy.⁴

MATERIALS AND METHODS

A present study consisting of 50 cases of intracranial glioma has been carried out at the department of pathology, Smt. NHL Municipal Medical College, Ahmedabad from June 2008 to September 2010. The clinical details were obtained from original case. The gross examination of each available specimen includes its size, shape, weight, consistency and appearance of cut surface especially in regards to the presence of hemorrhage, necrosis and cystic spaces etc. All the specimen were preserved in 10% formalin for fixation. In

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histopathological study, numbers of sections taken from different sites according to the size of specimen. While in the case of small biopsy specimen the whole specimen was processed. Slides were stained by H & E method. Special staining procedures like Periodic acid Schiff (PAS), Reticulin were done as and when required.

RESULT

In the present study consisting of 50 cases of intracranial gliomas 0-75 years are studied by H & E (paraffin section) and results are obtained and compared with other studies as per the availability of their data.

Table 1: Frequency of Intracranial Tumor According To Histological Type.

Histological type of tumor (WHO Classification)	Present study	
	Total cases	%
Astrocytic glioma	(31)	62%
Pilocytic astrocytoma (I)	10	
Low grade astrocytoma (II)	4	
High grade astrocytoma (III & IV)	(17)	
Anaplastic astrocytoma (III)	4	
Glioblastoma multiforme (IV)	13	
Oligodendroglial or mixed glioma	(14)	28%
Oligodendrogloma (II)	8	
Oligoastrocytoma (II)	0	
Anaplastic oligodendrogloma (III)	6	
Unspecified glioma	(3)	6%
Low grade glioma (II)	1	
High grade glioma (III)	2	
Ependymoma	2	4%
Total	(50)	100%

From above table it is evident that among the intracranial gliomas, most common is astrocytoma with 62% followed by oligodendrogloma or mixed glioma with 28 % and ependymoma with 4%.

Table 2: Distribution of Glioma According To Age.

Histological type of tumor (WHO Classification)	Mean age (Present study)
Astrocytic gliomas	
Pilocytic astrocytoma(I)	11
Low grade astrocytoma(II)	41
High grade astrocytoma (III & IV)	
Anaplastic astrocytoma(III)	34
Glioblastoma multiforme(IV)	48
Oligodendrogloma or mixed glioma	
Low grade oligodendrogloma(II)	43
Anaplastic oligodendrogloma(III)	55

From above table it is evident that most of the intracranial glial tumours are common in the middle age group except for the pilocytic astrocytomas which is more common in the children.

Table 3: Distribution of Glioma According To Gender (Male Female Ratio).

Histological type of tumor (WHO Classification)	Mean age (Present study)
Astrocytic gliomas	
Pilocytic astrocytoma(I)	1.5:1
Low grade astrocytoma(II)	3:1
High grade astrocytoma (III & IV)	
Anaplastic astrocytoma(III)	1:1
Glioblastoma multiforme(IV)	1.1:1
Oligodendrogloma or mixed glioma	
Low grade oligodendrogloma(II)	1.6:1
Anaplastic oligodendrogloma(III)	2:1

From above table it is evident that there is male predominance of incidence ratio in all histological subtypes of gliomas.

Table 4: Distribution of Intracranial Glioma Based on Anatomical Location

Tumor	Supratentorial	Infratentorial
Astrocytic Gliomas	22	10
Oligodendroglial or mixed glioma	11	02
Ependymoma	00	02
Unspecified glioma	03	00
Total	36	14

Above table is evident that supratentorial location is more common than infratentorial location for glioma.

DISCUSSION

CNS is the host of the greatest variety of tumours and malignant brain tumours are unarguably aggressive, so patients often succumb to the disease in a less than one year period. The imaging modalities, using MRI and CT scan, were proved to be of a particular importance for at least provisional diagnosis but not for definitive diagnosis. In fact, a discrepancy between the imaging and histological findings regarding malignant meningiomas, metastatic tumours and glioblastomas, can be explained by the fact that MRI depicts a similar picture for all this lesions as a heterogenous contrast enhancement with irregular boundaries.

