

Metastatic Brain Tumors



FOCUSING ON TUMORS



American Brain Tumor Association

A Word About ABTA

Founded in 1973, the American Brain Tumor Association was the first national, nonprofit organization dedicated solely to brain tumors. Since then, ABTA has been a consistent leader in brain tumor research, and patient/family information and support.

We gratefully acknowledge Marc Chamberlain, MD, Chief, Division of Neuro-Oncology, Seattle Cancer Care Alliance and Professor of Neurology, University of Washington Department of Neurology and Neurological Surgery, Seattle, Washington; and Deneen Hesser, MSHSA, RN, OCN, Director of Research and Patient Services, American Brain Tumor Association, Des Plaines, Illinois, for technical review of this publication.

Introduction

The terms metastatic brain tumor, metastasis to the brain, or secondary brain tumor are different names for the same type of brain tumor. A metastatic brain tumor begins as a cancer elsewhere in the body and spreads to the brain. Sometimes this process results in a single tumor, sometimes it causes multiple tumors.

Metastatic brain tumors and their symptoms are often treatable. Longer survival, improved quality of life, and stabilization of neurocognitive function for patients with brain metastasis is more common today due to treatment advances in the last decade.

METASTASIS means one tumor.

METASTASES is plural — it means two or more tumors.

METASTASIZE is the process of cells traveling through the body to reach another part of the body.

PRIMARY SITE refers to the location of the original cancer.

Lung, breast, melanoma (skin cancer), colon, and kidney cancers commonly spread to the brain. Breast cancer and kidney cancer often cause single tumors in the brain. Lung, melanoma, and colon cancers tend to cause multiple tumors.

A metastatic brain tumor is most often found when a cancer patient begins to experience neurological symptoms and a brain scan (CT or MRI) is ordered. Sometimes the metastatic brain tumor may be found before the primary cancer is diagnosed. This may happen when a person has an MRI scan for another medical reason, and the brain tumor is “incidentally” found. Increasingly, cancer patients offered new therapies are required to undergo brain imaging that may incidentally discover brain metastases. Or, the person may have neurological symptoms, undergoes a brain scan and has no history of cancer.

If the site of the primary cancer is not found, this is called an “unknown” primary site.

Or, the primary site may have been too tiny to be seen or cause symptoms. In that situation, the metastatic brain tumor is found first and subsequently the primary site is discovered. Markers found in the blood, the appearance of the tumor on scan, and a tissue sample (if surgery is done) helps focus the search for the primary disease site and guides treatment.

The metastatic brain tumor usually contains the same type of cancer cells found at the primary site. For example, small-cell lung cancer which metastasizes to the brain forms small-cell cancer in the

brain. Squamous-cell head and neck cancer forms squamous-cell cancer in the brain.

Incidence

As more effective cancer diagnostics and treatments are developed, and as larger numbers of cancer patients live longer, researchers are learning more about people who develop metastatic brain tumors.

- Metastatic brain tumors are the most common brain tumor in adults.
- The exact incidence of metastatic brain tumors is not known, but is estimated at between 100,000 and 170,000 people per year. These numbers are based on small series of statistics reported by individual hospitals, estimates from a few individual city-based statistics, and observations from autopsy results. The American Brain Tumor Association is funding research into the incidence and prevalence of these tumors.
- Research indicates that approximately 10-20 percent of metastatic brain tumors arise as a single tumor, and 80+ percent as multiple tumors within the brain.
- About 85 percent of metastatic lesions are located in the cerebrum (the top, large sections of the brain) and 15 percent are located in the cerebellum (the bottom, back part of the brain.)
- The incidence begins to increase in those ages 45-64, but is highest in people over 65.
- Although melanoma spreads to the brain more commonly in males than in females, gender does not seem to play a role in the overall incidence of brain metastases.

- Central nervous system (CNS) metastasis is not common in children. Brain metastases account for only 6 percent of CNS tumors in children.

Researchers have also found that women with breast cancer appear to be at higher risk of developing a meningioma — a benign type of primary brain tumor — than those who have not had breast cancer. For information about meningiomas, please contact the American Brain Tumor Association at 800-886-2282.

