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SHORT COMMUNICATION

CURRENT EPIDEMIOLOGICAL TRENDS OF BRAIN TUMORS: ONE OF THE ORGANIC CAUSES OF NEUROPSYCHIATRIC PRESENTATIONS, IN KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract:

Background: Brain neoplasms represent abnormal growths or masses of cells, which arise from brain parenchyma or surrounding tissues. There are different classes of brain tumors, each with their own unique Histopathological characteristics, clinical course, prognosis and management. They are a significant cause of distress and mortality in adults as well as pediatric populations, causing significant disabilities and burden on overall health care and family systems.

Objective: The foremost objective is to know about the prevalence and demographic details of Primary intracranial neoplasms and neoplasm like lesions.

Material and Methods: This retrospective study was done from 1st January 2015 to 30th April 2024 at Central Pathology Laboratory, Peshawar. All the biopsy samples were processed as per standard procedure of WHO and the reports are presented in the form of table and SPSS Software was utilized to analyze the data.

Results A total of 195 brain tumors biopsy reports were Histopathological diagnosed. 113(57.94%) were males while 82(42.05%) were females, which is indicative of male predominance. On the basis of age, the least number of subjects were in the age group of 1-9 years i.e. 9 (4.62%) followed by 20-39 years with only 13 cases (6.67%). Majority of patients i.e. 173 (88.71 %) were aged 40 years and above. The mean age was 37.60 ±SD 17.84. Histopathological, the most prevalent brain neoplasms were astrocytomas.

Conclusion: The most frequent neoplasms were astrocytomas and meningiomas. Neurophysicians and psychiatrists should be watchful in their clinical experience for excluding organic brain pathologies including brain neoplasms. Less female prevalence could be due to their limited access to medical services in our region.

Keywords: Dyspepsia, Stool Test, H. pylori, PPT, Prevalence.

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Introduction:

Primary intracranial tumors represent a class of neoplasms which originate from brain tissue. They cause increased mortality across all ages and are accountable for producing severe disabilities and high burden on our health care systems. Due to inadequacy of data, the prevalence of brain tumors is poorly understood in our region. Proper understanding of the epidemiology of these tumors can be of great help in proper planning regarding the allocation of heath care resources for their timely management and reducing subsequent mortalities[1] .Globally, among males and females, the annual incidence of primary brain neoplasms is about 3.9 and 3.2 per 100,000respectively[2].As long as malignant brain neoplasms are concerned, their incidence is 3.7 and 2.6 per 100,000 in males and females respectively[3]. Majority of CNS tumors are histological benign and may be fatal if not managed appropriately. Cerebellum and cerebral hemispheres are the brain areas, where tumors most frequently occur. Brain neoplasms result in diverse neuropsychiatric symptoms through mass effects. Due to causing varying clinical presentations, complications and disabilities, early diagnosis is the key for successful management and subsequent good

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prognosis[4].

Psychiatric symptoms are rarely the sole manifestations of intracranial neoplasms, which mayin some cases even deceive competent and adept psychiatrists leading to improper management with poor therapeutic benefits. The commonly encountered psychiatric manifestations of brain neoplasms include mood symptoms, psychotic features, memory impairment, anorexia, anxiety and rarely abnormal changes in personality. The origin of new onset memory, mood or psychotic features, new aberrant clinical manifestations, alterations in personality and appetite changes without body dimorphic symptoms, are highly indicative of detailed workup with neuroimaging interventions like MRI scan so as to rule out any brain organ city like brain neoplasms[5].

Due to lack of extensive research related to intracranial brain neoplasms globally as well as locally, this study will set forth an understanding related to the prevalence and frequency of brain neoplasms in Khyber Pakhtunkhwa. Subsequently, it will act a guide for appropriate formulation and allocation of health resources to timely diagnose and manage subjects with brain neoplasms depicting different neuropsychiatric manifestations.

Material and Method:

Study Design and Duration:

Our study was retrospective in nature, which was conducted from 1st January 2015 to 30th April 2024.

Study Area:

Central Pathology Laboratory, Peshawar, a well-equipped laboratory, was selected as the site for conducting the study.

Study Methodology:

On the basis of age, the participants were divided into 3 groups i.e. Group 1(1-19 years), Group 2 (20-39 years) and Group 3 (40 years and above). Mean ± SD was calculated for continuous variables such as age. Frequencies and %ages were calculated for categorical variables like gender. SPSS Software was utilized to analyze the data. The results obtained were shown in the form of tables.

Results:

Our study showed male predominance. Brain tumors were highly prevalent in subjects aged 40 years and above. The most predominant intracranial tumors were astrocytomas.

The results are given as under:

Gender	Frequencies	%ages
Males	113	57.94%
Females	82	42.05%
Age(Years)	Frequencies	%ages
1-19	9	4.62%
20-39	13	6.67%
40 and above	173	88.71%

Tumor	Frequencies	%Ages
Astrocytoma	77	39.48
Meningioma	48	24.61
Oligodendroglioma	15	7.69
Craniophyrangioma	7	3.58
Medulloblastoma	7	3.58
Pituitary Adenoma	8	4.10
Hemangioma	5	2.56
Ependymoma	7	3.58
Schwanoma	5	2.56
Gliosarcoma	2	1.02
Astroblastoma	1	0.51
Gangliogliomas	1	0.51
Neurofibroma	4	2.05
Cystic lesions	5	2.56
Undifferentiated tumors	2	1.02
Choroid plexus carcinoma	1	0.51

Discussion:

Our study revealed male predominance which is in line with a study conducted in UAE at Tawam Hospital by Sarah et.al. One possible cause could be the reduced approachability of women to health care services in our region6. Another local national wide study conducted in Pakistan by Syed Ather Enam *et.al* also revealed male predominance with 58.4% and 41.5% males and females respectively[7].

