



## HISTOPATHOLOGICAL PATTERN OF BRAIN TUMORS: ONE YEAR RETROSPECTIVE STUDY IN A TERTIARY CARE HOSPITAL IN JHARKHAND INDIA.

### Pathology

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### ABSTRACT

**BACKGROUND:** A brain tumor is an intracranial solid neoplasm which involves varied types of cells. Management strategies and prognosis of tumor depends on the combination of factors like the type and grade of tumor, its location, size and state of development. So definite typing of brain tumor by histological examination is essential for appropriate treatment.

**METHODS:** This retrospective study was carried out from August 2017 to July 2018 in RIMS Ranchi. A total of 55 brain tissue biopsy samples were collected irrespective of age and sex along with patients' clinical diagnoses, CT scan or MRI report, and operative findings and histological diagnosis were done.

**RESULTS:** Majority (38.18%) of the study subjects belonged to 41–50 years of age group with male predominance (63.64%). Astrocytoma comprised the largest group (38.18%).

**CONCLUSIONS:** It is concluded from this study that among the different varieties of brain lesions astrocytoma is the most common with male predominance between the age group of 40–49 years confirmed by biopsy and histopathology along with CT or MRI.

### KEYWORDS

Brain tumor, Astrocytoma, Histological subtype.

### INTRODUCTION

Central nervous system neoplasms are the rarest tumor accounting for 1-2% of all neoplasms<sup>[1]</sup>. Male patients are more affected than female except in meningioma. Brain tumors have bimodal age distribution with a peak at childhood and adult age group of 45–70 years<sup>[2]</sup>. Brain tumours occurs not only in the brain, but also in lymphatic tissue, blood vessels, the cranial nerves, the brain envelopes (meninges), skull, pituitary gland, pineal gland and spinal canal. Within the brain cells involved may be neurons or glial cells which include astrocytes, oligodendrocytes and ependymal cells<sup>[3]</sup>. It attacks the patient's sense of self by causing paralysis, seizures, cognitive impairment, and personality changes. It is the second most common cause of death from neurological disease, surpassed only by stroke<sup>[4]</sup>. The primary brain tumors involve about two-third of all central nervous system (CNS) neoplasms<sup>[5]</sup>. According to the WHO classification, CNS tumors have extensive classification and subtypes. Glial tumors are the most common type of brain tumor and include astrocytoma, ependymoma, glioblastoma, oligodendroglioma, and others<sup>[6]</sup>. The brain is well protected by the skull, so the early detection of a brain tumor occurs only when diagnostic tools are directed at the intracranial cavity. Computed tomography (CT) scans and especially MRI play a central role in the diagnosis of brain tumor. But there are some difficulties in their interpretation. Errors in reporting of CT or MRI are even more common when attempts are made to predict the type of malignancy<sup>[7][8]</sup>. The definitive diagnosis can only be confirmed by histological examination of brain tissue samples obtained either by means of brain biopsy or open surgery. Histological examination is essential for the appropriate treatment and prognosis. Management strategies and prognosis of tumor depends on the combination of factors like the type and grade of tumor, its location, size and state of development<sup>[9]</sup>. So, it is wise not to be overconfident about the suspected type or grade of a tumor prior to biopsy.

### MATERIALS AND METHODS

We did a retrospective analysis of the data on brain tumours obtained from the histopathology reports in the Department of Pathology RIMS, Ranchi during the one year study period (August 2017 to July 2018). A total of 55 study subjects were enrolled in this study irrespective of age and sex. Purposive sampling of cases was done and the study subjects included all cases of brain tumours received in the department. Non neoplastic and inflammatory lesions of the brain were excluded. We retrieved the slides of these cases and reviewed them. IHC, in required cases were done. Strict confidentiality of patient information was

maintained while handling the data sets. Those cases with incomplete data were excluded from the study.

### OBSERVATION AND RESULTS

Out of 55 study subjects the majority belongs to 41–50 years of age group (38.18%) and there was male predominance (63.64%) (Table 1 and 2).

**Table 1: Distribution of the study subjects by age (n = 55)**

Age group	Frequency	Percentage
0-10 years	1	1.82%
11-20 years	4	7.27%
21-30 years	8	14.54%
31-40 years	10	18.18%
41-50 years	21	38.18%
51-60 years	7	12.72%
>60 years	4	7.27%
Total	55	100%

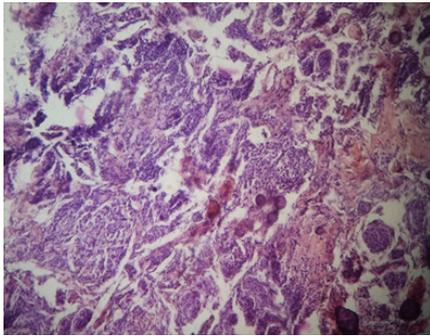
**Table 2: Distribution of the study subjects by sex (n = 55)**

Sex group	Frequency	Percentage
Male	35	63.64%
Female	20	36.36%
Total	55	100%

**Table 3 shows the Histological pattern of brain tumors among which astrocytoma comprised the largest group (38.18%)**

**Table 3: Distribution of the study subjects by histopathological diagnosis (n = 55)**

Histopathological diagnosis	Frequency	Percentage
Astrocytomas	21	38.18%
Meningioma	14	25.45%
Oligodendroglioma	04	7.27%
Craniopharyngioma	01	1.82%
Ependymoma	03	5.45%
Schwannoma	05	9.09%
Lymphoma	03	5.45%
Metastatic tumor	04	7.27%
Total	55	100%



**Figure 1: The photomicrograph of meningioma**

## DISCUSSION

Brain tumors refer to a mixed group of neoplasm originating from the intracranial tissues and the meninges with degrees of malignancy ranging from benign to aggressive. Benign tumors can be lethal due to their site in the brain, their ability to infiltrate locally and the propensity to transform to malignancy<sup>[10]</sup>. The incidence of brain tumor rises with the age range from less than 10 years to more than 60 years<sup>[11]</sup>. It is more common between the ages of 41–50 years with a drop in incidence over 60 years. Our study also shows more frequency between the age of 41–50 years (38.18%). Our finding was similar to the finding of Masoodi et al. and Dhar et al.<sup>[2],[12]</sup>. Males are more likely to be diagnosed than females, with a male:female ratio of 1.75:1. Similar results are documented by Counsell et al.<sup>[13]</sup>. Astrocytoma was the most common subtype (21 cases, 38.18%) in the present study, supporting the previous studies by Masoodi and Aryal et al.<sup>[2],[6]</sup> However, Dhar et al. found glioblastoma as the most common subtype in their series.<sup>[12]</sup> Meningiomas (14 cases, 15.3%) were the second common type CNS tumor in our series, similar to the findings of other previous studies by Masoodi, Aryal et al.<sup>[2],[6]</sup>

## CONCLUSION

It can be concluded from this study that among the different varieties of brain lesions in our population, astrocytoma is the most common one and with male predominance between the age group of 41–50 years. Histopathological diagnosis is necessary for the formulation of further management after neurosurgery.

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