Cause

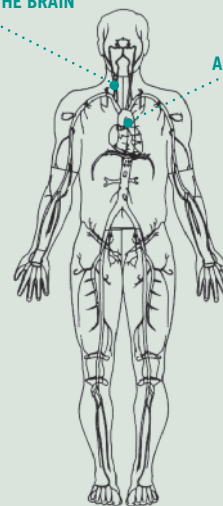
Metastatic brain tumors begin when cancer located in another organ of the body spreads to the brain. Tiny cancer cells, too small to be seen under a microscope, may move away from the primary cancer. The immune system attempts to destroy these migrating cancer cells. However, if the number of cancer cells becomes very high, the immune system may become overwhelmed or tolerant of these cells. Scientists believe those cells may enter the bloodstream or lymph system, make a stop in the lungs, then move on to other organs.

Some scientists believe cancer cells may break away from the primary cancer site while that cancer is still in its earliest stages. Research shows that these traveling cells may reattach in another part of the body, then sit dormant in these “protected” areas until a change occurs in the body. The metastatic cells, independent of the primary site, may sit dormant in brain and later grow in a delayed manner.

Arterial Blood Flow

ARTERY BRINGING BLOOD FROM THE HEART TO THE BRAIN

AORTA/HEART



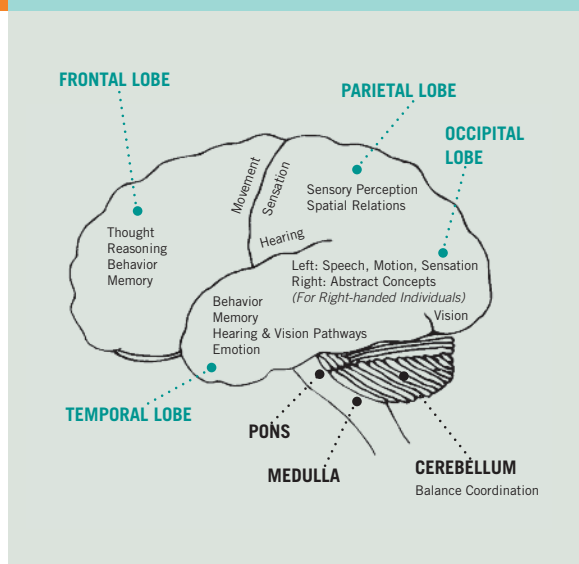
In some situations, the process of tumor spread and regrowth occurs rapidly. Since blood from the lungs flows directly to the brain, lung cancer is capable of quickly spreading to the brain. Sometimes, this happens so fast that the brain metastases are found before the primary lung cancer is found.

Scientists also know that primary cancers tend to send cells to particular organs. For example, colon cancer tends to metastasize to the liver and the lung. Breast cancer tends to metastasize to the bone, the lung, and the brain. Some scientists believe these organ preferences may be caused by hormones or proteins that attract tumor cells to the metastatic site. Other scientists believe cancer cells may be able to adhere, or stick, only to select organs.

Symptoms

The symptoms of a metastatic brain tumor are the same as those of a primary brain tumor, and are related to the location of the tumor within the brain. Each part of the brain controls specific body functions. Symptoms appear when areas of the brain can no longer function properly.

Functions of the Lobes of the Brain



Headache and seizures are the two most common symptoms.

- The causes of headaches include swelling (also called edema) from fluid leakage through tumor blood vessels and compression of the brain due to the growing tumor. Headaches may also be related to bleeding, which can require surgery. While swelling around the tumor is more common, bleeding from ruptured blood vessels in the tumor occurs in a small percentage of patients.

- A seizure is an episode of abnormal electrical activity in the brain caused by a brain tumor, surgery, or something else that upsets brain electrical activity. During normal electrical activity, the nerve cells in the brain communicate with each other through carefully controlled electric signals. During a seizure, abnormal electrical activity occurs which may stay in a small area of the brain or spread to other areas. The result is a partial (focal) or generalized seizure. For information about seizures or caring for someone who may have a seizure, please call the American Brain Tumor Association at 800-886-2282.

Disturbance in the way one thinks and processes thoughts (cognition) is another common symptom of a metastatic brain tumor. Cognitive challenges might include difficulty with memory (especially short term memory) or personality and behavior changes.

