

Histopathological Patterns Of Cns Tumors – A 3 Years Retrospective Study In A Tertiary Care Hospital

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Abstract

CNS (Central Nervous System) tumors comprise a heterogeneous group of neoplasms which are influenced by a wide variety of factors like X-rays, chemotherapeutic drugs, electromagnetic radiations from appliances like microwaves and mobile phones^{1,3}. Their diagnosis & management are aided by the radiological diagnostic techniques and the neurosurgical procedures. Current research aimed to study the histopathological spectrum of CNS tumors irrespective of age in a tertiary care hospital for the last 3 years.

Keywords: NIL

Introduction

Previously, brain tumors were classified mainly on the basis of histogenesis i.e. cells of origin and their supposed levels of differentiation but due to overlapping of entities and newer lesions, newer classifications were based on both histopathological and molecular features. The 2016 WHO classification has included molecular information into diagnosis and classification as must².

Central nervous system tumors have unique characteristics in contrast to other neoplastic processes elsewhere in the body like distinction between benign and malignant neoplasms is less evident in CNS than other organs. The ability to resect infiltrating glial neoplasms surgically without compromising neurological function is limited. Anatomic site of neoplasm can have lethal consequence irrespective of histologic classification. Pattern of spread of primary CNS neoplasms differ from that of other tumors. Even the most highly malignant gliomas rarely metastatise outside the CNS¹⁰. Majority of brain tumors are derived from glial cells called gliomas. Highly malignant tumors are glioblastomas. The CNS tumors affect both

children and adults. The diagnosis of CNS neoplasms needs an integrated approach which involves the neurophysician, neurosurgeon, radiologist and pathologist. It is the pathologist who gives the final report and the treatment is based on pathologist's report⁵. The purpose of this study is to look into the histopathological patterns of CNS tumors and to provide a spectrum of CNS tumors with which patients suffer.

Materials & Methods:

The present study is a 3 years retrospective study conducted in the Department of Pathology, GMC Jammu. A total of 50 formalin fixed, paraffin embedded, H&E stained biopsy specimens were identified. The histopathological typing and grading with WHO classification was done. Finally, results were analysed and the data was prepared to determine the relative frequencies of various histopathological patters with reference to distribution of age and sex.

Results:

A total of 50 CNS tumors were identified in a period of 3 years ranging from Dec. 2021 to Dec. 2018. The

majority of cases (95%) present as space occupying lesions in the brain and remaining (5%) of cases were intra-spinal tumors. When gender was compared, there was male predominance (60%) as compared to females (40%). The subjects had a mean age of 42 years. Of all the CNS tumors, the paediatric tumors were eight in number. We found that tumors of neuroepithelial tissue was the common entity (20 cases) followed by tumors of meninges (16) and metastatic tumors (4). Out of 4 metastatic tumors, the

most common histologic type was Adenocarcinoma. Among the tumors of neuroepithelial tissue, astrocytic tumors were predominant and among the astrocytic tumors, Anaplastic astrocytoma Grade III was the commonest type. Among the tumors meninges, meningiomas were seen in majority of cases¹¹. In paediatric age group, astrocytic tumors were seen in majority of cases. The average age in paediatric tumors was 8 years with equal male to female ratio (1 : 1)

	Tumor Type	%age of case
i)	Neuroepithelial tumors (20)	40%
ii)	Meningiomas (16)	32%
iii)	Metastasis (4)	8%
iv)	Pituitary Adenoma (1)	--
v)	Neurilemmoma (2)	
vi)	Medulloblastoma (2)	
vii)	Craniopharyngioma (1)	
vi)	PNET (1)	
vii)	Neurofibroma (1)	
viii)	Ependymoma (1)	
ix)	Lymphoma (1)	

Discussion

In our retrospective study conducted from Dec. 21 to Dec. 18, a total of 50 cases of CNS tumors were encountered. The peak occurrence was noted in the age group of 41-50 yrs. Similar findings were seen in previous studies by Kadaru MR et al⁷, Yadav⁸ N et al & Jain C et al⁶. In the present study CNS tumors occurred with a predominance in males (60%) as compared to 40% in females. This is quite similar to studies conducted by Kadaru MR et al⁷, Mondal S et al⁹, Masoodi et al¹² & Nibhoria S et al¹⁵.

But studies conducted by CBTRUS⁴, Patil MB et al¹³ & Wadhwa R et al¹⁴, female cases were seen in majority. In the present study, neuroepithelial tumors were the most common category of CNS tumors seen in majority of cases. In this category, Astrocytomas were commonly occurring CNS tumors with a percentage of 40%. This appears similar to the

observation in studies of Jain C et al⁶, Mondal S et al⁹, Nibhoria S et al¹⁶ & Chen et al¹⁷. In contrast to present study, CBTRUS study¹⁸ Kadaru M et al⁷, Kanthikar S N¹⁵ et al & Ghangoria S et al¹¹, Meningioma is seen in majority of cases.

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