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# **Brain Cancer**

## ****Types of Brain Cancer****

Primary brain cancer is rare and accounts for about 1.4% of all cancers. Tumours form from either glial cells, which cover and support neurons, or the meninges, which cover the brain. Primary brain tumours develop more frequently in men with a median age of 58 at diagnosis. Metastasis may occur in the brain, however this is not referred to as primary brain tumours. Some types of primary brain tumours include:

* Glioma: accounts for 70% of primary central nervous system tumours
* Meningioma: most common brain tumour in adults
* Astrocytoma
* Oligodendroglioma
* Ependymoma
* Acoustic neuroma
* Glioblastoma (GBM)
* Chordoma
* Medulloblastoma
* Primary central nervous system lymphoma

### **What risk factors cause brain cancer?**

* Radiation exposure
* Inherited conditions (Neurofibromatosis, Von Hippel-Lindau syndrome, Li-Fraumeni syndrome, Tuberous sclerosis, Turcot syndrome, Basal cell nevus syndrome, Cowden syndrome)
* Family history of brain tumours
* Personal history of childhood cancer
* Weakened immune system

### **What are the Clinical Manifestations?**

Clinical presentation is dependent on where the tumour is located and its size. Some signs/symptoms include:

* Persistent headaches
* Seizures
* Nausea, vomiting, loss of appetite
* Dizziness or vertigo
* Personality, emotional, cognitive, mood, memory, behavioral or social skill changes
* Walking, balance and/or coordination difficulties
* Weakness and/or numbness
* Speech, hearing (e.g. tinnitus) or visual impairments
* Unusual somnolence or change in activity level

### **What are the Treatment Options?**

Each case is unique and requires a personalized medical treatment plan. Some of the treatment options may include:

* Tumour resection:removal of the abnormal cancerous tissue through surgery.
* Cerebral Fluid Drainage: procedures to drain excess cerebral spinal fluid built up in the ventricles.
* Radiation therapy: doses of radiation are often used to kill cancer cells. This may be in combination with chemotherapy treatment.
* Chemotherapy: a systemic treatment that kills cancer cells and prevents them from dividing.

**What are the Possible Side Effects of Treatment?**

**1) Surgery:**

* Seizures
* Hydrocephalus and/or leakage of cerebral spinal fluid
* Bleeding and blood clot formation
* Pain and swelling around the incision
* Infection of the incision or separation of the wound
* Cerebral edema
* Loss of neurological function
* Coordination, mobility and motor (i.e. fine and gross) dysfunctions
* Alteration in visual motor/visual spatial function, working memory, and processing speed

**2) Radiation Therapy:**

* Acute, early delay or chronic neurotoxicity
* Fatigue
* Dermal irritation
* Chronic diminished cognitive function
* Somnolence syndrome (development of drowsiness,
* confusion, fatigue, lethargy, and mild headache)
* Cerebral edema
* Headaches, nausea and vomiting
* Seizures
* Auditory difficulties
* Neurological changes (e.g. concentration, emotions, memory, speech, balance, and coordination)
* Hormone deficiencies
* Radiation necrosis
* Leukoencephalopathy (lethargy, ataxia, numbness, muscle spasms, and weakness or paralysis)
* Radiation myelopathy

**3) Chemotherapy:**

* Fatigue
* Alopecia
* Low blood cell counts causing increased risk of bruising, bleeding, infection, anemia, thrombocytopenia, and neutropenia.
* Appetite changes, nausea and vomiting
* Loss of muscle mass, strength, cachexia

**What is the role of Physical Therapy and Rehab?**

The goals of rehabilitation depend on the extent of the disease and the treatment that a patient has received. Physical Therapy can help:

* Regain alterations to physical function, strength, balance and coordination.
* Retrain gait and assess for need of adaptive mobility aids.
* Provide support for return to activities of daily living, returning to work and recreational activities.
* Correct posture and pain management.
* Create individualized programs to improve cardiovascular endurance, overall strength and psychological well being.
* Establish healthy lifestyle habits for life-long wellness.

Multidisciplinary collaboration with occupational therapists, speech pathologists, social workers and psychologists to optimize recovery.

### **References & Resources**

* National Cancer Institute: https://www.cancer.gov/types/brain
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