

Current Perspectives on Brain Tumor/Cancer

Mahima jadhav¹, Arti Tidke², Renuka R. Deshpande³

^{1,2}B.Pharmacy second Year Student, Latur College of Pharmacy Hasegaon, Tq. Ausa, Dist. Latur-413512, Maharashtra, India

³Assistant Professor, Department of Pharmaceutics, Latur College of Pharmacy Hasegaon, Tq. Ausa, Dist. Latur-413512, Maharashtra, India

Abstract- Tumors of the central nervous system (CNS) constitute approximately 2% of all malignancies. Although relatively rare, the associated morbidity and mortality and the significant proportion of affected young and middle-aged individuals has a major bearing on the death-adjusted life years compared to other malignancies. CNS tumors encompass a very broad spectrum with regards to age, location, histology, and clinical outcomes. Advances in diagnostic imaging, surgical techniques, radiotherapy equipment, and generation of newer chemotherapeutic and targeted agents over the past few years have helped improving treatment outcome. Further insights into the molecular pathways leading to the development of tumors made in the past decade are being incorporated into routine clinical practice. Several focused groups within India have been working on a range of topics related to CNS tumors, and a significant body of work from India, in the recent years, is being increasingly recognized throughout the world. The present article summarizes key published work with particular emphasis on gliomas and medulloblastoma, the two commonly encountered tumors.

Index terms- Central nervous system tumor, glioma, Indian data, medulloblastoma

INTRODUCTION

This disease first observed by German brain tumor association. This is nonprofit organization which rises public awareness educates people about brain tumor. The incidence of central nervous system tumors in India ranges from 5 -10 % per 100,000 populations with an increasing trend. Metastatic brain tumor occurs when cancer located in another organ of body spreads to the body. 40% of all cancers are spread to the brain. Brain & CNS tumor are also the

second most common cancer in children, accounts for about 26% of childhood cancers.

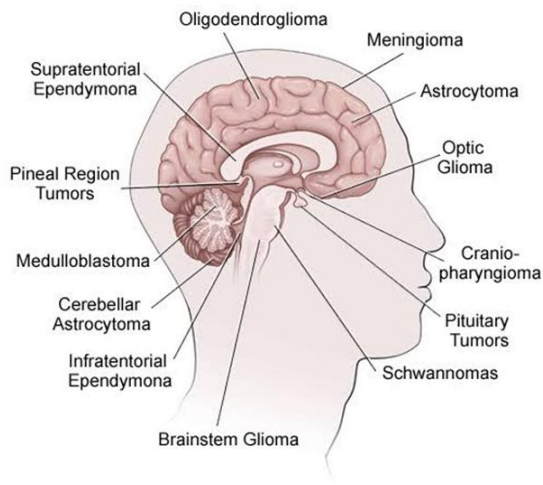
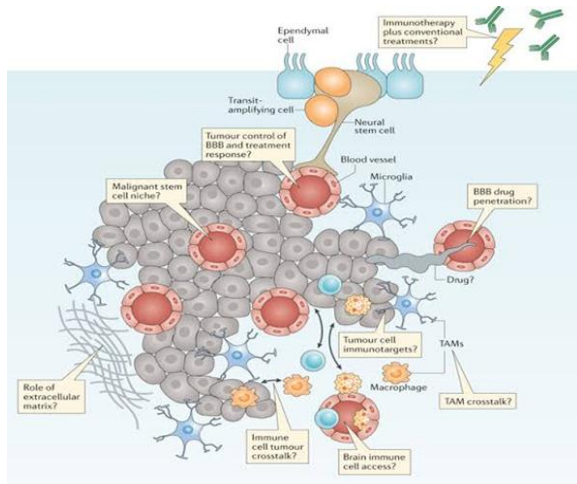
Government of India has introduced national programme for prevention & control of cancer, diabetes, cardiovascular disease etc. With the objectives of prevention, screening, early detection, diagnosis and treatment including palliative care in end stage for the major non-communicable disease.

World brain tumor day is observed on 8th of June every year since 2000. This day was 1st observed by the German brain tumor association (Deutsche Hirntumorhilfe e. V). This was a nonprofit organization which raised public awareness and educated people about brain tumor. Government of India has introduced national programme for prevention and control of cancer, Diabetes, Cardiovascular diseases and stroke with the objectives of prevention, screening, early detection, diagnosis, and treatment including palliative care in end stages for the major non-communicable disease.

WHAT IS BRAIN TUMOR?

Unnecessary growth of cells when body doesn't require them is known as tumor. A brain tumor occurs when abnormal cells are produced within any part of brain. There are main two types of tumors; malignant & benign (non-malignant tumor). Benign are non-cancerous while malignant are cancerous. Most of the brain tumors are non-cancerous. Brain tumor can occur at any age.

The exact cause of brain tumor is not clear but the most well-known environmental risk factor for the development of brain tumors is exposure to radiation especially due to previous cancer treatment.



