



## HISTOPATHOLOGICAL SPECTRUM OF BRAIN TUMORS : A TWO YEAR STUDY IN OUR INSTITUTE

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### ABSTRACT

**Introduction/Background:** Central nervous system neoplasms are rare tumor accounting for 1-2% of all neoplasm. The most common types of primary tumors in adults are meningiomas, and astrocytomas such as glioblastomas. CNS tumours are quite heterogeneous, vary widely by site of origin, morphologic features, growth potential and extent of invasion.

**Aim Of the Study:** To evaluate the age, site, gender and frequency of various CNS tumors and to analyse the data of these tumors

**Materials and Methods:** Present study on CNS neoplasms was carried out in Department Of Pathology, J.K Hospital, Bhopal, with biopsies received from Neurosurgery Department. 60 patients were studied prospectively over a 2 yr period. The excised specimen were fixed and processed.

**Results:** It was observed that Astrocytoma was most common tumor, followed by Meningiomas and Metastatic Tumors. Age group of these tumors ranged from 3-75 years with male preponderance.

**Conclusion:** In the present study Astrocytoma is the most common glial tumor reported, followed by the meningiomas and metastatic tumor.

**KEYWORDS :** CNS tumors, Astrocytomas, Histopathology

### INTRODUCTION

Brain tumors are heterogeneous group of neoplasm, which include both benign and malignant cases. Brain tumors constitute only <2% of all neoplasms. Male patients are more affected than female cases except in meningioma. Brain tumors have bimodal age distribution with a peak at childhood and adult age group of 45-70 years. [1]

There are two main types of tumors: malignant or cancerous tumors and benign tumors. [2] Cancerous tumors can be divided into primary tumors that start within the brain, and secondary tumors that have spread from somewhere else, known as brain metastasis tumors. [3]

All types of brain tumors may produce symptoms that vary depending on the part of the brain involved. [2] These symptoms may include headaches, seizures, problem with vision, vomiting, and mental changes. [2] The cause of most brain tumors is unknown. Uncommon risk factors include inherited neurofibromatosis, exposure to vinyl chloride, Epstein-Barr virus, and ionizing radiation. [3]

The most common types of primary tumors in adults are meningiomas (usually benign), and astrocytomas such as glioblastomas. [3] In children, the most common type is a malignant medulloblastoma. [4] Secondary or metastatic brain tumors are more common than primary brain tumors, with about half of metastases coming from lung cancer. [2] The most common sources of brain metastases are from: Lung cancer (48%), Breast cancer (15%), Genitourinary tract cancers (11%), Osteosarcoma (10%), Melanoma (9%)

Central nervous system tumours are quite heterogeneous, vary widely by site of origin, morphologic features, growth potential and extent of invasion. Immunohistochemistry has become an important tool in the diagnosis of brain tumors, although conventional HISTOPATHOLOGY (H&E STAINING) is the MAINSTAY for PATHOLOGIC DIAGNOSIS.

The World Health Organization has classified mobile phone radiation on the IARC scale into Group 2B – possibly carcinogenic. Claims that current cell phone usage may cause brain cancer, modern, third generation (3G) phones emit, on average, about 1% of the energy emitted by the GSM (2G) phones that were in use when epidemiological studies that observed a slight increase in the risk for glioma – a malignant type of brain cancer – among heavy users of wireless and cordless telephones. [5]

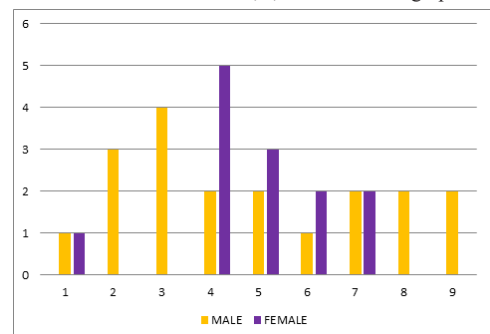
### AIMS AND OBJECTIVES :

To evaluate the age, site, gender and frequency of various central nervous system tumors. The purpose of this study was to analyse the data of CNS tumor.