The patients aged 40 years and above were found in high frequency in our study. In another hospital based study done in India by Jaiswal et .al at also demonstrated maximum proportion of primary intracranial tumors in the fourth decade[8]. Another Indian study by Kumar P *et.al* supports the same findings[9].

The mean age and standard deviation in our study i.e. 37.60 +/- SD 17.84 is in line with some local studies[10].

The most frequent brain neoplasms in our study were asroctomas, which goes along with the studies done by Jain C.et al, P.P Gupta et.al and Preeti Agarwal et.al[11, 12, 13].The findings in studies like HK Manjunatha *et.a*l, F.Salehpour *et.al* and S.S Malami *et.al* do not accede to our study as meningiomas were the most prevalent intracranial tumors in these studies[14,15,16]. These regional differences regarding the prevalence of intracranial tumors may be due to some unknown causes which may require further studies in this regard.

Conclusion:

Our study will provide preliminary information for future researches related to CNS neoplasms, which are one of the organic causes of neuropsychiatric presentations. For more comprehensive understanding, genetic studies related to intracranial neoplasms should be undertaken. Lastly, neurophysicians and psychiatrists should be eagle eyed in their professional experience to preclude organic brain lesions including CNS neoplasms.

References:

1. de Robles P, Fiest KM, Frolkis AD, Pringsheim T, Atta C, St. Germaine-Smith C, Day L, Lam D, Jette N. The worldwide incidence and prevalence of primary brain tumors: a systematic review and meta-analysis. Neuro-oncology. 2015 Jun 1;17(6):776-83.
2. Ullah S. Prevalence of Primary Brain Neoplasms and Neoplasm-Like Lesions Reported at Central Pathology Laboratory, Peshawar-A Retrospective Study. BMC Journal of Medical Sciences. 2021;2(2):60-3.
3. Jiang T, Tang GF, Yi LI, Peng XX, Zhang X, Zhai XW, Xiang PE, Yang JQ, Huang HE, Wu NF, Chen XJ. Prevalence estimates for primary brain tumors in China: a multi-center cross-sectional study. Chinese medical journal. 2011 Sep 1;124(17):2578-83.
4. Salari N, Ghasemi H, Fatahian R, Mansouri K, Dokaneheifard S, Shiri MH, Hemmati M, Mohammadi M. The global prevalence of primary central nervous system tumors: a systematic review and meta-analysis. European journal of medical research. 2023 Jan 20;28(1):39.
5. Madhusoodanan S, Ting MB, Farah T, Ugur U. Psychiatric aspects of brain tumors: a review. World journal of psychiatry. 2015 Sep 22;5(3):273.
6. Khan S, Kambris ME, AlShamsi ET. Epidemiology of brain tumors in the United Arab Emirates: a national registry cross-sectional study. BMC neurology. 2020 Dec;20:1-0.
7. Enam SA, Shah MM, Bajwa MH, Khalid MU, Kamran S. The Pakistan Brain Tumour Epidemiology Study. Social History. 2022 Nov 1;8:1-40.
8. Jaiswal J, Shastry AH, Ramesh A, Chickabasaviah YT, Arimappamagan A, Santosh V. Spectrum of primary intracranial tumors at a tertiary care neurological institute: A hospital-based brain tumor registry. Neurology India. 2016 May 1;64(3):494-501.
9. Kumar P, Kumar R, Sharma N, Kumar HS, Kumar KH, Jakhar SR. Descriptive Epidemiology of Primary Brain Tumors from North-Western India-Single institute study. Journal of Advanced Medical and Dental Sciences Research. 2021 Jun 1;9(6):175-80.
10. Sajjad M, Shah H, Khan ZA, Ullah S. Histopathological pattern of intracranial tumors in a Tertiary care Hospital of Peshawar. Pakistan. JSZMC. 2015;7(1):909-12.
11. Jain C, Jain VK, Mogra N. Study of prevalence pattern of neoplastic intracranial tumor in the tribal area of Rajasthan, India. International Journal of Advances in Medicine. 2017 Jan;4(1):275.
12. Gupta PP, Goyal RP. Descriptive epidemiology of central nervous system tumors in rural hospital of central India: 5-year experience.
13. Agarwal P, Monterio R, Choudhary I, Mal N, Sujanani S. Histopathological spectrum of brain tumors in tertiary care teaching hospital in Southern Rajasthan. Indian J Pathol Res Pract. 2020 Jan;9(1):65-70.
14. Manjunatha HK. Prevalence of primary CNS tumors in a diagnostic setup in Nairobi, Kenya. Indian Journal of Pathology and Oncology. 2018 Oct;5(4):631-5.
15. Salehpour F, Mirzaei F, Meshkini A, Parsay S, Salehi S, Asl M. Trends in primary brain tumors: a 5-year retrospective histologically confirmed study in Tabriz, Iran, 2011–2016. Asian Journal of Neurosurgery. 2019 Jun;14(02):427-31.
16. Malami SS, Wemimo RM, Kabiru A, Taiwo AA, Umar M, Abiodun AE, Akanni OW, Bello MS, Ismail NJ. Histopathological pattern of intracranial tumours at a Tertiary Health Facility in Sokoto, North-West, Nigeria. American journal of laboratory medicine. 2019 Dec 17;4(6):119-23.