

Incidence of Brain Tumours in Children and Adults in Pakistan

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ABSTRACT

Objective: To study the incidence of Brain Tumours in Children and Adults in Pakistan

Study Design: Retrospective Study

Place and Duration of Study: This study was conducted at the Pathology Department of Idris Teaching Hospital Sialkot and Aziz Bhatti Teaching Hospital Gujrat from January 2016 to February 2020.

Materials and Methods: The histopathology records of all patients with brain tumors were reviewed which were received, diagnosed and operated for brain tumors. In addition to types and site of the tumor, patient demographics including sex and age were also recorded. To highlight the sex distribution and age frequency amongst each age group, the age of the patients was divided in two broad groups 1 (0-14 years) and 14 -82 years. The written informed was taken before collecting the data from each patient and permission of Ethical Committee was also considered before collecting the data and publishing in medical journal. The data was analyzed for results by SSPP version 10.

Results: Incidence of Benign 16 (30.76%) Small Round Blue Cell Tumor 09 (17.30%) Medulloblastoma 11 (21.15%) High grade glioma 06 (11.53%) Low grade glioma 07(13.46%) Glioblastoma multiform 03(5.76%) Total 52(100%). Incidence of GBM 27(21.95%) Meningioma 25(20.32%) Benign 25(20.32%) Low grade glioma 23(18.69%) Metastatic carcinoma 05(4.06%) High grade glioma 04(3.25%) DLBCL 02(1.62%) Mesenchymal chondrosarcoma 03(2.43%) Non diagnostic 09(7.31%). One hundred seventy-five patients with brain tumors, of ages between 2-82 years had underwent surgery during the study period. Out of these, 154(88%) were males and 21(12%) were females. Male to female ratio was 13.63:1. The mean age of patients was 6.73 (± 0.21) years. A distinct overall male predominance was noted in all tumor types.

Conclusion: Population-based studies were required to determine the cancer burden due to pediatric malignancies of the brain in this population and for the morphological categorization of brain tumors in Pakistan. Conventional hematoxylin-eosin staining is the mainstay for pathological diagnosis in most of the cases, however Immunohistochemistry (IHC) has a major role in differential diagnosis and improving diagnostic accuracy in difficult cases not only in general surgical pathology but also in neurooncologic pathology.

Key Words: Incidence, Brain Tumours, Pakistan

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INTRODUCTION

Occurrence of cerebrum tumors is identified with age, with the most noteworthy frequency in more established men and women¹. In youth mind tumors are the second most normal diseases after leukemia, representing in excess of a fourth of all tumors analyzed

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in youngsters Although a dominant part of these tumors happen in grown-ups, some particular histological sorts which are basic in adolescence are uncommon in

adults^{2,3}. All the more significantly, there are signs that pediatric and grown-up glial tumors have contrasts in their sub-atomic science and conduct. These have significant ramifications for future research, treatment and prognosis⁴. In numerous pieces of the world, they are not just the most widely recognized dangerous strong tumors seen before the age of 20 years, yet in addition a biggest reason for youth malignancy mortality in the age group 0-1⁴. Early location and improvement in remedial modalities have brought about longer endurance. It's shocking that treatments effectly affect the cerebrum tissue. Longer stabilities are regularly connected with neurological, subjective and endocrine issue and diminished nature of life⁵. Survivors are at an expanded danger of building up a second neoplasm later in life⁶.

In writing there are overall varieties in the example of cerebrum tumor as for occurrence, sexual orientation, anatomical area and recurrence of explicit histological sorts. Area and histological sorts, to an enormous degree, impact treatment choices, out-come and hazard factors. Information on these parameters are helpful for arranging of social insurance conveyance framework

and future research. Generally morphological measures are useful for diagnosing the vast majority of these tumors however in situations where tumors are ineffectively separated or example gave is restricted, Immunohistochemistry and radiological assessment is extremely useful in arriving at a precise diagnosis^{7,8}.

MATERIALS AND METHODS

For this study data of one hundred seventy five patients was collected from the Pathology department of Idris Teaching Hospital Sialkot and Aziz Bhatti Teaching Hospital Gujrat Pakistan. The histopathology records of all patients with brain tumors were reviewed which were received, diagnosed and operated for brain tumors during January 2016 to February 2020. In addition to types and site of the tumor, patient demographics including sex and age were also recorded. To highlight the sex distribution and age frequency amongst each agegroup, the age of the patients was divided in two broad groups 1 (0-14 years); and 14 -82 years.

The written informed was taken before collecting the data from each patient and permission of Ethical Committee was also considered before collecting the data and publishing in medical journal. The data was analyzed for results by SSPP version 10.

Inclusion criteria: All the patients having brain tumors were included in this study.

Exclusion criteria: All the patient without brain tumor were excluded from the study.

RESULTS

Table No: 1 Childhood brain tumours distribution

Diagnosis	Number of Patients	Percentage %
Benign	16	30.76 %
Small Round Blue Cell Tumor	09	17.30 %
Medulloblastoma	11	21.15 %
High grade glioma	06	11.53 %
Low grade glioma	07	13.46 %
Glioblastoma multiform	03	5.76 %
Total	52	100 %

Incidence of Benign 16 (30.76%) Small Round Blue Cell Tumor 09 (17.30%) Medulloblastoma 11 (21.15%) High grade glioma 06 (11.53%) Low grade glioma 07(13.46%) Glioblastoma multiform 03(5.76%) Total 52(100%) as shown in table no 1.

