ORIGINAL RESEARCH PAPER
Volume-9 | Issue-4 | April-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

HISTOPATHOLOGICAL STUDY OF SPACE OCCUPYING LESIONS OF BRAIN - A STUDY OF 2 YEARS IN A TERTIARY CARE HOSPITAL

Pathology

S. Srikanth*
Professor, Department of Pathology, Malla Reddy Institute of Medical Sciences, Suraram, Hyderabad,Telangana,India. *Corresponding Author

ABSTRACT

Background: Tumours of the central nervous system have several unique characteristics that set them apart from neoplastic processes elsewhere in the body.First, the distinction between benign and malignant lesions is less evident in the CNS than in other organs.
Materials & Methods: The present study is a retrospective and prospective study conducted for a period of two years.All required necessary data, clinical and Radiological data was collected and correlated.
Results: A total of 40 cases were studied and out of them 38 were neoplastic. Out of the total 40 cases 16 were males and 22 were females. Meningiomas and Gliomas contributed highest number of cases.
Conclusion: Various morphological types of brain tumors occur at different age groups. Histopathological diagnosis is necessary for the formulation of further management after neurosurgery. The present study helps in knowing the various space occupying lesions in different age groups.

KEYWORDS

Gliomas, Meningiomas, Oligodendrogliomas.

INTRODUCTION

Brain tumors are heterogeneous group of neoplasms, affecting different age groups. Brain tumors are heterogeneous group of neoplasms, which include both benign and malignant cases.[1] Brain tumors constitute only <2% of all neoplasms.[1,2] 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.[1]

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.[3] Clinical presentation of brain tumors depends on the location, size of the tumors, and growth rate of the neoplasm.[1]There is a high morbidity and mortality in these tumors irrespective of their histological grade.[4] The primary brain tumors involve about two-third of all central nervous system (CNS) neoplasms.[5]

According to the WHO classification, CNS tumors have extensive classification and subtypes. As a group, gliomas are one of the most common types of brain tumors. While the exact origin of gliomas is still unknown, they are thought to grow from glial cells or glial precursor cells. A glial cell is a type of supportive cell in the brain. The main types of supportive cells in the brain include astrocytes, oligodendrocytes, and ependymal cells. Gliomas may be considered astrocytoma, oligodendroglioma, or ependymoma. Gliomas are assigned a grade, which is an indication of how aggressive a tumor is likely to be. A higher grade is usually more aggressive and more likely to grow quickly.

MATERIALS AND METHODS

A Retrospective and Prospective study done on 40 patients for a period of two years, who were diagnosed on CT scan ,operated and sent for histopathological examination. Tumors classified according to the classification of the World Health Organization. Specimens received were processed and H&E slides prepared and studied.

Detailed morphological analysis was done for 9 cases of Glioblastomas

The following features were studied in subtyping the various gliomas: Cellularity & pleomorphism ,Necrosis (pseudopalisading/geographic) , Mitosis (atypical),Hemorrhage,Micro-vascular proliferation ,Gemistocytes and Giant cells.

RESULTS

A total of 40 cases were studied. All the details of clinical history and radiological history was collected and considered. Out of the 40 cases of ICSOLs, 38 cases were neoplasms. Among the 38 neoplasms, 16 in males and 22 in females.

Radiologically which were considered as neoplastic and suspicious were considered. After the surgery, we received the excised tissue in fixative and after thorough fixation, we submitted the tissue for processing. Final diagnosis was made histopathologically and confirmed. Out of the 40 cases meningiomas and gliomas contributed highest number of cases. [Table 1].

Table 1: Showing list of various lesions

TYPES OF TUMORS	MALE	FEMALE	TOTAL	PERCENTAGE
MENINGIOMAS	6	9	15	35
GLIOMAS	7	8	15	35
CRANIOPHARYNGIOMA	0	2	2	5
SCHWANNOMA	1	1	2	5
HEMANGIOBLASTOMA	1	0	1	2.5
MEDULLOBLASTOMA	0	1	1	2.5
PITUITARY ADENOMA	0	1	1	2.5
METASTASIS	1	0	1	2.5
TUBERCULOMA	1	0	1	2.5
ARACHNOIDAL CYST	0	1	1	2.5
TOTAL	17	23	40	

DISCUSSION

Tumors of the central nervous system (CNS) are rare and account for about 1–2% of all malignancies in cancer patients. However, their association with a high morbidity and mortality makes them the most dreaded form of cancer. Generation of hospital-based brain tumor registry (HBBTR) data examining the spectrum of brain tumors within the Indian population would help us to contribute to large-scale studies nationally, similar to the ones done internationally. HBBTRs would provide us with the necessary clinical benchmark for comparison of data of CNS tumors with previous and future studies, as well as world literature.[6]

Astrocytoma is the most common type of glioma. Astrocytoma cells look like glial cells called astrocytes that are found in the cerebrum or cerebellum. There are 4 grades of astrocytoma.

- **Grade I or pilocytic astrocytoma** is a slow-growing tumor that is most often benign and rarely spreads into nearby tissue. Astrocytoma in children is more common than astrocytoma in adults.
- **Grade II or low-grade diffuse astrocytoma** is a slow-growing tumor that can often spread into nearby tissue and can become a higher grade.
- **Grade III or anaplastic astrocytoma** is a cancerous tumor that

can quickly grow and spread to nearby tissues.
- **Grade IV or glioblastoma** is a very aggressive form of astrocytoma.

Oligodendroglioma. Oligodendroglioma is a tumor whose cells look like glial cells called oligodendrocytes. These cells are responsible for making myelin. Myelin surrounds the nerves and is rich in protein and fatty substances called lipids. They are subclassified as either oligodendroglioma, which is considered low grade, or anaplastic oligodendroglioma.

