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Brain Cancer Types

Every brain cancer patient is different. The cancer experts at Cancer Treatment Centers of America (CTCA) have extensive experience in properly staging and diagnosing the disease, and developing a treatment plan that's tailored to your specific type of brain cancer

Types of brain cancer

Primary brain tumors are tumors that form from cells within the brain. The tumors are categorized by the type of cell in which it first develops.

There are over 120 different types of brain tumors (National Brain Tumor Society). The most common primary brain tumors are called gliomas, which originate in the glial (supportive) tissue. About one third of all primary brain tumors and other nervous system tumors form from glial cells.

Other neurological cancers

Aside from tumors in the brain, cancer can begin in, or spread to, other areas of the central nervous system, such as the spinal cord or column, or the peripheral nerves. Cancer that develops in the spinal cord or its surrounding structures is called spinal cancer. Most tumors of the spine are metastatic tumors, which have spread to the spine from another location in the body.

Astrocytomas

Astrocytomas develop from small, star-shaped cells called astrocytes, and may arise anywhere in the brain or spinal cord. Astrocytomas are the most common primary CNS tumor. In adults, astrocytomas most often occur in the cerebrum, which is the largest part of the brain.

The cerebrum uses sensory information to tell us what's going on around us and how our body should respond. The left hemisphere controls the muscles on the right side of the body, while the right hemisphere controls the muscles on the left. The cerebrum also controls speech, movement and emotions, as well as reading, thinking and learning.

Overview of astrocytomas

- Grade I: **Pilocytic astrocytoma**
- Grade II: **Diffuse astrocytoma / Low-grade astrocytoma**
- Grade III: **Anaplastic astrocytoma**
- Grade IV: **Glioblastomas** (also called glioblastoma multiforme, GBM, or grade IV astrocytoma). Anaplastic astrocytomas and glioblastomas are malignant astrocytomas that grow and spread aggressively, accounting for more than 50 percent of all astrocytomas. Glioblastomas occur most often in adults between the ages of 50 and 70.
- **Brain stem gliomas** arise in the brain stem, which controls many vital functions, such as body temperature, blood pressure, breathing, hunger and thirst. The brain stem also serves to transmit all the signals to the body from the brain. The brain stem is in the lowest part of the brain, and connects the brain and spinal cord. Tumors in this area can be difficult to treat. Most brain stem gliomas are high-grade astrocytomas.

Glioblastoma multiforme

Glioblastoma, also known as glioblastoma multiforme, GBM or grade IV [astrocytoma](#), is a fast-growing, aggressive type of central nervous system tumor that forms on the supportive tissue of the brain.

Glioblastoma is the most common grade IV brain cancer. Glioblastomas may appear in any lobe of the brain, but it develops more commonly in the frontal and temporal lobes. Glioblastoma usually affects adults.

Glioblastoma cancer symptoms

Symptoms of glioblastoma vary depending on the location of the tumor, but they may include:

- Persistent headaches
- Double or blurred vision
- Nausea
- Vomiting
- Loss of appetite
- Changes in mood or personality
- Changes in ability to think and learn
- Memory loss
- New onset of seizures
- Muscle weakness
- Speech difficulty

NOTE: These symptoms may be attributed to a number of conditions other than cancer. It is important to consult with a medical professional for an accurate diagnosis.

Advanced treatments for glioblastoma

Common glioblastoma treatments include:

Surgery: Surgical resection, which requires a [craniotomy](#), is typically the first stage of treatment for patients with glioblastomas. Surgery may also allow for the removal of tumor tissue to relieve pressure in the brain caused by the tumor. We offer [the Six Pillar Approach](#), a minimally invasive surgery for patients with hard-to-reach tumors.

Radiation therapy: Radiation may be recommended after surgery for some glioblastomas. It may also be necessary to treat glioblastomas when surgery is deemed unsafe or is not recommended for another reason. Radiation therapy may be used alone, with chemotherapy or with targeted therapies. We offer several methods for delivering external beam radiation therapy to treat glioblastomas:

- Intensity modulated radiation therapy (IMRT): IMRT is a state-of-the-art radiation delivery system that is used to treat hard to reach tumors. It can also spare healthy tissue from radiation therapy. In IMRT, the radiation beams are broken up into smaller beams and the intensity of each of these smaller beams can be changed. This means that the more intense beams, or the beams giving more radiation, can be directed only at the tumor. It is most useful to treat a tumor that is near critical parts of the brain, such as the brain stem and areas that control sight.
- Stereotactic radiation therapy: this treatment focuses radiation from various angles to the outline of the tumor. This technique is designed to reduce damage to healthy tissue. Because the procedure does not

require an incision, it typically leads to less discomfort, shorter recovery times and fewer complications than surgery.

Chemotherapy: Several chemotherapy drugs taken orally or intravenously are available to manage the symptoms of glioblastoma. Chemotherapy and radiation therapy are typically the recommended course of treatment for nearly all glioblastomas. Following surgery, carmustine wafers may also be implanted. After a surgeon operates to remove the cancerous tissue in the brain, up to eight dime-sized wafers are implanted in the space where the tumor was. Over the next few weeks, the wafers slowly dissolve while filling surrounding cells with medication. The goal is to kill tumor cells left behind after surgery. Chemotherapy along with Optune has been approved for adjuvant therapy once radiation is complete.