1. Types & causes
2. Symptoms
3. Diagnosis
4. Treatment
5. Home care

1. Types & causes

Type of primary brain tumor among adults

- a. Astrocytoma
- b. Meningioma
- c. Ologodendroglioma

Types of primary brain tumor in childrens

- a. Medulloblastoma
- b. Grade I or II astrocytoma
- c. Ependymoma
- d. Brain stem glioma

Brain tumors are abnormal growths of cells in the brain.

Although such growths are popularly called brain tumors, not all brain tumors are cancer. Cancer is a term reserved for malignant tumors.

Malignant tumors can grow and spread aggressively, overpowering healthy cells by taking their space, blood, and nutrients. They can also spread to distant parts of the body. Like all cells of the body, tumor cells need blood and nutrients to survive.

Tumors that do not invade nearby tissue or spread to distant areas are called benign.

In general, a benign tumor is less serious than a malignant tumor. But a benign tumor can still cause many problems in the brain by pressing on nearby tissue.

In the U.S., brain or nervous system tumors affect about 6 of every 1,000 people.

SYMPTOMS

Not all brain tumors cause symptoms, and some (such as tumors of the pituitary gland) are often not found unless a CT scan or MRI is done for another reason. The symptoms of brain cancer are numerous and not specific to brain tumors, meaning they can be caused by many other illnesses. The only way to know for sure what is causing the symptoms is to undergo diagnostic testing. Symptoms can be caused by:

A tumor pressing on or encroaching on other parts of the brain and keeping them from functioning normally.

Swelling in the brain caused by the tumor or surrounding inflammation.

The following symptoms are most common:

- Headache
- Weakness
- Clumsiness
- Difficulty walking
- Seizures.

BRAIN TUMOR

3. Diagnosis

Exams and Tests

Findings of your medical interview and physical exam will probably suggest to your health care provider that you have a problem with the brain or brain stem.

In most cases, you will have a CT scan of the brain. This test is like an X-ray, but shows more detail in three dimensions. Usually, a contrast dye is injected into your bloodstream to highlight abnormalities on the scan.

More often, the MRI scan is being used instead of a CT scan for suspected brain tumors. This is because MRI has a higher sensitivity for detecting the presence of, or changes within, a tumor. However, most institutions still use the CT scan as the first diagnostic test.

4. Treatment

Treatment for a brain tumor differs depending on several factors: a person's age, general health, and the size, location, and type of tumor.

You and your loved ones will have many questions about brain cancer, the treatment, side effects, and the long-term outlook. Your health care team is the best source of this.

5. Home care

Home care usually includes supportive measures, depending on your symptoms and individual needs.

For example, if you have trouble walking, physical and occupational therapists can help you improve movement and use equipment to aid in daily activities.

A speech therapist can help with problems related to speaking and swallowing. Home health aides are specially trained to help with personal care tasks such as bathing, dressing, and eating.

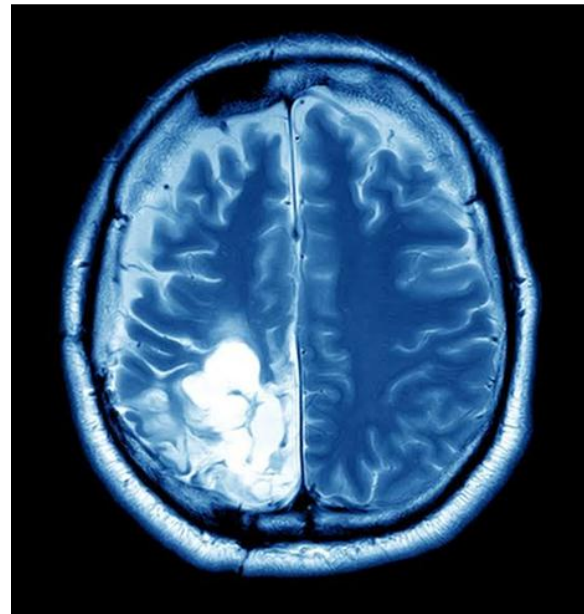
Home care can also include nurses to give medicines, provide wound care, and monitor side effects.

If the prognosis is poor, it is appropriate to discuss options that include hospice care, advance directives to doctors, and provisions for a living will.

Home hospice care is a way of providing pain and symptom relief, as well as emotional and spiritual support for the patient and the family, at home rather than in the hospital. It involves a multidisciplinary approach that may include a doctor or other

healthcare provider, nurses, a pharmacist, aides, a social worker, a spiritual caregiver, and counselors.

Advance directives are legal documents that provide a means to express your wishes for treatment and your choice on the person you want to make decisions on your behalf if you are not able to do so. Types of advance directives include a living will and durable power of attorney for health care. For example, a person with advanced brain cancer may not want to be put on a ventilator (breathing machine) if he or she stops breathing. You have the right to make these decisions for yourself as long as you are mentally competent.



People suffering from tumor.

Over 2,500 Indian kids suffer from brain tumour every year.

With a surge in the brain related ailments in the world, every year over 2,500 of the Indian children suffer from medulloblastoma, a pediatric malignant primary brain tumour which spreads through the cerebrospinal fluid (CSF) and frequently metastasize to different locations along the surface of the brain and spinal cord, doctors have said.