Incidence of GBM 27(21.95%) Meningioma 25(20.32%) Benign 25(20.32%) Low grade glioma 23(18.69%) Metastatic carcinoma 05(4.06%) High grade glioma 04(3.25%) DLBCL 02(1.62%) Mesenchymal chondrosarcoma 03(2.43%) Non diagnostic 09(7.31%) as shown in table no 2

Table No.2: Adult brain tumours distribution

Diagnosis	Number of Patients	Percentage %
GBM	27	21.95 %
Meningioma	25	20.32 %
Benign	25	20.32 %
Low grade glioma	23	18.69 %
Metastatic carcinoma	05	4.06 %
High grade glioma	04	3.25 %
DLBCL	02	1.62 %
Mesenchymal chondrosarcoma	03	2.43 %
Non diagnostic	09	7.31 %
Total	123	100 %

Table No. 3: Age and Gender distribution

Age (Years)	Male	Female
2-14	15 (9.7%)	7 (33.33%)
15-30	25 (16.23%)	5 (23.80%)
31-45	25 (16.23%)	3 (14.28%)
46-60	30 (19.49%)	5 (23.80%)
61-76	31 (20.13%)	7 (33.33%)
77-82	30 (19.49%)	4 (19.04%)
Total	154 (100%)	21 (100%)

One hundred seventy five patients with brain tumors, of ages between 2-82 years had underwent surgery during the study period. Out of these, 154(88%) were males and 21(12%) were females. Male to female ratio was 13.63:1. The mean age of patients was 6.73 (± 0.21) years. A distinct overall male predominance was noted in all tumor types.

DISCUSSION

The current investigation was intended to decide the recurrence of Brain Tumors from January 2010 to February 2014. Our examination uncovered male prevalence with by and large male to female proportion of 13.63:1, which is in accordance with past studies⁹⁻¹². As it is a medical clinic based examination, it is preposterous to expect to figure tumor rate. In past investigations a moderately lower recurrence was accounted for. Grover and Hardas announced a recurrence of 8.2% in Bombay Cancer Registry¹³. Khan et al announced 9% recurrence of youth mind tumors¹⁴. Present examination uncovered the greater part of the patients in age bunch 6-8 which is about as per a past report done by Ahmed et al¹⁰ who revealed most cases in age bunch 5-9. Anyway Velema and Percy; and Memon et al detailed most cases in lower age group^{11,15}. In our examination mean age for tumor occurrence was 6.73. The mean age was 6 years in a past report revealed by Farwell et al¹⁶ while Ahmed et al¹⁰ and Mehrzin et al¹⁷ announced mean age as 8.8 and 8.7 years separately which is higher than our examination. Medulloblastoma was the most successive

tumor in youngsters as indicated by our examination establishing 24% of complete cases and is equivalent to concentrate by Young et al and Ahmed et al, where it was additionally the main tumor type^{10,18}. Some different investigations have detailed astrocytoma as the most well-known youth tumor dissimilar to our study^{11,19}. Our investigation repudiates with contemplates done by Mehrazine et al, Rehman et al and Khan et al who revealed meningioma, neuroma and gliomas as the most ruling kinds of youth tumors^{12,14,19}. The greater part of the studies^{10,11,19} indicated roughly the comparable %age of ependymoma as detailed in the current investigation (9.5%). In some studies^{14,17} lower rates of ependymoma is appeared. The present examination is a solitary establishment study and needs wary translation. Morphology is the way in to the conclusion and sub typing of these biopsies; in any case, this ought to be joined with clinical history, radiological connection, and proper examining. Old style morphological highlights by and large consider right finding. Challenges may emerge when tumor show irregular morphology, are, ineffectively separated or blended sort. Metastatic tumors from different locales can be of indicative difficulties. In such cases Immuno histochemistry is very useful in setting up right diagnosis²⁰. Changes embraced with respect to analytic and treatment since mid-1970s have brought about improved endurance rates for patients analyzed as Medulloblastoma, oligodendroglioma, and astrocytoma, particularly controlling for age at determination. Glioblastoma multiform keeps on being the most obstinate essential mind tumor²¹. In grown-ups the astrocytomas were the commonest tumors comprising 47% and meningioma was the second most successive tumor 21%. This is similar to worldwide statistics²². Morphology alone had the option to analyze the majority of the cerebrum tumors. In kids for instances of Medulloblastoma and little round blue cell tumor Immunohistochemistry was required for the affirmation of the conclusion. In grown-ups Immunohistochemistry was required in instances of metastatic carcinomas and lymphomas. So as to get a corroborative finding a board of Immunohistochemical stains involving CK, S100, GFAP, EMA, LCA, CD20, CD56, chromogranin and synaptophysin was used²³. ImranaTanvir, Rahat Malik, RizwanUllah Kh.

CONCLUSION

Population-based studies are required to determine the cancer burden due to pediatric malignancies of the brain in this population and for the morphological categorization of brain tumors in Pakistan. Conventional hematoxylin-eosin staining is the mainstay for pathological diagnosis in most of the cases, however IHC has a major role in differential diagnosis and improving diagnostic accuracy in

difficult cases not only in general surgical pathology but also in neurooncologic pathology.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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