This publication is about oligodendroglioma and oligoastrocytoma (tumors which are a mix of oligodendroglioma and astrocytoma). If your questions are about another type of tumor, please call us for a copy of *A Primer of Brain Tumors*.

“Glial” tissue is the supportive, or nourishing, tissue of the brain. Any tumor of this tissue is called a glioma. There are several types of gliomas.

- **Oligodendrogliomas** are gliomas that arise from oligodendrocytes — fried egg shaped cells within the brain. These cells normally form the covering layer of nerve fibers in the brain.

- **Astrocytomas** are gliomas that arise from astrocytes — star-shaped cells within the brain. Astrocytes store information and nutrients for nerve cells in the brain.

Oligodendrogliomas are generally soft, greyish-pink tumors. They often contain mineral deposits (called calcifications), areas of hemorrhage, and/or cysts. These tumors may be “graded” to describe the appearance of their cells when viewed under a microscope. Using the World Health Organization classification system, oligodendrogliomas and oligoastrocytomas can be either grade II or grade III tumors.
The cells of a grade II tumor are referred to as “well-differentiated” — they appear slightly abnormal when compared to normal cells. These tumor cells reproduce at a slow rate. Grade III tumors are “anaplastic” tumors. The cells of these tumors are definitely abnormal in appearance. Anaplastic tumors tend to contain many blood vessels and cells capable of quickly reproducing. Some anaplastic oligoastrocytomas contain glioblastoma cells which are grade IV, aggressive cells.

Incidence

About 4% of primary brain tumors are oligodendrogliomas, representing about 10-15% of the gliomas. Only 6% of these tumors are found in infants and children. However, these tumors may be more common than generally thought since newer biologic markers now help pathologists separate oligodendrogliomas from other types of tumors. Most oligodendrogliomas occur in adults ages 50-60, and are found in men more often than than women.

Cause

The cause of these tumors, as well as other types of brain tumors, is unknown. Scientists have identified abnormalities on chromosomes 1p and 19q which may play a role in the development of oligodendroglioma and oligoastrocytoma. In addition, anaplastic tumors appear to have abnormalities on chromosome 9 or 10, along with unusual amounts of growth factors and gene proteins. Those substances are thought to control the growth of blood vessels around a tumor.

Researchers believe that both oligodendrogliomas and astrocytomas may originate from one mother cell whose “offspring” follow two different developmental pathways. This research may help explain the biologic relationship between the two tumor types. However, the initial steps which change these cells from normal to abnormal still are uncertain.
Symptoms

Because of their generally slow growth, oligodendrogliomas are often present for years before diagnosis. The most common symptoms are seizures, headaches, and personality changes. Other symptoms vary by location and size of the tumor.

These tumors can be found anywhere within the cerebral hemispheres of the brain, although the frontal and temporal lobes are the most common locations. Tumors of the frontal lobe may cause weakness on one side of the body, personality or behavior changes, and difficulty with short term memory. Temporal lobe tumors are usually “silent,” causing few symptoms other than perhaps seizures or language problems.

If you would like to learn more about the symptoms of brain tumors, please see our book, *A Primer of Brain Tumors*.

Diagnosis

After a neurological examination, MRI and/or CT scans are ordered. The calcification sometimes present in an oligodendroglioma may be seen on a CT scan and suggests the diagnosis. However, only examination of a sample of tumor tissue by a pathologist confirms the exact diagnosis and leads to appropriate treatment.

Treatment

Surgery

Surgery is the primary treatment for an oligodendroglioma or oligoastrocytoma if it is located in an accessible area of the brain. An “accessible” tumor is one that can be removed without causing severe neurological damage. Numerous tools are available to assist the neurosurgeon in tumor removal. Computer-guided stereotactic navigational systems can
help define the exact tumor location, and brain mapping techniques may help outline vital parts of the brain to be avoided during surgery. Even with the use of these tools however, some tumors can be only partially removed because of their location. If the tumor is inoperable, a biopsy will be done to confirm the exact diagnosis.

**RADIATION**

For an adult with an anaplastic tumor or an oligoastrocytoma, radiation therapy may follow surgery. If your tumor is an oligodendroglioma, your doctor will determine if radiation therapy is recommended at this time.

There are different types of radiation which use various doses and schedules. Most forms of radiation, however, are aimed at the tumor and a small area around the tumor. Conventional external beam radiation is “standard” radiation given 5 days a week for 5 or 6 weeks. A form of “local radiation” may be used to boost conventional radiation. Stereotactic radiosurgery aims converged beams of radiation at the tumor. Conformal photon radiation (intensity-modulated radiation therapy) shapes radiation beams to the shape of the tumor. Interstitial radiation, also called brachytherapy, may be implanted into the tumor during surgery. Monoclonal antibodies may be capable of carrying radiation or drugs to the tumor site.

**CHEMOTHERAPY**

PCV — the combination of the drugs procarbazine, lomustine (CCNU) and vincristine — has been found to be an effective treatment for both anaplastic oligodendrogliomas and anaplastic oligoastrocytomas. Some physicians also use PCV for lower-grade oligodendrogliomas. About 60-65% of oligodendrogliomas respond to chemotherapy, but scientists are unclear as to which tumors will respond and which will not. New tests being developed may help better predict the effectiveness of chemotherapy in this group of tumors. In anaplastic oligodendrogliomas, loss of the chromosomes 1p and 19q is strongly associated with chemosensitivity. While most experience is with PCV, a newer drug, temozolomide, is being increasingly used in people with oligodendrogliolal tumors.