Motor problems, such as weakness on one side of the body or an unbalanced walk, can be related to a tumor located in the part of the brain that controls those functions. Metastatic tumors in the spine may cause back pain, weakness or changes in sensation in an arm or leg, or loss of bladder/bowel control. Both cognitive and motor problems may also be caused by edema, or swelling, around the tumor.

For additional information about the symptoms of a brain or spinal cord tumor, please see the American Brain Tumor Association book, *A Primer of Brain Tumors*.

Diagnosis

A brain scan may be part of the initial screening process when the primary cancer is diagnosed, or a scan may be ordered if a person living with cancer begins to have symptoms of a brain or spinal cord tumor.

Metastatic tumors are diagnosed using a combination of neurological examination and imaging (also called scanning) techniques. A physician may use more than one type of scan to make a diagnosis. MRI or CT is the most commonly available — the use of contrast dye makes the tumor(s) easier to see. Magnetic resonance spectrometry (MRS) is used to measure mineral content in the brain. Positron emission tomography (PET) scans collect detailed information about the way the tumor uses glucose (sugar), and may help show differences between healthy tissue, cancer cells, dead disease tissue, and swelling. When brain metastases are found first, full body PET scans can be helpful in identifying the primary cancer site. Your physician will determine the type of imaging most appropriate for you.

The images will help your physician learn:

- Size and the number of tumors
- Exact location of the tumor(s) within the brain or spine
- Impact on nearby structures

Although scans provide the physician with a “probable” diagnosis, examination of a sample of tumor tissue under a microscope confirms the exact pathologic diagnosis. The tissue sample may be obtained during surgery to remove the tumor, or during a

biopsy. A biopsy is a surgical procedure to remove a small amount of tumor for diagnosis.

If a metastatic tumor is diagnosed before the primary cancer site is found, tests to locate the primary site will follow. These tests may include blood tests, a chest x-ray or CT, an abdominal or pelvic CT, a body PET scan, or other tests as needed. The pathology report of tissue collected during surgery can also help the doctor determine possible sites of the primary cancer if testing fails to do so.

If you already have a history of cancer, your doctor will determine the tests that might be helpful.

Specific Types of Metastases

LUNG METASTASES

- The most common type of brain metastases in both men and women*
- The brain tumor is often found before, or at the same time, or soon after the primary lung tumor
- Multiple brain metastases are common

BREAST METASTASES

- Second most common type of brain metastases in women*
- Metastases tend to occur a few years after the breast cancer is found, but metastases at five or ten years post treatment are not unusual
- Are generally found in younger and pre-menopausal women

- Two or more metastatic brain tumors are common

MELANOMA METASTASES

- Second most common type of brain metastases in men*
- These cancers may metastasize to the brain or the meninges (the covering of the brain and spinal cord)
- Metastases tend to occur several years after the primary melanoma
- Multiple brain metastases are common
- The metastatic tumors are rich with blood vessels which have a high tendency to bleed

COLON/COLORECTAL METASTASES

- Third most common type of brain metastases in both men and women*
- Metastases tend to occur a few years after the primary tumor is found
- A single metastatic tumor is common

KIDNEY/RENAL METASTASES

- Metastases tend to occur within a few years after the primary tumor
- Single tumors are common
- The metastatic tumor often contains blood vessels

*sources: Barnholtz-Sloan, et al, 2004; Smedby, et al, 2009.

Treatment

Once your scan shows a suspected brain tumor, your next step will likely be a consultation with a neurosurgeon. The neurosurgeon will look at your scans to determine if the tumor(s) can be surgically removed, or if other treatment options would be more reasonable for you.

The three main categories of treatments include surgery, radiation, and chemotherapy. More than one type of treatment might be suggested.

When planning your treatment, your doctor will take several factors into consideration.

- Whether or not you have a history of cancer
- If you had a history of cancer, the status of that disease
- Your overall health
- Number and size of metastatic tumors
- Location of the metastatic tumor(s) within the brain or spine

Early treatment of your brain tumor will focus on controlling symptoms, such as swelling of the brain and/or seizures.

