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Meningioma - Treatment Options [1]

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ON THIS PAGE: You will learn about the different ways doctors use to treat people with meningioma. To see other pages, use the menu on the side of your screen.

This section outlines treatments that are the standard of care (the best proven treatments available) for this specific type of tumor. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, see the Clinical Trials [3] and Latest Research [4] sections.

Treatment overview

Different types of doctors often work together to create a patient?s overall treatment plan that combines different types of treatments. This is called a multidisciplinary team [5]. For meningioma, this team may include neuro-oncologists, medical oncologists, radiation oncologists, surgeons, rehabilitation therapists, and other specialists.

Meningiomas are typically slow-growing tumors. However, because a growing CNS tumor can cause severe symptoms, people diagnosed with a CNS tumor should seek treatment as soon as possible. The pressure caused by a growing CNS tumor can cause serious symptoms, including a backup of cerebrospinal fluid and problems with blood circulation, which can damage delicate nerves and block cells from getting important nutrients.

Descriptions of the most common treatment options for meningioma are listed below, including surgery, radiation therapy, and occasionally chemotherapy. Treatment options and recommendations depend on several factors, including the type and grade of the tumor, possible side effects, and the patient?s preferences and overall health. Your care plan may also include treatment for symptoms and side effects, an important part of care for meningioma.

Treating brain and spinal cord tumors can be challenging. Surgery is the most common type of treatment, but it can be difficult if the tumor is near a delicate part of the brain or spinal cord. The blood-brain barrier, which normally serves to protect the brain and spinal cord from damaging

chemicals, also keeps out many types of chemotherapy. Meningioma grows outside the blood-brain barrier, so some drugs do reach these tumors; however, they are very resistant to currently available chemotherapy.

More refined surgeries, a better understanding of the tumors that can be treated with chemotherapy, and precise delivery of radiation therapy have helped more patients with CNS tumors live longer and have a better quality of life. Take time to learn about your treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your doctor and what you can expect while receiving the treatment.

Learn more about making treatment decisions [6].

Active surveillance

Because a grade I meningioma grows slowly, active surveillance may be recommended for some patients. This approach is also called watchful waiting or watch-and-wait. During active surveillance, the tumor is monitored and treatment would begin if it started causing any symptoms or problems. This approach may be used for much older patients or for those with a tumor that was discovered accidentally and is not causing any symptoms.

Surgery

Surgery is the removal of the tumor and surrounding tissue during an operation. For meningioma, it is the most common treatment. It is often the only treatment needed for a person with a noncancerous tumor that is able to be completely removed during surgery. For patients with a cancerous tumor or a tumor that cannot be fully removed during surgery, the treatment plan often includes radiation therapy and/or chemotherapy after surgery (see below).

Blocking the blood vessels that feed the tumor may be performed before surgery to reduce bleeding. Surgery to the brain is done by removing part of the skull, a procedure called a craniotomy. A neurosurgeon is a doctor who specializes in surgery of the brain and spinal cord. After the surgeon removes the tumor, the patient?s own bone will be used to cover the opening in the skull.

In addition to removing or reducing the meningioma, surgery can be used to take a sample of tumor for analysis under a microscope by a pathologist or neuropathologist. A neuropathologist is a doctor who specializes in the diagnosis of diseases of the nervous system by studying tissue under a microscope. The results of the analysis can show if additional treatments, such as radiation therapy, will be necessary.

There have been rapid advances in surgery for brain tumors, including cortical mapping to identify the areas of the brain that control the senses, language, and motor skills and enhanced imaging methods to give surgeons more tools to plan and perform the surgery. Talk with your doctors to learn about the specific techniques that your surgery will include, including the possible side effects and what you can expect regarding your recovery.

Learn more about surgery [7].

Radiation therapy

Radiation therapy is the use of high-energy x-rays or other particles to destroy tumor cells. A doctor who specializes in giving radiation therapy to treat tumor is called a radiation oncologist. Doctors may recommend radiation therapy along with surgery to slow the growth of an aggressive tumor. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time. Radiation therapy can be given in several ways.

Internal radiation therapy or brachytherapy is the use of tiny pellets or rods containing radioactive materials that are surgically implanted in or near the tumor. This approach is only used for meningioma in clinical trials.