Chemotherapy may be used in infants and very young children to delay radiation therapy until the age of three or four. Clinical trials are underway to evaluate the most effective ways of treating these tumors in infants and children.

There are several drugs used to relieve the symptoms of a brain tumor. Steroids are drugs used to decrease swelling (edema) around the tumor. Anti-epilepsy drugs control seizures. Anti-emetic drugs prevent vomiting and help control nausea. Additional suggestions for managing side-effects are in our publication, *A Primer of Brain Tumors*.

> **Some treatments are investigational and are offered in organized testing plans called “clinical trials.” Your doctor can tell you if the treatment you are considering is a standard treatment or an investigational treatment.**

> **Just as in treating any disease, treatment for a brain tumor may have side effects. Ask your doctor to talk with you and your family about these potential effects. He or she can also help you balance the risks of treatment against the potential benefits.**
Recurrence

Tumors recur when all the tumor cells cannot be removed by surgery or killed by other treatments. Over time, those cells multiply and result in tumor regrowth. A tumor may recur as a higher grade tumor. It may contain a greater percentage of anaplastic cells, more astrocytoma cells, or the tumor may spread within the brain or into the spinal canal. However, because many oligodendrogliomas are slow growing tumors, it may be years before regrowth occurs.

Treatment for a recurrent tumor may be additional surgery, radiation therapy if the tumor was not previously radiated, or a form of local radiation if the tumor was previously radiated. There are also many clinical trials open to those with a recurrent tumor. Chemotherapy using drugs such as temozolomide or CPT11; new combinations of drugs; high-dose drugs used with a bone marrow transplantation; or biodegradable wafers soaked with chemotherapy drugs may all be considered. Anti-angiogenesis drugs are thought to interfere with the growth of new blood vessels which feed a tumor. Monoclonal antibodies (MOAB) are immune substances which may be capable of killing cells themselves, or they may serve as a delivery vehicle for drugs or radioactive products.

Finding Clinical Trials

Many investigational treatments — called clinical trials — are available to patients with an oligodendroglioma or an oligoastrocytoma. To find out more about these studies contact the National Cancer Institute’s Cancer Information Service at 800-422-6237. They can provide you with detailed information about brain tumors as well as a listing of clinical trials specific to your type of tumor. We maintain a resource listing of physicians participating in clinical trials for brain tumors, including oligodendrogliomas. Our office can be reached at 800-886-2282.

Prognosis

How well a patient responds to treatment is affected by their age, location of the tumor, grade of the tumor cells, and the amount of tumor that was able to be removed during surgery. Well-differentiated oligodendrogliomas tend to be lower grade, slow growing tumors. Anaplastic oligodendrogliomas are more aggressive, faster growing tumors. The outcome for those with an oligoastrocytoma depends on the percent of astrocytoma versus oligodendroglioma in the tumor, and the most aggressive type of cell found in the tumor.

Published survival rates for these tumors may not yet reflect the recent positive impact of chemotherapy. If you have an oligodendroglioma, your doctor is the best person to answer questions about the expected outcome. He/she can provide you with information specific to your tumor. When considering a therapy, ask your doctor how the recommended treatment will affect your prognosis. What are the expected benefits of this treatment? What are the risks? What quality of life can you expect during and after the treatment? If this is an investigational treatment, how many patients with your tumor type have received this treatment, and what were their results?
Resources

Support groups and pen-pal programs allow you to share experiences with others in the same situation. Social workers can help you find these support networks, as well as sources of financial assistance, transportation help, and/or rehabilitation programs. Nurses can provide you with information about how to care for yourself or your loved one. Dieticians can design a healthy eating plan to ensure your body receives the nutrients it needs during and after treatment. We can help you locate these resources in your area.

A Next Step

“Becoming Well Again Through…” is an ABTA quality of life series exploring rehabilitative medicine, memory retraining, managing fatigue, caregiver stress, and financial aid resources. Please call us at 800-886-2282 for a copy of the series. Our web site — www.abta.org — offers extensive brain tumor information, treatment and research updates, and patient/family stories. The thread that runs through each of our services and programs is hope. Become involved — join us in some way, to make sure there is a cure, and ultimately, a way to prevent brain tumors.

We hope that the information in this pamphlet helps you communicate better with the people who are caring for you. Our purpose is not to provide answers; rather, we encourage you to ask questions.
Questions I Want to Ask

Publications & Services

BUILDING KNOWLEDGE
A Brain Tumor — Sharing Hope
Tumor del Cerebro — Compartiendo la Esperanza
Dictionary for Brain Tumor Patients
Living with a Brain Tumor
A Primer of Brain Tumors

FOCUSBING ON TUMORS
Ependymoma
Glioblastoma Multiforme and Anaplastic Astrocytoma
Medulloblastoma
Meningioma
Metastatic Brain Tumors
Oligodendroglioma and Oligoastrocytoma
Pituitary Tumors

FOCUSING ON TREATMENT
Gene Therapy
Radiation Therapy of Brain Tumors: A Basic Guide
Stereotactic Radiosurgery

FOR & ABOUT CHILDREN
Alex’s Journey: The Story of a Child with a Brain Tumor
(for ages 9-13, video and booklet formats)
When Your Child Returns to School

SUPPORT RESOURCES
A Bibliography of Books & Resources
Brain Tumor Survivor’s Guide to the Internet
Care Options
Emergency Alert Wallet Cards
Financial Aid Resources
Housing During Treatment Resources
Organizing a Support Group
Scholarship & Educational Financial Resources
Support Group Listings
Transportation Resources
Wig and Head Covering Resources
Wish Granting Resources

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