Targeted therapy: are medicines that target the parts of cancer cells that make them unlike normal cells. These new drugs are used more often to treat brain tumors than standard chemotherapy. Targeted therapy can help when other treatments are not working as well. They can also have less-severe side effects than standard chemotherapy medicine.

Meningioma

Meningiomas are tumors that develop in the cells of the membrane that surrounds the brain and spinal cord. Meningiomas (also called meningeal tumors) account for approximately 15 percent of all intracranial tumors. Most of these tumors are benign (non-cancerous and slow-growing). Meningiomas are typically removed with surgery. Some meningiomas may not need immediate treatment and may remain undetected for years. Most meningiomas are diagnosed in women between 30 and 50 years old.

Common meningioma symptoms

Meningioma symptoms vary depending on their size and location within the central nervous system. They may include:

- Headache when waking up in the morning or during the night
- Headaches that worsen with time
- Dull, persistent headache
- Changes in vision, such as double vision or blurriness
- Hearing loss
- Memory loss
- Loss of smell
- Seizures
- Weakness in the arms or legs
- Persistent nausea or vomiting
- Physical weakness or paralysis
- Epilepsy (seizures)
- New onset of neurological deficits (speech disorders, clumsiness)

NOTE: These symptoms may be attributed to a number of conditions other than cancer. It is important to consult with a medical professional for an accurate diagnosis.

Advanced treatments for meningioma

Common treatments for meningioma include:

Surgery: The most common treatment for symptomatic meningiomas involves removal of the tumors. A surgeon typically performs a [craniotomy](#) to open the skull and remove the tumor. A pathologist may examine a biopsy of the tissue to determine the tumor's grade. If the tumor cannot be completely removed because of its location or other factors, the remainder of the tumor may be treated with radiation therapy.

Radiation therapy: Some tumors may be considered inoperable because they are located too close to areas of the brain that control vital functions. [Stereotactic radiosurgery](#) treatments may be used to attack malignant tumor cells with a technique designed to reduce exposure to normal healthy cells. The benefits of radiation may not be immediate but instead may develop over time. When radiation treatments are successful, the tumor will stop growing, shrink or, in some cases, disappear.

Observation: Also called active surveillance or watchful monitoring, observation is considered for meningiomas that cause no symptoms. With this technique, the neurosurgeon continues to evaluate the tumor, often with the aid of periodic imaging and other tests. If the tumor grows or symptoms develop or worsen, surgery or radiation therapy may be recommended.

Other gliomas

Aside from astrocytomas, there are a number of different primary brain tumors and other nervous system tumors that form from glial cells.

Overview of other gliomas

- **Ependymomas** usually occur in the lining of the ventricles, or spaces in the brain and around the spinal cord. Although ependymomas can develop at any age, these brain cancer tumors most commonly arise in children and adolescents. Ependymomas are also a common spinal cord tumor.
- **Oligodendrogliomas** develop in the cells that produce myelin, the fatty covering that protects nerves in the brain and spinal cord. These tumors are very rare, and usually occur in the cerebrum. They are slow growing and generally do not spread into surrounding brain tissue. These brain tumors occur most often in middle-aged adults. They generally carry a more favorable prognosis as compared to astrocytomas.
- **Mixed gliomas** have two types of tumor cells: oligodendrocytes and astrocytes. This type of brain tumor most often forms in the cerebrum.

Other brain tumors

There are a number of different brain tumors that do not begin in glial tissue.

- **Pituitary tumors** develop from the pituitary gland. Most pituitary tumors are benign. They are divided by size into macroadenomas (greater than 1 cm in size) and microadenomas (less than 1 cm in size). Arising from the pituitary gland (master gland of the body), these tumors can over-produce a variety of hormones. This overproduction of hormones typically causes symptoms, such as fatigue, menstrual irregularities, and weight gain or loss, among many others. Most pituitary tumors, however, do not produce hormones. These tumors, which are common among 30-50 year olds, can still create problems when they become large enough to push on the nearby optic nerves.
- **Craniopharyngiomas** develop in the area of the brain near the pituitary gland (the main endocrine gland which produces hormones that control other glands and many body functions, especially growth) near the hypothalamus. These brain tumors are usually benign. However, they may sometimes be considered malignant because they may create pressure on, or damage, the hypothalamus and affect vital functions

(such as body temperature, hunger and thirst). These tumors occur most often in children and adolescents, or adults over age 50.

- **Germ cell tumors** arise from developing sex (egg or sperm) cells, also known as germ cells. The most common type of germ cell tumor in the brain is the germinoma. Aside from the brain, germinomas can form in the ovaries, testicles, chest and abdomen. Most germ cell tumors occur in children.
- **Pineal region tumors** occur in or around the pineal gland, a small organ located in the center of the brain. The pineal gland produces melatonin, a hormone that plays an important role in the sleep-wake cycle. These brain cancer tumors can be slow growing (pineocytoma) or fast growing (pineoblastoma). Since the pineal region is very difficult to reach, it requires a high level of surgical expertise to remove these tumors.
- **Medulloblastomas** are fast-growing brain tumors that develop from the neurons of the cerebellum. The cerebellum is the lower back of the brain and controls movement, balance and posture. These tumors are usually found in children or young adults.
- **Primary CNS lymphomas** develop in lymph tissue of the brain or spinal cord. This type of brain tumor is usually found in people whose immune systems are compromised.