- Steroids are drugs used to reduce the swelling that can occur around a brain tumor. Reducing the swelling in the brain can remarkably reduce the pressure, and thus, temporarily reduce the symptoms of a metastatic brain tumor.
- Antiepileptic drugs and other approaches are used to control seizures.

Research shows that the number of metastases is not the sole predictor of how well you might do following treatment. Your neurological function (how you are affected by your brain metastases) and the status of the primary cancer site (the presence/absence of metastases in other parts of the body) appear to have more influence over survival than the number of brain metastases. Treatment decisions will take into account not only long term survival possibilities, but your quality of life during and after treatment, as well as cognition concerns.

SINGLE OR LIMITED BRAIN METASTASES

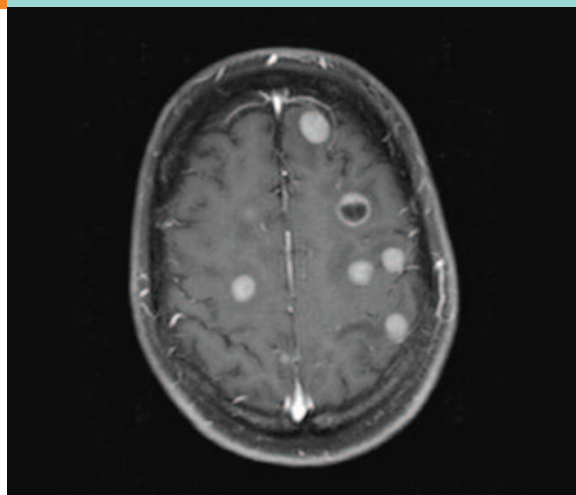
If you have a limited number of metastatic brain tumors — generally 1 to 3 tumors, or a small number of tumors that are close to each other — and if your primary cancer is treatable and under control, your treatment plan may include surgery to confirm the diagnosis and remove the tumor, followed by a form of radiation therapy. That radiation may be either whole brain radiation therapy, whole brain radiation plus stereotactic radiosurgery, or stereotactic radiosurgery alone.

If you have a limited number of metastatic brain tumors and your primary cancer is not well controlled, your treatment plan will likely be whole brain radiation, and possibly chemotherapy.

MULTIPLE BRAIN METASTASES

If you have multiple brain metastases — three or more brain tumors — and have a known history of cancer, whole brain radiation therapy may be suggested. If there is a question about the scan results or the diagnosis, a biopsy or surgery to

Multiple metastases from melanoma



MRI courtesy of Dr. Chamberlain.

remove the brain tumors may be done. This will allow your physicians to confirm that the brain tumors are related to your cancer. If the tumors prove to be metastatic from your primary cancer, your treatment plan will likely be whole brain radiation.

If you do not have a history of cancer, your physicians will order tests to try to determine the primary site. If no other cancer site is found, surgery to obtain a tissue sample may be performed. Surgery would likely be followed by whole brain radiation.

In general, the primary treatment for multiple metastatic brain tumors (or multiple tumors that are not close to each other) is whole brain radiation. The goal of this therapy is to treat the tumors seen on scan plus those that are too small to be visible. As a result, whole brain radiation may be both preventive and therapeutic.

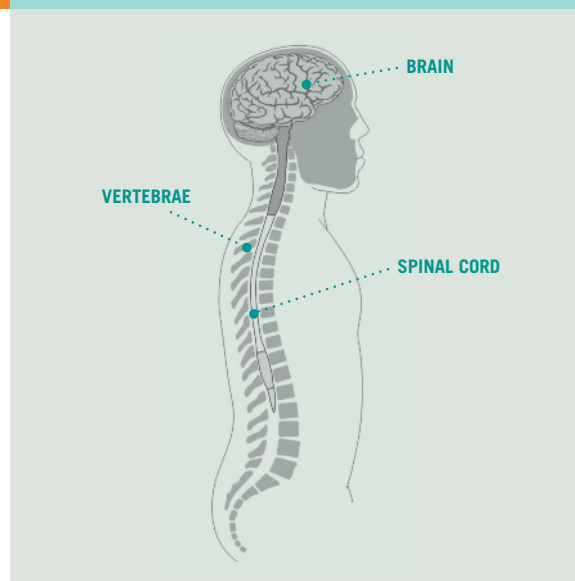
There is a growing interest in the role of chemotherapy for multiple metastatic brain tumors. A neuro-oncologist or a medical oncologist specializing in the treatment of brain tumors can help determine this additional therapy would be of help to you.

