CONDITION

Multiforme giant cell glioblastoma

Multiforme giant cell glioblastoma is a rare, aggressive brain cancer containing unusually large tumor cells.

WHAT IT IS
Rare giant-cell form of aggressive primary brain cancer

BODY SYSTEM
Brain and nervous system

MAIN SYMPTOMS
Headache, seizures, weakness, thinking or personality changes

WHAT CAUSES IT
Unknown; acquired genetic changes in brain cells

HOW IT IS DIAGNOSED
Brain MRI, surgery or biopsy, and tumor tissue testing

MAIN TREATMENT
Surgery, radiotherapy, and anti-cancer medicines

CAN IT BE CURED?
No - it usually returns despite treatment

IS IT AN EMERGENCY?
Sometimes - new seizure or sudden loss of function

LONG-TERM OUTLOOK
Often poor, with recurrence common despite treatment

Overview

Multiforme giant cell glioblastoma is an uncommon form of glioblastoma, an aggressive cancer that begins in the brain. Its name describes how the tumor looks under a microscope. It contains very large, abnormal cells that may have several nuclei, the structures that hold a cell's genetic material.

The condition is more often called giant cell glioblastoma . "Glioblastoma multiforme" is an older name for glioblastoma. Modern classification also uses molecular features, meaning changes in the tumor cells' genes, to identify the exact tumor type.

Most adult tumors given this diagnosis are classified as glioblastoma, IDH-wildtype, CNS WHO grade 4 . IDH is a gene that can be altered in some brain tumors. "Wildtype" means that particular alteration is not present. Grade 4 describes a fast-growing tumor that can spread

into nearby brain tissue.

The giant cells do not usually change the basic treatment approach. Some studies suggest that giant cell glioblastoma may have a somewhat better outlook than conventional glioblastoma in certain people. However, the evidence is limited, and it remains a serious condition that commonly returns after treatment.

Symptoms

Symptoms come from the tumor affecting brain function or causing swelling and pressure inside the skull. They depend more on the tumor's size and location than on its giant-cell appearance.

Possible symptoms include:

Symptoms may develop over days to weeks, although some changes are more gradual. These symptoms also have many other possible causes. Medical assessment and brain imaging are needed to find the cause.

- New or worsening headaches, sometimes with nausea or vomiting
- A first seizure or a change in an existing seizure pattern
- Weakness, numbness, poor balance, or trouble walking
- Difficulty speaking, understanding words, seeing, or using one side of the body
- Problems with memory, concentration, judgment, or personality
- Increasing sleepiness or confusion

Causes and risk factors

The exact cause is usually unknown. Glioblastoma develops when brain cells acquire genetic changes that allow them to grow and divide without normal control. These changes are generally found only in the tumor cells and are not changes that a person was born with.

Most cases are not inherited and do not result from something a person did. There is no established link with ordinary use of mobile phones, diet, minor head injuries, or everyday stress.

Previous high-dose radiation to the head is a recognized risk factor for brain tumors, although radiation-related glioblastoma is uncommon. A small number of cases occur in people with inherited cancer conditions, such as Li-Fraumeni syndrome or certain DNA-repair conditions.

Having glioblastoma does not by itself mean that relatives are at increased risk.

Genetic counseling may be discussed when the person is unusually young, has several related cancers, or has a strong family history suggesting an inherited condition.

Diagnosis

An MRI scan of the brain, usually performed with contrast material, can show the tumor's location, size, swelling, and effect on nearby structures. Glioblastoma often has an irregular appearance with areas of dead tissue. However, imaging alone cannot reliably confirm the giant cell form.

Confirmation usually requires tissue obtained during surgery or a biopsy. A neuropathologist, a doctor who specializes in brain and nerve tissue, examines the sample under a microscope. Giant cell glioblastoma contains markedly enlarged tumor cells, often with several irregular nuclei. Areas of tissue death and abnormal blood-vessel growth may also be present.

The laboratory then tests the tumor for molecular features. These may include:

These tests are important because several brain tumors can contain large or unusual-looking cells. The final diagnosis combines the MRI findings, microscopic appearance, and molecular results.

Before treatment, the healthcare team may also assess speech, movement, memory, general health, and the person's ability to manage daily activities. This helps with surgical planning and provides a baseline for later comparison.

- IDH status , which helps separate glioblastoma from other grade 4 astrocytomas
- MGMT promoter methylation , which may help predict how likely the tumor is to benefit from temozolomide chemotherapy
- Other chromosome or gene changes needed to classify the tumor accurately

Treatment and management

Treatment is planned by a team that may include neurosurgeons, radiation specialists, cancer specialists, neurologists, neuropathologists, rehabilitation professionals, and palliative care clinicians.

When possible, the first step is maximal safe resection . This means removing as much visible tumor as possible without causing unacceptable damage to important brain functions. Complete removal is rarely possible because glioblastoma cells can extend microscopically

into surrounding brain tissue.

For many adults who are well enough, surgery is followed by radiotherapy and temozolomide chemotherapy. Radiotherapy uses targeted high-energy beams to damage tumor cells. Temozolomide is an anti-cancer medicine that interferes with cell growth. It may be given during radiotherapy and then continued afterward in treatment cycles.

Treatment may be adjusted for age, general health, tumor location, recovery after surgery, and molecular results. A shorter course of radiotherapy or a different balance of radiotherapy and chemotherapy may be considered when a longer combined course would be difficult to tolerate.

Tumor treating fields may be offered to selected adults after initial chemoradiotherapy. This treatment uses adhesive arrays placed on the shaved scalp to deliver alternating electrical fields. It requires wearing a portable device for much of each day.