External-beam radiation therapy techniques use a machine outside the body to target the tumor. These techniques are becoming better able to direct radiation to the tumor while avoiding healthy tissue. For example, a linear accelerator is a special x-ray machine that moves around the body to direct pencil-thin beams of radiation to the brain tumor at different angles and intensities. This helps to reduce the amount of healthy tissue exposed to the radiation.

The following external-beam radiation therapy techniques may be used:

Conventional radiation therapy. In this procedure, the direction of radiation is determined by features of the brain and skull and by x-rays. When a person?s entire brain needs to receive radiation therapy, this technique is appropriate. For more precise targeting, different techniques are needed.

Intensity modulated radiation therapy (IMRT). IMRT is a type of external-beam radiation therapy that can more directly target a tumor, further sparing normal 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.

Three-dimensional conformal radiation therapy. Based on CT and MRI images, a three-dimensional model of the tumor and normal tissues is created on a computer. Beam size and angles are determined that deliver more radiation to the tumor and less to the normal tissue.

Stereotactic radiosurgery. Stereotactic radiosurgery delivers a single, high dose of radiation directly to the tumor and not healthy tissues. It works best for a tumor that is only in one area of the brain and some benign tumors, including most meningiomas. There are many different types of stereotactic radiosurgery equipment, including:

- A modified linear accelerator, which is a machine that creates high-energy radiation by using electricity to form a stream of fast-moving particles that help kill tumor cells.
- A gamma knife is another form of radiation therapy that concentrates highly focused beams of gamma radiation on the tumor. A gamma knife can only be used for meningioma in the brain, not meningioma on the spine.
- A cyber knife is a robotic device used in radiation therapy to guide radiation to the

tumor?particularly tumors in the brain, head, and neck.

Fractionated stereotactic radiation therapy. Radiation therapy is delivered as directly as stereotactic radiation therapy, but the dose is divided into small, daily doses over several weeks using a relocatable head frame instead of in a single day. This technique is best for tumors close to complex or sensitive structures, such as the optic (eye) nerves or brain stem.

Proton radiation therapy. Proton therapy is a type of external-beam radiation therapy that uses protons rather than x-rays. At high energy, protons can destroy tumor cells.

With these different techniques, doctors are trying to better target only the tumor and reduce the dose to the surrounding normal tissue. Depending on the size and location of the tumor, the radiation oncologist may choose any of the above radiation therapy techniques. In certain situations, a combination of two or more techniques may be used.

Side effects from radiation therapy may include fatigue, mild skin reactions, upset stomach, and neurologic symptoms. Most side effects go away soon after treatment is finished. Also, radiation therapy is usually not recommended for children younger than five because of the high risk of damaging their developing brains.

There are possible long-term side effects that may occur years after treatment. A person may experience cognitive problems, including memory loss and a slow decline in intellectual performance. If the pituitary gland received radiation, there may be changes in hormonal levels. The pituitary gland is a small gland near the brain that releases hormones that control bodily functions. In these situations, patients should be evaluated by an endocrinologist, who is a doctor that specializes in hormones, glands, and the endocrine system of the body. How severe these side effects are depends on how much radiation was given and where in the brain it was used. While these side effects have become less severe with better technology and precision in radiation therapy, you should speak with your radiation therapist before treatment begins if you have any questions or concerns about the possible long-term side effects of radiation therapy.

Learn more about radiation therapy [8].

Chemotherapy

Chemotherapy is the use of drugs to destroy tumor cells, usually by stopping the tumor cells? ability to grow and divide. Chemotherapy is given by a medical oncologist, a doctor who specializes in treating a tumor with medication.

Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally). A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.

The goal of chemotherapy can be to destroy any tumor remaining after surgery, slow the tumor?s growth, or reduce symptoms. However, chemotherapy is rarely used to treat meningioma, although researchers are studying this form of treatment. It is also important to keep in mind that

a treatment plan may change over time if it is no longer working.

The side effects of chemotherapy depend on the individual and the dose used, but they can include fatigue, risk of infection, nausea and vomiting, hair loss, loss of appetite, and diarrhea. These side effects usually go away once treatment is finished.

Learn more about chemotherapy [9] and preparing for treatment [10]. The medications used to treat any type of tumor are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using searchable drug databases [11].

Getting care for symptoms and side effects

A brain tumor and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the tumor, an important part of care is relieving a person?s symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient with his or her physical, emotional, and social needs.