According to them, in India, every year 40,000-50,000 persons are diagnosed with brain tumour. Of these 20 per cent are children. Until a year ago, the figure was only somewhere around 5 per cent.

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HEALTH Over 2,500 Indian kids suffer from brain tumour every year

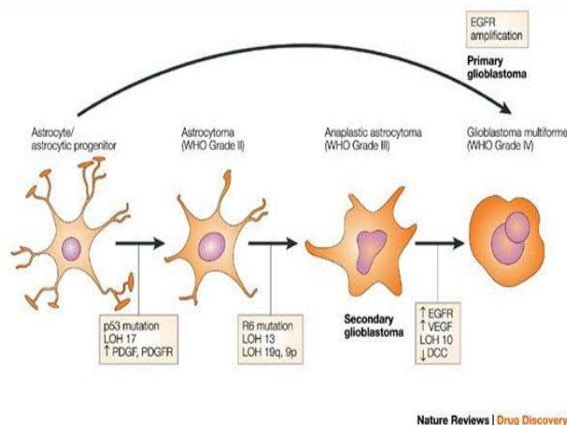
A laboratory assistant holds one hemisphere of a healthy brain in the Morphological unit of psychopathology in the Neuropsychiatry division of the Belle Idee University Hospital in Chene-Bourg near Geneva in a March 14, 2011 file photo. A series of recent studies has established that psychopathic rapists and murderers have distinct brain structures that show up when their heads are scanned using MRI.

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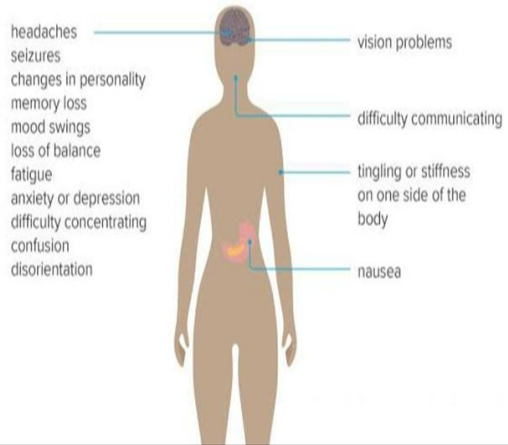
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“Twenty per cent of the brain tumour cases currently consist of children, which has increased over the years. Mostly the symptoms include repeated episodes of vomiting, and a morning headache, which may lead to a misdiagnosis of gastrointestinal disease or migraine,” said Vikas Gupta, Director and head of Neurosurgery and Interventional and Endovascular Neurosurgery at BLK Hospital here.



Effects on the Body Brain Tumor



Brain Tumour Foundation of India says that brain tumour is the second most common cancer among children after leukaemia.

Explaining further, Mr. Guptae said: “The child will develop a stumbling gait, frequent falls, diplopia, papilledema, and sixth cranial nerve palsy. Positional dizziness and nystagmus are also frequent and facial sensory loss or motor weakness may be present. Decerebrate attacks appear late in the disease.”

The health experts have also said that if the treatment is done in time, the children can live up to 70-80 years without any problem.

Satnam Singh Chhabra, head of Neuro and Spine Department at Sir Gangaram Hospital, said: “Brain damage not just in children but as a whole can be a serious problem. It can cause problems with thinking, seeing, or speaking. It can also cause personality changes or seizures.”

Talking about the causes, he said: “A small percentage of brain tumours are linked to genetic disorders and known environmental hazards, such as exposure to certain toxins or radiations.”

According to the official data, currently only six per cent of the children suffering from brain tumours are able to get the proper treatment. Arivazhagan Arimappagan³, Vani Santosh¹

Hospital for treatment of brain cancer /tumor:-

1. Department of Neuropathology, National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, Karnataka, India

2. Department of Clinical Neurosciences, National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, Karnataka, India
3. Department of Neurosurgery, National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, Karnataka, India.

CONCLUSIONS

The past 15 years have witnessed a revolution in our understanding of cancer. The integration of genomic and developmental biology has shown that morphologically similar cancers comprise discrete subtypes, driven by different genetic alterations, which likely arise from distinct cell lineages. These data help to explain why cancers once regarded as histologically homogeneous diseases have a discrepant range of characteristics. Improved understanding is also leading to the development of completely new treatment approaches for cancer, such as immunotherapies, and novel ways to test such therapies, such as adaptive trial designs. However, the successes achieved with these improvements have not occurred equally across all forms of cancer. Of particular note, the treatment of most childhood and adult brain tumours is at an impasse, with no new, more effective therapies being developed in the past 30 years. Thus, all available evidence suggests that the current preclinical and clinical research approaches to curing brain tumours are ineffective.

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AUTHOR DETAIL



Mahima muralidhar jadhav
Student of B.pharmacy 2nd year, Latur
College of Pharmacy, Hasegaon.



Arti Mahadev Tidke
Student of B.pharmacy 2nd year, Latur
College of Pharmacy, Hasegaon.



Renuka R. Deshpande,
Assistant Professor, Department of
Pharmaceutics, Latur College of
Pharmacy, Hasegaon