SPINAL METASTASES

Metastases to the spine are most often caused by lymphoma, breast, lung, or prostate cancers. These tumors may involve the bones of the vertebrae or the surface of the spinal cord. Radiation therapy alone, or surgery plus radiation, may be used to treat metastatic tumors to the spine.

Spread of cancer cells to the meninges or to the spinal fluid is called leptomeningeal metastases (also called carcinomatous meningitis or leptomeningeal carcinomatosis). This type of metastases occurs most commonly with lymphoma, leukemia, melanoma, breast, or lung cancers. It may be treated with radiation therapy, or radiation therapy and a regional form of chemotherapy administered into the water compartment of the brain (called cerebrospinal fluid or CSF). Intra-CSF chemotherapy is administered into the spinal fluid found between the meninges — the layers of the brain covering. Intra-CSF chemotherapy may be given via a spinal tap or lumbar puncture (intrathecal chemotherapy) or by use of a reservoir and catheter (for example, an Ommaya device) that is surgically implanted (intraventricular chemotherapy). The purpose of these devices is to place chemotherapy drug into the spinal fluid allowing it to “bathe” the cancer cells.

Brain, Spinal Cord, & Vertebrae



Your doctor will decide which treatment plan is best for you based on your primary cancer, the amount of cancer cells present in the spinal fluid, your neurological symptoms, and your general medical health.

ABOUT SURGERY

One of the first treatments considered for metastatic brain tumors is tumor removal, or resection. A neurosurgeon — a surgeon specially trained to operate on the brain and spine — will determine if your tumors can be surgically removed by evaluating your health and disease status.

- Factors supporting surgery include a single tumor larger than 3 cm (the size of a small pearl), location outside of the speech related areas of the brain, and limited and/or somewhat stable disease in other parts of the body. Symptomatic tumors are more likely to be surgically removed.

- Reasons surgery may not be suggested include a tumor that might better respond to radiation, multiple tumors – especially if they are far apart from each other — and tumors in brain locations where specific function resides, for example, language areas.

If surgery is not possible or the primary cancer has not been found, a biopsy may still be done to confirm the tumor type. Once the diagnosis is confirmed, radiation and or chemotherapy (depending on the type of cancer) may be part of the treatment plan.

ABOUT RADIATION

Radiation therapy can be used to treat single or multiple metastases. It may be used therapeutically (to treat a brain tumor), prophylactically (to help prevent brain metastases in people newly diagnosed with small-cell lung cancer or acute lymphoblastic leukemia), or as palliative treatment (to help relieve symptoms caused by the brain tumor).

Some types of cancer are more responsive to radiation than others. Small-cell lung cancer tumors and germ-cell tumors are highly sensitive to radiation, other types of lung cancer and breast cancers are moderately sensitive, and melanoma and renal-cell carcinoma are less sensitive.

Different types of radiation can be used for metastatic brain tumors.

- **Whole Brain Radiation**

Whole brain radiation is a common form of radiation for metastatic brain tumors, especially when multiple tumors are present. Whole brain radiation has been

used for several decades. It is delivered in 10 or more reduced doses called “fractions.” By dividing the doses in smaller amounts, the normal brain is somewhat protected from the toxic effects of radiation. An important and common concern about whole brain radiation is its possible impact on cognition and thinking. Research focused in this area is ongoing, and studies indicate that the presence of the brain tumor may cause thinking changes before treatments even begin. However, researchers continue to explore new ways of delivering radiation, as well as the impact of whole brain radiation therapy.

Radiosurgery

Recent advances have made stereotactic radiosurgery an effective treatment option for some patients with brain metastases. Radiosurgery focuses high doses of radiation beams more closely to the tumor than conventional external beam radiation in an attempt to avoid and protect normal brain tissue. This approach is most commonly used in situations where the tumor is small and contained in a localized area. “Small” tumors are generally considered to be 3 cm or less in diameter and limited in number. Radiosurgery can also be used to treat tumors that are not accessible with surgery, such as those deep within the brain. It may also be used for recurrences if whole brain radiation was previously given, or as a local “boost” following whole brain radiation.

