

## Study on Brain Tumors Types, Diagnosis & Treatments

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### Introduction

The word “brain tumour” refers to a category of neoplasms, each with its own pathology, prognosis, and treatment options; these tumours are more accurately referred to as “intracranial neoplasms,” since some do not originate in brain tissue. Most intracranial tumours, on the other hand, have a common clinical appearance, diagnostic strategy, and initial care.

The diagnosis or excision of a brain tumour is normally the first step of treatment. Following that, neurosurgeons, neurologists, neuroradiologists, neuropathologists, radiation therapists, and oncologists may collaborate to provide comprehensive treatment. A benign tumour cannot be resectable due to its adherence to the hypothalamus or other structures, and thus be lethal, as is the case with some optic nerve and hypothalamic gliomas. Alternatively, certain histologically malignant tumours, such as medulloblastomas, have a high cure rate when treated properly [1].

### Types of Brain Tumors

Primary brain tumours arise from the brain and central nervous system’s cells. They get their name from the type of cell in which they first appear. There are over 100 different types of brain tumours. The following are the most popular forms of adults:

- Gliomas
- Meningiomas
- Schwannomas
- Pituitary adenomas [2]

### Diagnosis & Treatment Methods

Brain tumours can be detected using sophisticated imaging techniques. Computed tomography (CT or CAT scan) and magnetic resonance imaging (MRI) are two diagnostic instruments (MRI). Other MRI sequences will assist the surgeon in preparing the tumour resection based on the location of the brain’s usual nerve pathways. Intraoperative MRI is also used to guide tissue biopsies and tumour removal during surgery. When a brain tumour is discovered, the first course of action is usually surgery to remove the tumour. However, because of their position in the brain, certain tumours cannot be

surgically removed. Chemotherapy and radiation therapy can be used to destroy and shrink the tumour in these cases.

Surgery, radiation, and/or chemotherapy are typically used to treat brain tumours, whether they are primary or metastatic, benign or malignant. While radiation and chemotherapy are most commonly used for malignant, latent, or recurring tumours, treatment decisions are taken on a case-by-case basis and are based on a variety of factors. A stereotactic biopsy is another procedure that is often done, often before a craniotomy. This less invasive technique helps doctors to collect tissue for a more precise diagnosis. High-energy X-rays are used in radiation therapy to destroy cancer cells and irregular brain cells while also shrinking tumours. If the tumour cannot be adequately treated by surgery, radiation therapy may be an alternative.

Many different types of new therapies are currently being investigated, especially for tumours with a poor prognosis when treated with existing traditional therapies. It is uncertain if these treatments will be successful. Immunotherapy, treatment with selective toxins, anti-angiogenesis therapy, gene therapy, and differentiation therapy are examples of such treatments that are administered according to a protocol. Combinations of therapies can also be able to enhance patients’ outcomes while reducing negative side effects [3].

### Risk Factors

Several CNS tumours are related to unusual genetic disorders, the most prominent of which is the autosomal dominant disorder neurofibromatosis 1. Patients with this condition experience a host of dermatological symptoms and are more likely to develop optic gliomas and astrocytomas. While many environmental factors have been related to the development of brain tumours, only high-dose ionising radiation has been shown to be a risk factor. 4 Other environmental factors such as workplace exposures, electromagnetic fields, pesticides, cellular phones, head injuries, and N-nitroso compounds have produced mixed results in research.

### References

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