Palliative care can help a person at any stage of illness. People often receive treatment for the tumor and treatment to ease side effects at the same time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the tumor, such as chemotherapy, surgery, and radiation therapy. Talk with your doctor about the goals of each treatment in your treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and supportive care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it is addressed as quickly as possible. Common types of supportive care for people with a brain tumor include:

Steroids. Steroids occur naturally in the body in tiny amounts. In larger amounts, they are very powerful anti-inflammatories, which are drugs that reduce swelling. Most patients with a brain tumor will be prescribed steroids to help relieve swelling of the brain. You will most likely receive steroids when you are first diagnosed, before and after surgery, before and after radiation therapy, and if you have an advanced brain tumor. Steroids have many side effects, which include weight gain and water retention, increased appetite, difficulty sleeping, changes in mood, and stomach irritation. After successful treatment for the brain tumor, your doctor may slowly reduce the amount of steroids you need to take over time.

Anti-seizure medication. A person with a CNS tumor may experience seizures (see Symptoms [12]), and this type of medication helps to control how often a person has seizures.

Shunt. If fluid begins to build up in the brain, it may become necessary for a surgeon to place a

device called a shunt that is used to bypass or divert fluid from one place to another and drain the excess fluid.

Anti-depressants. Depression can be common in people with a CNS tumor, but it is often undiagnosed. However, this does not mean that all people with a CNS tumor are depressed. For those who have symptoms of depression, the health care team may decide to prescribe an anti-depressant medication to help with the symptoms. Learn more about depression [13].

Learn more about palliative care [14].

Metastatic meningioma

If the tumor has spread to another location in the body, it is called a metastatic tumor. This is very rare for meningioma. Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating metastatic meningioma, because there can be different opinions about the best treatment plan. Learn more about seeking a second opinion [15] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include clinical trials [3] studying new treatments. Supportive care will also be important to help relieve symptoms and side effects.

For most patients, a diagnosis of metastatic meningioma is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a support group.

Remission and chance of recurrence

A remission is when the tumor cannot be detected in the body and there are no symptoms. This may also be called ?no evidence of disease? or NED.

A remission can be temporary or permanent. This uncertainty leads to many survivors feeling worried or anxious that the tumor will come back. While many remissions are permanent, it?s important to talk with your doctor about the possibility of the tumor returning. Understanding the risk of recurrence and the treatment options may help you feel more prepared if the tumor does return. Learn more about coping with the fear of recurrence [16].

If the tumor does return after the original treatment, it is called a recurrent tumor. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

When this occurs, a cycle of testing will begin again to learn as much as possible about the recurrence, including whether the tumor?s grade has changed. After testing is done, you and your doctor will talk about your treatment options. Often the treatment plan will include the therapies described above such as surgery, radiation therapy, and chemotherapy, but they may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent tumor. The most common treatment for recurrent meningioma is additional surgery. If surgery cannot be performed, radiation therapy is generally used. In addition, a patient can still receive care to manage the

symptoms caused by the tumor. Symptom management is always important since the symptoms of meningioma can interfere with a person?s quality of life.

People with a recurrent tumor often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about dealing with a recurrence [17].

If treatment fails

Recovery from meningioma is not always possible. If treatment is not successful, the disease may be called advanced or terminal.

This diagnosis is stressful, and this is difficult to discuss for many people. However, it is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced disease and who are expected to live less than six months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about advanced cancer care planning [18].

After the death of a loved one, many people need support to help them cope with the loss. Learn more about grief and loss [19].

The next section helps explain clinical trials, which are research studies. Use the menu on the side of your screen to select About Clinical Trials, or you can select another section, to continue reading this guide.

Links:
[1] http://www.cancer.net/cancer-types/meningioma/treatment-options
[2] http://www.cancer.net/about-us
[3] http://www.cancer.net/node/19274
[4] http://www.cancer.net/node/19277
[5] http://www.cancer.net/node/24957
[6] http://www.cancer.net/node/24582
[7] http://www.cancer.net/node/30689
[8] http://www.cancer.net/node/30687
[9] http://www.cancer.net/node/30673
[10] http://www.cancer.net/node/24473
[11] http://www.cancer.net/node/25369
[12] http://www.cancer.net/node/19270
[13] http://www.cancer.net/node/30346
[14] http://www.cancer.net/node/25282
[15] http://www.cancer.net/node/25355
[16] http://www.cancer.net/node/25241
[17] http://www.cancer.net/node/25042

[18] http://www.cancer.net/node/25113
[19] http://www.cancer.net/node/25111