Other care may include:

If the tumor returns, options may include another operation, focused radiotherapy, anti-cancer medicines, tumor treating fields, or a clinical trial. Bevacizumab may reduce swelling and symptoms in some situations, but it has not been shown to cure glioblastoma. Treatment at recurrence depends on the tumor's location, earlier treatment, current health, and personal goals.

Palliative care can be involved alongside tumor treatment. It focuses on symptom control, practical planning, and quality of life; it is not limited to the final stage of illness.

- Steroids like prednisone or hydrocortisone to reduce swelling around the tumor
- Anti-seizure medicine for people who have had seizures
- Physiotherapy, occupational therapy, or speech therapy
- Help with pain, nausea, sleep, mood, and family support needs

Complications

The tumor can cause seizures, weakness, communication problems, changes in thinking or behavior, and increased pressure inside the skull. Swelling may temporarily worsen symptoms even without clear tumor growth.

Treatment can also cause complications. Surgery may affect movement, speech, vision, or memory, depending on the area involved. Radiotherapy can cause tiredness, scalp irritation, hair loss in the treated area, and delayed changes in brain tissue. Chemotherapy may cause nausea, fatigue, or reduced blood-cell counts, which can increase infection or bleeding risk.

An MRI after treatment can sometimes look worse because of treatment-related inflammation. This is called pseudoprogression . Further scans or specialized imaging may be needed to distinguish it from true tumor growth.

Blood clots, loss of mobility, mood changes, and reduced independence can also occur. Rehabilitation and symptom-focused care may help manage these effects.

Prevention

Multiforme giant cell glioblastoma generally cannot be prevented. There is no proven screening test for people without symptoms, and no lifestyle change is known to prevent this tumor.

Avoiding unnecessary exposure to high-dose ionizing radiation is sensible, but medically necessary imaging uses much lower doses than the radiation historically linked with brain tumors. MRI does not use ionizing radiation.

People with a known inherited cancer condition may receive condition-specific monitoring and genetic counseling. This applies to a small minority of cases and does not mean routine screening is needed for most relatives.

Living with it and what to expect

Recovery after surgery may take weeks or longer. Some symptoms improve as the tumor and surrounding swelling are reduced. Others may remain if the tumor or treatment has affected an important part of the brain. Rehabilitation can help a person adapt and recover function.

Follow-up usually includes regular appointments, neurological examinations, and MRI scans. Scan timing is individualized. The team compares scans over time because one image may not clearly separate recurrence from treatment effects.

Glioblastoma commonly grows back despite treatment. The timing and pattern are not predictable for an individual. Giant cell features may be associated with longer survival in some studies, but they do not make the condition harmless or reliably curable.

Over months and years, priorities may shift between controlling the tumor, preserving independence, managing symptoms, and reducing treatment burden. Some people continue work, family activities, and travel during treatment, while others need substantial help with everyday tasks.

Seizures, changes in vision or thinking, and medication effects may affect driving. Driving rules

differ by location, and a brain tumor or seizure often has to be reported to the relevant licensing authority.

Planning ahead can be useful even while treatment is active. This may include identifying who can help with appointments, recording personal care wishes, and arranging financial or workplace support. Such planning does not mean that treatment has stopped.

When to get medical help

Call emergency services for:

These symptoms can result from the tumor, swelling, bleeding, or another urgent neurological problem.

Contact the cancer or neurosurgical team promptly for a steadily worsening headache, new weakness, increasing confusion, repeated vomiting, a change in seizure pattern, or difficulty taking prescribed medicines. Fever or signs of infection during chemotherapy also need prompt advice because treatment can lower infection-fighting blood cells.

Less urgent issues, such as ongoing fatigue, sleep disturbance, mild nausea, rehabilitation needs, or questions about work and driving, can usually be discussed during routine follow-up. Do not wait for a scheduled visit if symptoms are new or clearly worsening.

- A first seizure, or a seizure lasting more than five minutes
- Repeated seizures without recovery between them
- Sudden facial drooping, one-sided weakness, or loss of speech
- Collapse, severe breathing difficulty, or inability to wake
- A sudden severe headache with vomiting, confusion, or reduced consciousness

Common questions

Is giant cell glioblastoma the same as glioblastoma multiforme?

It is an uncommon microscopic form of glioblastoma. "Glioblastoma multiforme" is an older term. Current diagnosis relies on both the tumor's appearance and its molecular test results.

Is giant cell glioblastoma hereditary?

Usually not. Most genetic changes are acquired within the tumor and are not passed through families. Genetic counseling may be considered when personal or family history suggests an inherited cancer condition.

Can surgery remove the whole tumor?

A surgeon may remove all tumor visible on the scan, but individual glioblastoma cells usually extend into nearby brain tissue. This is why radiotherapy and anti-cancer medicine are often recommended after surgery.

Does the giant cell form have a better outlook?

Some studies have found longer survival than with conventional glioblastoma, possibly because of biological differences and the characteristics of the people affected. The evidence is limited, and recurrence remains common.

Will the tumor come back?

Glioblastoma usually returns after initial treatment. Follow-up MRI scans look for changes, but no scan can predict exactly when recurrence will happen. Further treatment may still control symptoms or slow growth.

Can I live normally during treatment?

Some people maintain many usual activities, while others need help because of fatigue, seizures, weakness, or changes in thinking. Activity, work, travel, and driving plans should account for symptoms, treatment effects, and local safety rules.

Sources

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