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HISTOPATHOLOGICAL SPECTRUM OF CENTRAL NERVOUS SYSTEM TUMOURS IN A TERTIARY CARE CENTRE.

Pathology

Dr. Vivek. A. Kolage Resident, Department of Pathology, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Adgaon, Nashik.

Dr. Atul. Pawar Resident , Department of Pathology, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Adgaon, Nashik.

Dr. Preeti. Bajaj Professor & Head, Department of Pathology, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Adgaon, Nashik.

Dr. Rajendra. Chaudhari Associate Professor, Department of Pathology, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Adgaon, Nashik.

ABSTRACT

Introduction: CNS tumours represent unique heterogenous population of neoplasms which include both benign and malignant neoplasms. **Aims and objectives:** The aim of the study is to analyse histopathological spectrum of CNS tumours. **Material And Methods:** A retrospective study was carried out in the Department of Pathology from January 2018 to October 2021 at a tertiary health care centre. WHO fascicle 2007 was followed for the classification of CNS tumours. **Results:** In our study, Two hundred fifty (250) CNS neoplasms were analysed. There was a bimodal age peak in 31-40 years (60 cases, 24%) and the other in 51-60 years (80 cases, 32%). The most common tumour was schwannoma (70 cases, 28%) and was present most commonly in age group of 51-60 years (40 cases). **Conclusion:** The present study highlights the histological diversity of CNS tumours in various age groups.

KEYWORDS

CNS tumours, Schwannoma, Medulloblastoma

INTRODUCTION

Central nervous system tumours represent a unique heterogeneous population of neoplasms, include both benign and malignant neoplasms. In India, they constitute about 1.9% of all tumours. [3] CNS tumours are rare neoplasms reported to < 2% of all malignancies. [9] They vary widely in terms of site of origin, morphological grouping and location presenting features, growth potential and tendency for recurrence. [10] Geographical variation in incidence is less than that for most other human neoplasms. [10,11] These intracranial tumours comprise a relatively small percentage of malignancies globally and have particular significance due to their associated severe morbidity and mortality. [10]

AIMS AND OBJECTIVES

The aim of the study is to analyse histopathological spectrum in CNS tumours.

MATERIALS AND METHODS

Study Design: Retrospective Study

Study Setting: Study was conducted in Department of Pathology, Dr Vasantrao Pawar Medical College, Nashik.

Duration of Study: 3 years (January 18 – October21)

Study Participants:

Sample Size– This retrospective study done on histopathological analysis of brain tumors was carried out in the Department of Pathology from January 2018 to October 2021. WHO fascicle 2007 was followed for the classification of CNS tumours.

Study was carried out on the histopathology specimens received in department of pathology.

Eligibility Criteria –

Inclusion Criteria:

- All age group patients are included in this study.
- Newly diagnosed cases on histopathological study

Exclusion Criteria:

- Follow-up cases are excluded

RESULTS:

- Total 250 cases were analysed in the present study.
- Age ranging from 0 – 60 years were taken for study.
- Majority of cases seen in the age group of 51 – 60 (80 case, 32 %) and least common cases seen in 21-30 age group (30 cases,12%). (Table no.1)
- Schwannoma were most commonly seen in (70 cases, 28%) followed by Medulloblastoma, Astrocytoma (40 cases, 16%).(Table no.1)
- Out of 250 cases – 140 (56%) Females.
- 110 (44%) Males.
- Majority 210 cases (84%) of the tumours were intracranial tumours whereas the remaining 40 cases (16%) cases were spinal. (Table no.4)
- Out of intracranial cases, frontal lobe was the most common site involved (32%) followed by temporal lobe (16%).
- Headache was the most common symptom seen in intracranial tumours followed by memory loss. (Table no.3)
- Among intracranial tumours, schwannoma constituted the largest group (28%) of the present study, most commonly seen in 5th decade in this study, whereas medulloblastoma seen paediatric age group.
- WHO grade I lesions were more common in this study constituting (52%) of all CNS neoplasm.(Table no.6)

Table 1: Age Wise Distribution Of The Patients:

Diagnosis	0-10	11-20	21-30	31-40	41-50	51-60	Total	(%)
Astrocytoma	10	-	-	10	20	-	40	16
Oligodendroglioma	-	-	-	10	-	-	10	4
Medulloblastoma	30	-	10	-	-	-	40	16
Meningioma	-	-	-	10	-	10	20	8
Schwannoma	-	-	10	10	10	40	70	28
Hemangioblastoma	-	-	-	20	-	-	20	8
Pituitary Macroadenoma	-	-	-	-	10	-	10	4
Glioblastoma Multiforme	-	-	10	-	-	-	10	4
Metastasis	-	-	-	-	-	30	30	12
Total No:	40	-	30	60	40	80	250	100
Percentage :	16%	-	12%	24%	16%	32%	-	100%

Sex Wise Distribution: Table no.2

Sex Distribution		
CNS Tumours	Male	Female
Astrocytoma	10	30
Oligodendroglioma	10	-
Medulloblastoma	10	30
Meningioma	-	20

Schwannoma	40	30
Hemangioblastoma	-	20
Pituitary Macroadenoma	10	-
Glioblastoma Multiforme	10	-
Metastasis	20	10
Total	110 (44%)	140 (56%)

According To Symptoms: Table No.3

Symptoms	Total Patients
Headache	140
Vomiting	50
Imbalance	30
Convulsion	40
Visual Symptoms	20
Memory Loss	60
Altered Sensorium	50
Neurological Deficit	10
Difficulty in Walking	10
Urinary Incontinence	10

Distribution Of CNS Tumours: Table No.4

Sr.No.	Distribution according to site	Percentage (Total cases 250)
1.	Intracranial Tumours	210 (84%)
2.	Spinal Tumours	40 (16%)

Patterns Of Tumours Based On Origin: Table No.5

Sr.No.	Patterns of Tumours based on origin	Percentage (Total cases 250)
1.	Primary CNS Tumours	220 (88%)
2.	Metastasis	30 (12%)

Frequency Of Various CNS Tumours According To The WHO Grading: Table No.6

WHO Grading	Number of cases (%)
Grade I	130(52%)
Grade II	30(%)
Grade III	10(4%)
Grade IV	50(20%)
Total	220(88%)

DISCUSSION

- Total 250 cases were analysed in the present study.
- In this study a bimodal age peak in 31-40 years (60 cases,24%) and the other in 51-60 years (80 cases,32%).
- Overall females are 3 times more affected than males (3:1) in medulloblastoma, astrocytoma cases, whereas in schwannoma males are slightly more affected than females (4:3).
- In this study, intracranial tumours were more common (210 cases,84%) as compared to spinal tumours (40 cases,16%). Similar finding were seen in study done by Iyengar B et al.
- Among intracranial tumours, schwannoma constituted the largest group (28%) of the present study, most commonly seen in 5th decade in this study , whereas medulloblastoma seen paediatric age group.
- Metastasis is common in this (51-60) age group in this study, similar finding shows in study done by G.Vahini et al.(4)
- Frontal lobe (32%) was the most common site involved followed by temporoparietal lobe (20%) in our study. Torres et al (6), Andrew et al (7) and Jamal et al (8) also mentioned the frontal lobe as common site followed by temporoparietal lobe.
- Headache was the most common symptom seen in this study and similar finding was seen in study done by Dwivedi R et al (12).

CONCLUSION

- There is histological diversity in various age group and sex.
- Post Operative treatment of CNS tumours depend on grading of tumours.
- Accurate diagnosis of CNS tumours is the prerequisite for the treatment of CNS tumours.

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