Meningioma

A meningioma is a tumor that forms on the outside membranes of the brain and spinal cord. These membranes are called meninges. Most meningiomas are not cancer (benign) and grow slowly over many years. The tumors usually do not invade the brain, but can press on the brain as they grow. They can also grow outward and cause the skull to thicken (hyperostosis).

Meningiomas are more common in females and the risk increases as you get older. They are less common in children. About 3 in 10 tumors within or on the surface of the brain (intracranial) are meningiomas.

Causes

Most meningiomas have no known cause. Some patients have a greater chance of developing these tumors:

- Patients who have received radiation to the head and neck have an increased risk of developing meningiomas.
- About 5 in 100 patients with a genetic disorder called Neurofibromatosis Type 2 will develop meningiomas.
- Research to date has not found a link between head injury or cell phone use and meningiomas.

Symptoms

Some patients have no symptoms. Symptoms depend on the tumor location and size, and may include:

- Headaches
- Seizures
- Personality changes or confusion
- Weakness or numbness of the face, arms or legs
- Vision changes, such as double vision or vision loss

Diagnosis

Your doctor will assess your complete medical history and do physical and neurological (nervous system) exams. The neurological exam involves a series of tests to check your mental status, memory, cranial nerve function (such as vision and hearing), muscle strength, coordination and sensation.

Imaging Tests

Imaging tests are also used to diagnose meningiomas. The tests take detailed pictures that help your doctor find tumors and see how the tumors are affecting your body.

- Magnetic resonance imaging (MRI) scans create images of soft tissues. A tumor can cause swelling in the tissues around it, so an MRI scan may show any swelling. An MRI scan for meningiomas uses contrast dye.
- Computerized tomography (CT) scans are used to see if a tumor has affected the bone. A CT scan for meningiomas uses contrast dye.
- Sometimes an angiogram is needed. An angiogram is an x-ray of the blood vessels. This image can show if the tumor has affected blood flow.

Tumor Grade

Tumor grade is a system used to describe types of tumor cells. The grades are based on how abnormal the tumor cells look under a microscope and how quickly the tumor is likely to grow, spread or come back after treatment.

Meningiomas are divided into 3 grades:

- Grade I
  - This is the most common type of meningioma.
  - They are often watched closely for changes or treated with surgery.
  - Patients have regular MRI scans and follow-up exams.
- Grade II
  - These are called atypical (not normal) tumors.
  - They tend to be more aggressive and are more likely to come back compared to Grade I tumors.
  - About 2 in 10 meningiomas are Grade II and often need surgery. Some may need radiation treatment after surgery.
- Grade III
  - These tumors are cancer (malignant or anaplastic) and are the most aggressive type of meningioma.
  - Surgery followed by radiation is often needed.
  - If the tumor comes back, chemotherapy may be used for treatment.
  - About 3 in 100 or less of meningiomas are cancer.

Treatment

Treatment depends on the tumor grade and your symptoms. Treatment options may include:

- Observation
  - If the tumor appears benign, does not press on the brain or cause symptoms, most can be watched with regular MRI or CT scans and follow-up exams with your doctor.
- Surgery
  - For tumors that cause symptoms, surgery is often the first step.
  - A neurosurgeon performs a surgery, called a craniotomy, to open the skull and remove the tumor. If the whole tumor cannot be safely removed, the rest of it may be watched closely or treated with radiation.
  - Sometimes, the tumor may be in an area that is too dangerous to remove.
  - Treatment after surgery depends on how much of the tumor was removed and tumor grade.

- Radiation
  - Radiation therapy may be used if the tumor comes back or if some of the tumor cannot be removed. Radiation destroys tumor cells and stops the tumor from growing. Radiation can be given in very focused doses to help save nearby, healthy tissues.
  - External beam radiation therapy my be used for treating larger areas. It delivers radiation to the tumor in multiple low doses and may take about 6 weeks.
  - Stereotactic radiosurgery is often used for smaller tumors. It delivers one high dose of radiation in one session, targeted exactly to the meningioma.
- Chemotherapy
  - Chemotherapy is sometimes used to treat meningiomas that come back after surgery and radiation.
  - There is no standard chemotherapy medicine used for these tumors.

After Treatment

Long-term outcomes depend on the tumor location, tumor grade, your age, and overall health status before treatment. MD Anderson provides a team approach to help our patients with rehabilitation and recovery during and after treatment.

Some meningiomas, most often atypical or cancerous (malignant) types, may come back after treatment. Your doctor may recommend regular MRI or CT scans and follow-up visits to watch for tumor regrowth.

Research is studying targeted therapy as treatment for meningiomas that come back. Your doctor may recommend genetic testing on removed meningiomas in order to add to the research.

For more information, please contact the Brain and Spine Center at 713-792-6600.

Resources

American Brain Tumor Association
800-886-2282
www.ABTA.org

National Brain Tumor Society
800-934-2873
BrainTumor.org/