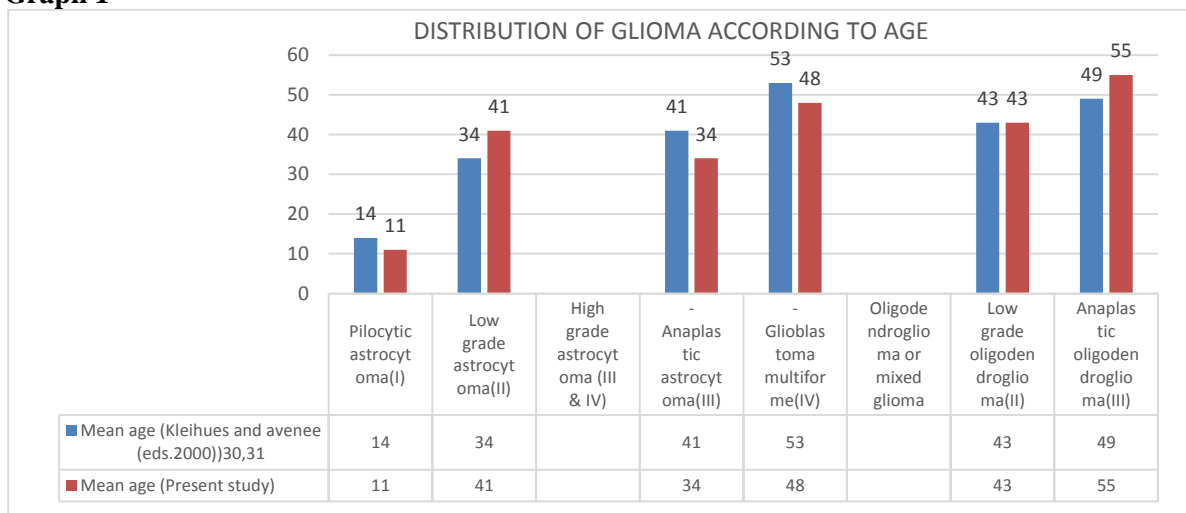
Table 5: Frequency of Intracranial Tumor According To Histological Type.

Histological type of tumor (WHO Classification)	J.-S. Guillamo et al ⁵		Acta NeurologicaScandinavica ⁶		Present study	
	Total cases	%	Total cases	%	Total cases	%
Astrocytic glioma	(18)	56%		79%	(31)	62%
Pilocytic astrocytoma (I)	1				10	
Low grade astrocytoma (II)	6		30		4	
High grade astrocytoma (III & IV)	(11)		(70)		(17)	
Anaplastic astrocytoma (III)	7		29		4	
Glioblastoma multiforme (IV)	4		41		13	
Oligodendroglial or mixed glioma	(8)	25%	26*	21%	(14)	28%
Oligodendrogloma (II)	1				8	
Oligoastrocytoma (II)	4				0	
Anaplastic oligodendrogloma (III)	3				6	
Unspecified glioma	(6)	19%			(3)	6%
Low grade glioma (II)	3				1	
High grade glioma (III)	3				2	
Ependymoma					2	4%
Total	32	100%	126	100%	(50)	100%

*Cases of ependymoma are included along with oligodendrogloma or mixed glioma in this study of Act NeurologicaScandinavica.

From above table it is evident that among the intracranial gliomas, most common is astrocytoma with 62% followed by oligodendrogloma or mixed glioma with 28 % and ependymoma with 4% which is closely correlate with the study of J.-S. Guillamo et al⁵ and Acta NeurologicaScandinavica⁶.

Graph 1



From above chart it is evident that most of the intracranial glial tumours are common in the middle age group except for the pilocytic astrocytomas which is more common in the children which is closely correlates with the study of Kleihues and avenee (eds.2000)⁷. The age specific incidence for glioblastoma is increases with age.

Table 6: Distribution of Glioma According To Gender (Male Female Ratio).

Histological type of tumor (WHO Classification)	Mean age (Kleihues and avenee (eds.2000)) ⁷	Present study
Astrocytic gliomas		
Pilocytic astrocytoma(I)	1:1.2	1.5:1
Low grade astrocytoma(II)	1.2:1	3:1
High grade astrocytoma (III & IV)		
Anaplastic astrocytoma(III)	1.2:1	1:1
Glioblastoma multiforme(IV)	1.5:1	1.1:1
Oligodendrogloma or mixed glioma		
Low grade oligodendrogloma(II)	1.1:1	1.6:1
Anaplastic oligodendrogloma(III)	1.5:1	2:1

The overall ratio of intracranial glial tumours shows a male predominance in the study by Kleihues and avenee (eds.2000)⁷ which closely correaltates with our study.

CONCLUSION

Among the intracranial glioma most common is the Astrocytoma followed by oligodendrogloma and ependymoma. Most intracranial glioma are found in middle age group except pilocytic astrocytoma which is more common in

children. There is a male predominance of incidence ratio in all histological subtypes of glioma. Supratentorial location is more favorable location than infratentorial location for glioma.

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