Ependymoma. Ependymoma commonly begins in the passageways in the brain where CSF is made and stored. In adults, they occur more often in the spine and can also be of the myxopapillary subtype. They most often arise next to the ependymoma lined ventricular system,including the oft-obliterated central canal of the spinal cord.
Non glial tumours tumors that arise from cells in the brain that are not glial cells. Types of non-glioma tumors include:
-
- **Meningioma.** Meningiomas are predominantly benign tumours of adults,usually attached to the dura,that arise from the meningothelial cells of the arachnoid. Meningiomas may be found along any of the external surfaces of the brain as well as within the ventricular system, where they arise from the stromal arachnoid cells of the choroid plexus. Meningioma is the most common primary brain tumor. It begins in the meninges and is most often noncancerous. Meningioma can cause serious symptoms if it grows and presses on the brain or spinal cord or grows into the brain tissue.
- **Pineal gland and pituitary gland tumors.** These are tumors that start in the pineal gland and pituitary gland.

Medulloblastoma. Medulloblastoma occurs predominantly in children and exclusively in the cerebellum. Medulloblastoma is thought to start from a specific type of cell in the cerebellum. These cells are called cerebellar granule progenitor cells. It is most common in children and is usually cancerous, often spreading throughout the CNS. In children, medullobalstomas are located in the midline of the cerebellum but lateral locations are more often found in adults.Rapid growth may occlude the flow of CSF, leading to hydrocephalus. The tumour is often well circumscribed, gray and friable and may be seen extending to the surface of the cerebellar folia and involving the leptomeninges. On microscopic examination, medulloblastoma is usually extremely cellular, with sheets of anaplastic cells.Individual tumour cells are small, with little cytoplasm and hyperchromatic nuclei that are frequently elongated or crescent shaped.

- **Craniopharyngioma:.**Craniopharyngioma is a benign tumor that begins near the pituitary gland located near the base of the brain. These tumors are rare. **Schwannoma.** Schwannoma is a rare tumor that begins in the nerve sheath, or the lining of the nerves. It may often occur in the vestibular nerve, which is a nerve in the inner ear that helps control balance. It is typically noncancerous.Within the cranial vault, the most common location of Schwannomas in the cerebellopontine angle,where they are attached to the vestibular branch of the eighth nerve.Patients presents with tinnitus and hearing loss and the tumour is often referred to as acoustic neuroma, although it is more accurately called a vestibular schwannoma. Grossly Schwannomas are well circumscribed ,encapsulated masses that are attached to the nerve but can be separated fromit. On microscopy they show mixture of two growth patterns,Antoni A pattern which is hypercellular and Antoni B pattern which is hypocellular along with nuclear free zones of processes that lie between the regions of nuclear palisading are termed Verocay bodies.

CONCLUSION

Central nervous system lesions are common in any age group. In the present study glimas and meningimas contribute highest number of cases. Females contributed highest number of cases compared to males. Histopathology plays a major role in diagnosing the lesions and Immunohistochemistry plays a major role in confirming the final diagnosis.

Figure 1: Showing peripheral palisading and geographical necrosis in glioblastoma .[H&E,x40]

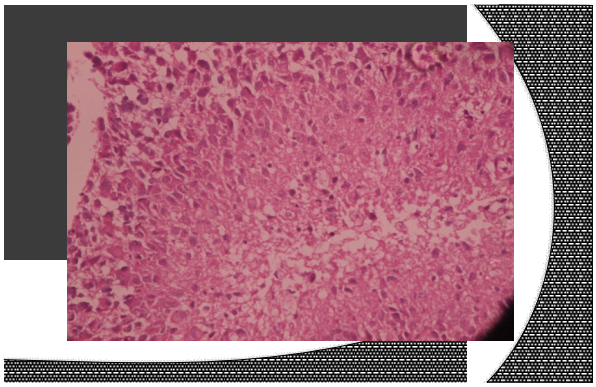
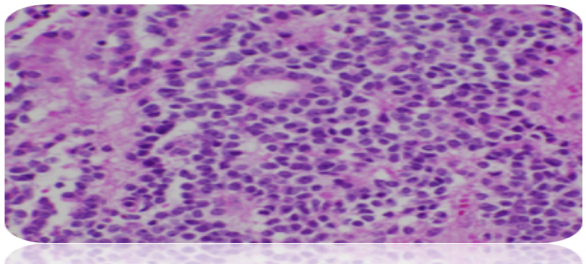


Figure2:Section showing rosettes and monotonous cells – Ependymoma [H&E,x40]



REFERENCES

1. Masoodi T, Gupta RK, Singh JP, Khajuria A. Pattern of central nervous system neoplasm: A study of 106 cases. JK Pract 2012;17:42-6.
2. Stewart BW, Kleihues P. Tumor of the nervous system. In: World Cancer Report. Leon, France: IARC Press; 2003.
3. Molla N, Baki A, Afzal N, Hossen A. Clinical and pathological characteristics of brain tumor. Bangabandhu Sheikh Mujib Med Univ J 2010;3:68-71.
4. Enow Orock GE, Enoh Nkongho K, Eyenga VC, Verla V, Mengot BE. Brain tumours: Clinicopathologic aspects of 40 cases seen in Cameroon and review of the literature. Afr J Integr Health 2015;5:18-23.
5. Monga K, Gupta VK, Gupta S, Marwas K. Clinicopathological study and epidemiological spectrum of brain tumours in Rajasthan. Indian J Basic Appl Med Res 2015;5:728-34.
6. Aryal G. Histopathological pattern of central nervous system tumor: A three year retrospective study. J Pathol Nepal 2011;1:22-5.