Gliomas

Brain cancers are either **primary** (starting in the brain) or **metastatic** (starting somewhere else in the body and then moving to the brain). **Gliomas** are primary brain tumors involving **glial** cells, which provide nutrients, oxygen, and other support to **neurons** (nerve cells). **Malignant** (characterized by progressive and uncontrolled growth) gliomas are the most common primary brain tumors, accounting for about 10 000 primary malignant brain tumors diagnosed yearly in the United States. They are a common cause of cancer death in persons 15 to 44 years old and affect more men than women. Senator Edward Kennedy recently died of a malignant glioma. The March 10, 2010, issue of *JAMA* includes an article about a woman with a glioma.

CAUSES

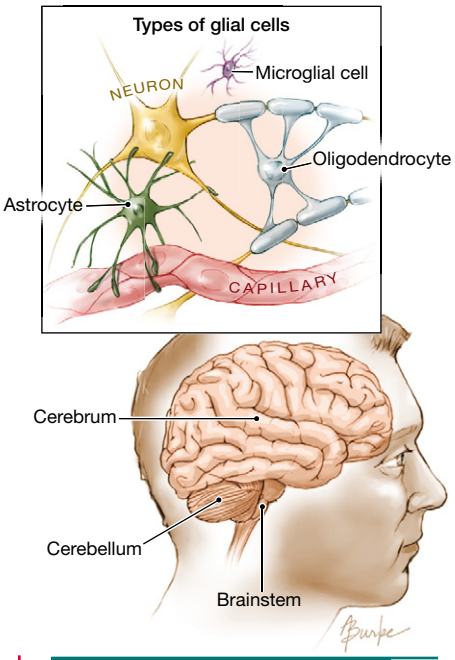
The causes of gliomas are not known, although several **acquired** (not inherited) genetic mutations have been found in gliomas. These include genes that affect DNA copying, regulation, and growth. These mutations can cause cells to divide uncontrollably.

SYMPTOMS

Symptoms of gliomas depend on the part of the brain involved but can include headaches, nausea and vomiting, seizures, balance or walking problems, or changes in vision or hearing.

CLASSIFICATION

Gliomas can be classified by cell type, location, and grade. Gliomas are named for the type of cell they most closely resemble (eg, astrocytes in astrocytomas; oligodendrocytes in oliogodendrogliomas). About half of gliomas are glioblastomas. About 70% of adult tumors are in the **cerebrum** (upper part of the brain) and about 70% of tumors in children are in the **cerebellum** (lower part of the brain). Perhaps the most important classification is by grade, which requires a biopsy of the tumor. **Low-grade** gliomas tend to grow slowly and are associated with a better prognosis. **High-grade** gliomas have a tendency to spread and are associated with a worse prognosis. All gliomas usually reappear, even after surgical removal and additional treatment.



DIAGNOSIS

Diagnosis of a glioma usually involves an examination by a **neurologist** (physician with specialized training in diseases of the nervous system). Studies may include x-ray, **CT scan** (special x-rays of the head), **MRI** (more detailed imaging of the brain), **angiogram** (a procedure using material injected into the body to see blood vessels), **PET** (a nuclear medicine imaging technique assessing brain metabolism), and a biopsy of the tumor.

TREATMENT AND PROGNOSIS

Supportive care for glioma patients usually includes antiseizure medication. Treatment depends on the cell type, location, and grade of the glioma. Often, treatment consists of a combined approach, using surgery to remove as much of the tumor as is safely possible, **radiotherapy** (a beam of radiation directed at the tumor), and **chemotherapy** (use of medications to kill cancer cells). About half of Americans diagnosed each year with malignant gliomas are alive after 1 year and about 25% are alive after 2 years. Scientists are working on many potential treatments for gliomas.

Sources: National Cancer Institute, American Brain Tumor Association

FOR MORE INFORMATION

- National Cancer Institute
  www.cancer.gov/cancertopics/treatment/brain/malignantglioma
- American Brain Tumor Association
  www.abta.org

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on *JAMA*'s Web site at www.jama.com. Many are available in English and Spanish. A Patient Page on brain tumors was published in the February 2, 2005, issue.

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