Radiosurgery given in multiple treatments is called stereotactic radiotherapy.

There are many different pieces of equipment used to deliver radiosurgery; each has a brand name created by their manufacturer. For more information about radiosurgery, and about the different equipment used for radiosurgery, please see ABTA's publication *Stereotactic Radiosurgery*.

Brachytherapy

Interstitial radiation, or brachytherapy, is the use of radioactive materials surgically implanted into the tumor to provide local radiation.

Radioenhancers

Radioenhancers, which make the tumor more sensitive to the effects of radiation, are under investigation. Sometimes, the addition of chemotherapy prior to, or during, radiation treatment can also have this effect.

CHEMOTHERAPY

Historically, chemotherapy has not often been used to treat metastatic brain tumors due to the blood-brain barrier and drug resistance. However, new research indicates that it may be an effective treatment for some patients. The decision to use chemotherapy depends on the status of the systemic disease, the primary site, the number and size of tumors in the brain, available drugs, and previous history of chemotherapy treatment, if any.

- Recent studies show that some tumors may be sensitive to drug therapy. Small-cell lung cancer, breast cancer, germ cell

tumors, and lymphoma are among these tumors.

- Intrathecal chemotherapy (drugs placed within the brain/spine water compartment) may be used for leptomeningeal metastases — cancer cells that metastasize to the covering layers of the brain and spinal cord.

Chemotherapy may be combined with other therapies such as radiation. Some tumors that are sensitive to chemotherapy in other parts of the body may become resistant to the chemotherapy once in the brain. The cause for this resistance is unknown. A different drug may be considered if you received chemotherapy for your primary cancer, or a different type of therapy may be considered.

As in any disease, there are possible side effects from brain tumor treatment. Ask your doctor to explain these effects. He or she can also help you and your family balance the risks against the benefits of treatment.

INTEGRATIVE HEALTH CARE

Integrative health care brings the physical, mental, emotional, and spiritual components of health into the treatment plan and beyond. Integrative therapies support the health and healing of the whole person. Treatment and supportive areas may include diet, exercise, stress reduction, lifestyle enhancements, acupuncture, herbs, mind-body therapies, and spiritual growth, among others. Many major cancer centers now offer some components of integrative health care. Talk with your healthcare team if you would like to learn more about these complementary approaches.

FOLLOW-UP

After your brain tumor treatment is completed, it will take a few months before the true effects of the treatment can be measured on scan. Most often, the first post-treatment scan is done 1-3 months after the completion of radiation therapy. This timing allows the full effect of radiation therapy to be evaluated by your physicians.

Follow-up scans are usually done every 2-3 months for a year, then as often as your doctor feels is appropriate for you. The scans are used to monitor your tumor's response to treatment, and to watch for possible tumor recurrence. Metastatic brain tumors, just like tumors elsewhere in the body, may recur. That's why it is important for cancer survivors to continue their regularly scheduled health visits, even long after their cancer is under control.

The chance of a metastatic brain tumor recurring is primarily influenced by the nature and course of the primary cancer, the number of brain metastases, and whether there were metastases to other sites in the body.

Can radiation be given more than one time?

Yes, depending on the type, dose, and scope of the radiation received the first time.

Focused forms of radiation therapy may be used after whole brain radiation if the tumor is small, or radiosurgery may be repeated if tumor regrows in a limited area. Your doctor can review your original treatment records and advise if you are a candidate for another course of radiation.

If your brain tumor recurs, or if other brain tumors are seen on subsequent scans, a new course of treatment will be planned for you. Treatment for a recurrent metastatic brain tumor begins with updated scans, an evaluation of the person's overall health, the status of their primary cancer, and their response to previous treatments. Options may include another surgery to remove regrowth or new tumors, another course of radiation therapy, a different form of radiation therapy, a course of chemotherapy, or perhaps a clinical trial.

Finding Clinical Trials

New treatments are developed in organized, carefully overseen testing plans called clinical trials.