### MATERIAL AND METHODS:

Present study on biopsy was carried out in Department Of Pathology, J.K Hospital, Bhopal, with biopsies received from Neurosurgery Department. 60 patients were studied prospectively over a 2 yr period. The excised specimen were fixed in 10% buffered formalin and were processed. Paraffin blocks were prepared, from which sections of 3-5 micrometer were prepared and mounted on a clean glass slide. The sections were stained with routine H & E stained followed by microscopic examination.

**RESULTS:** The detailed spectrum of CNS tumours noted in our study are summarized in Chart-1 Table-1, 2, 3 & Photomicrograph



**Chart 1: Distribution of Central nervous system tumors according to Age & Gender**

S. NO	LESION	NO. OF CASES	%
1.	ASTROCYTOMA I	3	10%
2.	ASTROCYTOMA II	4	13.3%
3.	ASTROCYTOMA III	4	13.3%
4.	ASTROCYTOMA IV	7	23.3%
5.	MENINGIOMA	8	26.6%
6.	METASTATIC TUMOR	4	13.3%
	<b>TOTAL</b>	<b>30</b>	<b>100%</b>

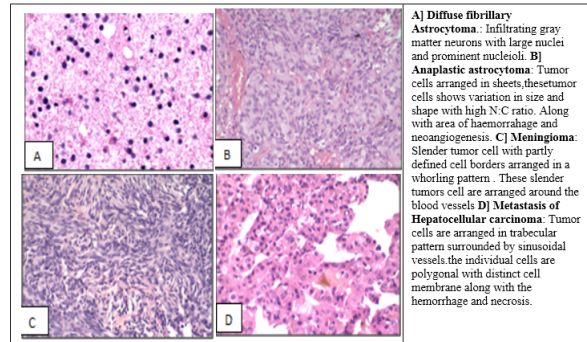
**Table 1: Incidence of major CNS lesions**

S. NO	SITE	NO. OF CASES	%
1.	Cerebro Frontal Region	11	36.6%
2.	Cerebro Parietal Region	5	16.6%
3.	Cerebro Temporal Region	3	10%

4.	Cerebro occipital Region	1	3.3%
5.	Cerebellum	2	6.6%
6.	Cerebellopontine Angle	6	20%
7.	Spinal cord region	2	6.6%
	<b>Total</b>	<b>30</b>	<b>100%</b>

**Table 2: Site distribution of CNS tumors**

**PHOTOMICROGRAPH**



**DISCUSSION:**

In the diagnosis of CNS Tumors Histopathology is the gold standard in diagnosing and Grading of CNS Tumors. Amongst all CNS Tumors, Astrocytoma is most frequently observed to occur in our study ,followed by Meningiomas and Metastatic Tumors .

Histopathologically, Neuroepithelial tumors formed the major part of CNS tumors Most common, location was Cerebrum. In cerebrum ,majority of cases occurred in frontal lobe followed by parietal lobe & temporal lobe. Occipital lobe showed least tumors.These findings of our study are consistent with the findings of other studies in the recent past.

There is male preponderance with most patients in age group from 3-75 years with highest incidence in 36-50 years which was also similar to other studies done in the recent past.

The prognosis of CNS tumor varies depending upon the location, histological grade and metastasis. Most of the higher grade neuroepithelial tumors have bad prognosis

**Table 3: showing various studies in the recent past with findings similar to our study:**

Author	Year of study	No of cases	Sex ratio	Spectrum
Larjavaara S et al[6]	2007	267	-	Astrocytoma
Aryal G[7]	2011	57	1.2:1	Astrocytoma
N chawla et al[8]	2014	77	1.6:1	Astrocytoma
Kasa Lakshmi et al[9]	2015	72	1.8:1	Astrocytoma
Sajeeb Mondal et al [1]	2012	130	1.3:1	Astrocytoma
Kailash chand jat et al[10]	2015	59	1.8:1	Astrocytoma
Present study	2017	60	1.6:1	Astrocytoma

**CONCLUSION**

In the present study Glial tumors were the most fequent neoplasm and Astrocytoma was the most common glial tumor reported, followed by the meningiomas and metastatic tumor. Histopathology (H&E) remains the mainstay and is still the gold standard in diagnosing CNS tumors.

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