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STUDY OF CLINICOPATHOLOGICAL PATTERN OF BRAIN TUMOURS IN RIMS RAIPUR

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ABSTRACT

Brain tumors are heterogeneous group of neoplasms, affecting different age groups. Although some studies have been published regarding pathological pattern of brain tumors from different countries of the world and also from India, comprehensive clinicopathological studies from Eastern India is lacking. The aim of this study was to observe recent incidence of different brain tumors and to study clinical and histopathological spectrum of brain tumors in RAIPUR. The present study was a cross-sectional observational study involving 130 cases of brain tumors which were diagnosed during the 5-year study period (January 2010–December 2015). Data regarding clinical presentation and radiological features of all cases were collected from all patients. Histopathological diagnosis was correlated with clinical and radiological diagnosis. We found 130 cases of brain tumor with a male preponderance. The cases were distributed in a wide age range from 4 years to 78 years with the mean age of 42.38 years. Most common tumor type in our study was neuroepithelial tumor (92 cases, 70.76%). Among the neuroepithelial tumors, most frequent subtype was astrocytic tumor (54 cases, 41.5%). The second most frequent brain tumor was meningioma (20 cases, 15.3%). We found higher incidence of oligodendroglial tumor (8.46%) and medulloblastoma (7.69%) in our series. Conclusion: Males are more predispose to brain tumors in comparison to females. Astrocytic tumors are most common subtype in Eastern India. However, the WHO Grade I neoplasms are more frequent brain tumors.

KEYWORDS Incidence, Astrocytic tumors, brain tumors, histopathological subtypes.

INTRODUCTION:-

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. Nearly 20% of childhood malignancies are brain tumors and 70% of primary brain tumors of childhood are infratentorial and involve cerebellum, midbrain, pons, and medulla. Clinical presentation of brain tumors depends on the location, size of the tumors, and growth rate of the neoplasm. There is a high morbidity and mortality in these tumors irrespective of their histological grade. The primary brain tumors involve about two-third of all central nervous system (CNS) neoplasms. 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. Nonglial tumors include embryonal tumors, choroid plexus tumors, pineal tumors, meningeal tumors, nerve sheath tumors, tumors of sellar region, hematopoietic neoplasm, and metastatic tumors. Among these extensive entities, meningiomas, gliomas, nerve sheath tumors, and pituitary tumors account more than 85% of all CNS tumors. Accurate diagnosis of brain tumors requires sophisticated modern noninvasive and invasive techniques such as radiological imaging, intraoperative squash cytology, postsurgical biopsy, and histopathology of the tumors.

MATERIAL AND METHOD:-

The present study was done at the Department of Pathology in collaboration with the Department of Neurosurgery in our hospital. Ethical clearance was obtained from the Institutional Ethics Committee. In the 5-year study period, we studied 130 brain tumor cases. Data on clinical presentation and radiological features of all cases were collected from the patients' records. In all cases, gross features were recorded during grossing of the resected tumors. The tissue sections were processed and stained as standard procedure. Squash cytology and immunohistochemistry were used in atypical cases and in the case it was required. Histopathological diagnosis was done depending on the WHO classification and grading (2007). Statistical analysis was performed using Statistical Package for Social Science (SPSS, Version 20 window 8). Relative frequency of different types of brain tumors and grading was analyzed.

RESULT:-

We studied 130 cases of brain tumors in 5 years. We found 73 (56.15%) male patients and 57 (43.84%) female cases. The cases were distributed in a wide age range (lowest-4 years and highest-78 years) in our series with the mean age of 42.38 years. The highest number of cases was among 41–50 years (38 cases, 29.23%). Most common presentation of brain tumor in our series was headache (63 cases, 48.46%). Other symptoms were seizure (48 cases, 36.92%), vomiting (32 cases, 24.61%), visual disturbance (11 cases, 8.46%), cranial nerve palsy (8 cases, 6.15%), and gate disturbance (5 cases, 3.84%). According to the sites of involvement, frontal lobe was most common site (44 cases, 33.84%). We found 12 (9.23%) cases of cerebellar tumor in our study.

Most of the tumors in our series were neuroepithelial tumor (92 cases, 70.76%). Among the neuroepithelial tumors, most frequent type was astrocytic tumor (54 cases, 41.5%). The second most frequent group was meningioma (20 cases, 15.3%). Histopathological subtypes of brain tumors are shown in . Among the astrocytic tumors , 13 cases were WHO Grade I and 6 cases were Grade II. Another 12 (22.22%) cases of astrocytoma were WHO Grade III and 23 (42.5%) cases were glioblastoma (Grade IV). We found 9 (6.92%) cases of nerve sheath tumors (eight cases of schwannoma and one case of neurofibroma) in our series. All of brain tumors of pediatric age group were embryonal tumors (three cases, 2.3%). We found one primary CNS lymphoma and two metastatic brain tumor in our series.

DISCUSSION:

Among the 130 cases of brain tumor in our study, we found 65 (50%) cases in the group of 31–50 years. Peak age group in our study was 40–50 years, accounting 38 (29.23%) cases. Our finding was similar to the finding of Masoodi *et al*. and Dhar *et al*. Male versus female ratio in the present study was 1.28:1, but meningioma cases had a female predominance. Masoodi *et al*., Ghanghoria *et al*., and Yeole found similar sex ratio in their studies. Lee *et al*. found six types of brain tumors occurred more frequently in females than males (female:male - 1.43:1). We found frontal lobe as most common site of brain tumors in our study, similar to the finding of Masoodi *et al*., Jamal *et al*., and Jalali *et al*. Most common symptom in the patients in our study was headache (63 cases, 48.46%). Headache was also found to be the most common

complaint in previous studies.Neuroepithelial tumor was most common tumor (92 cases, 70.76%) and astrocytoma was the most common subtype (54 cases, 41.5%) in the present study, supporting the previous studies by Aryal, Masoodi *et al*., Jalali and Datta, and Ahmed *et al*. However, Dhar *et al*. found glioblastoma as the most common subtype in their series. Meningiomas (20 cases, 15.3%) were the second common type CNS tumor in our series, similar to the findings of other previous studies. However, Ghanghoria *et al*., Das *et al*., and Lee *et al*. found meningioma as the most common lesion in their study group. Among the astrocytic tumors, most common type was WHO Grade IV (glioblastoma) accounting 42.59% of cases. Dhar *et al*., Ghanghoria *et al*., and Ahmed *et al*. also found similar findings in their series. Both the cases of metastatic tumor were adenocarcinoma. One case was metastasis from colonic adenocarcinoma, and another was secondary from ductal carcinoma of breast. Aryal found eight cases of metastatic brain tumor and 87.5% (seven cases) of these were adenocarcinoma. We diagnosed 3 cases of pituitary adenoma (2.3%) in the present study whereas Das *et al*. and Masoodi *et al*. found higher incidence. We found higher incidence of oligodendroglial tumor (8.46%) and medulloblastoma (7.69%) in our series than others. We found only one (0.76%) case of primary CNS lymphoma in the present study. Previous studies found incidence of CNS lymphoma from 0.8% to 1.5% in different series.

CONCLUSION:-

We observed that various morphological types of brain tumors occur at different age groups. Histopathological diagnosis is necessary for the formulation of further management after neurosurgery. Our study gives a current outlook of epidemiology and clinicopathological aspects of different brain tumors.

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