For additional information about both standard treatment and treatment in a clinical trial, call the National Cancer Institute's Cancer Information Service at 800-422-6237. They can provide information specific to the primary site of the cancer, such as lung cancer or breast cancer, as well as the metastatic brain tumor(s).

We also offer our Focusing on Treatments series of booklets which address *Surgery*, *Steroids*, *Conventional Radiation Therapy*, *Stereotactic Radiosurgery*, and *Chemotherapy*. If that information is of interest to you, please call us at 800-886-2282.

Resources

Many families living with metastatic brain tumors find assistance through cancer support 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 networks as well as sources of financial assistance, transportation help, home-care needs, or hospice programs. Nurses can provide you with information about how to care for yourself or your loved one. Reach out to neighbors, family, and friends for help with daily chores. You are not alone — there are extensive resources available to you. If you would like help finding them, please call ABTA's social work office at 800-886-2282.

A Next Step

“Becoming Well Again Through...” is an ABTA Quality of Life series exploring fatigue management, caregiver stress, rehabilitative medicine, financial aid, and care options. Call us, or send an e-mail to info@abta.org and request 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 will help you communicate better with your healthcare team. Our purpose is not to provide answers, rather, we encourage you to ask questions.

Questions to Ask Your Healthcare Team

You may wish to consider asking some of the following questions, or develop additional ones based on your situation.

1. How many tumors do I have in my brain?
2. What is the size?
3. What is the location?
4. What brain functions are controlled in these location(s)?
5. What treatments are you recommending?
6. What are the advantages and disadvantages of the treatments you are recommending?
7. Will any of these treatments limit my choices in treatment further down the road?
8. How effective is the treatment plan you are recommending?
9. How long might that effectiveness last?
10. What are the short term side effects of the suggested treatments?
11. What are the long term side effects (1-2 years, or more) of these treatments?

This publication is not intended as a substitute for professional medical advice and does not provide advice on treatments or conditions for individual patients. All health and treatment decisions must be made in consultation with your physician(s), utilizing your specific medical information. Inclusion in this publication is not a recommendation of any product, treatment, physician, or hospital.

ABTA Publications and Services

Building Knowledge Series

Dictionary for Brain Tumor Patients
Living with a Brain Tumor
Patient and Family Publications & Services
A Primer of Brain Tumors

Focusing on Tumors Series

Cysts
Ependymoma
Glioblastoma & Anaplastic Astrocytoma
Low Grade Astrocytomas
Medulloblastoma
Meningioma Tumors
Metastatic Brain Tumors
Oligodendroglioma and Oligoastrocytoma
Pituitary Tumors

Focusing on Treatment Series

Chemotherapy
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Conventional Radiation Therapy
Seizure First Aid Tips
Stereotactic Radiosurgery
Steroids
Surgery
Physician Resource List: Physicians who offer
investigational treatments for brain tumors

Focusing on Support Series

Listings of support groups
Listings of bereavement (grief) support groups
Organizing and Facilitating Support Groups
Reaching Out for Support
Resources for Online Support

ABTA News and Updates

ABTA E-news (monthly e-mail bulletin)
TLC: Tips for Living and Coping (monthly e-bulletin)
Headlines Newsletter

For and about Children Series

Adolescent and Young Adult Resources
Alex's Journey DVD: The story of a child with a brain
tumor (for ages 9-13)
Educating Children and Teenagers
Resources for Talking with Children when a Parent is Ill
When Your Child Returns to School

Resources

Becoming Well Again Through-Quality of Life article series
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Employment Rights and Job Retraining Resources
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Health Insurance Resources
Housing During Treatment Resources
Networking Links
Neuropsychology Resources
Palliative Care
Scholarship & Educational Financial Aid Resources
Searching Medical Journals
Social Security Disability Resources
Spanish-Language Resources
Therapeutic Recreation Resources
Transportation Assistance Resources
Wig and Head Covering Resources
Wish Fulfillment Organizations

Pen Pal Programs

Connections (Program for patients and family members)
Bridges (Program for those who have lost someone to a
brain tumor)

Single copies of our publications are available free of charge.

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FOCUSING ON TREATMENT



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