Brain Cancer Symptoms, Diagnosis, and Treatment

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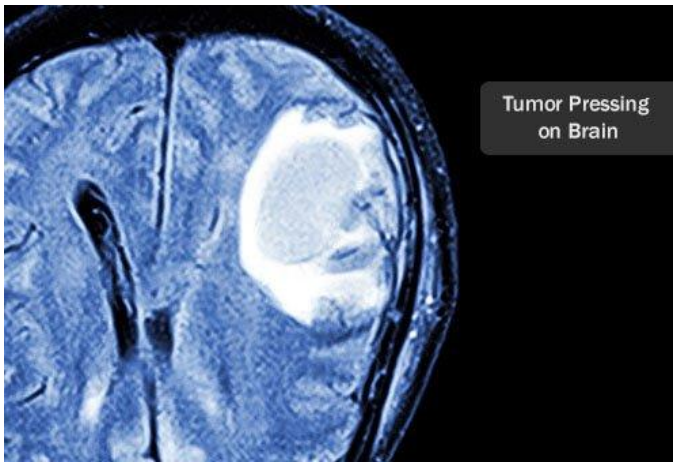
What Is Brain Cancer?

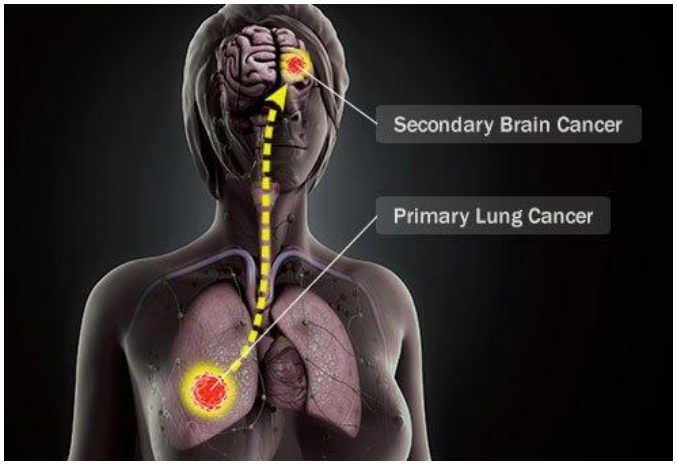
Brain cancer is a malignant growth of abnormal brain cells in the brain. A grouping of abnormal cells is called a tumor. Some tumors are benign and some are malignant. There are several different types of tumors that occur in the brain and spinal cord. Different cells in the brain and spinal cord give rise to various kinds of tumors. Spinal cord tumors and brain tumors may grow quickly or slowly. Even benign tumors may cause symptoms. The brain is the central organ that governs other organs and systems in the body, so all brain tumors need to be taken seriously.

Brain Tumor Dangers



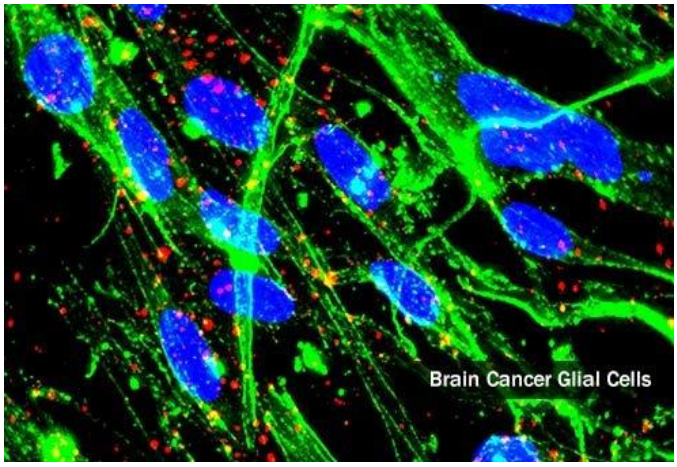
The skull is a hard framework of bone. Tumors in the brain are dangerous because they press on areas of the brain as they grow. The skull is not able to expand to accommodate the presence of a tumor. When the tumor grows, it presses on the brain. Depending on which area of the brain is affected, this may cause problems with thinking, acting, seeing, and feeling. Factors that determine how dangerous a brain tumor is include the location, whether or not it can be surgically removed, and how quickly it grows, and whether or not it has the ability to spread.

What Is Secondary Brain Cancer?



Approximately 200,000 to 300,000 people per year in the U.S. suffer from tumors that start elsewhere in the body and then spread, or metastasize, to the brain. Approximately 50% of cancers found in the brain begin as lung cancer that later spreads to other organs including the brain. Other cancers that may spread to the brain include those of the colon, breast, kidney, and melanoma, a potentially deadly type of skin cancer. At least 80% of tumors in the brain occur as multiple growths in the brain. Another 10% to 20% of tumors that have metastasized to the brain are single tumors.

Main Primary Brain Tumors



Primary brain tumors begin in the brain cells. Meningiomas are the primary brain tumors that are the most common. More than 35% of primary brain tumors are meningiomas.? These tumors come from tissue that covers the brain and spinal cord. The next most common type of tumor in the brain is a glioma. Glioma occur in the gluey, supportive tissue of the brain. Nearly 25% of primary brain tumors are gliomas. Glioblastomas are the next most common type of primary brain tumor. They are a type of glioma and they comprise almost 15% of all primary brain tumors. They comprise more than 55% of all gliomas. Senator John McCain was diagnosed with a primary glioblastoma.

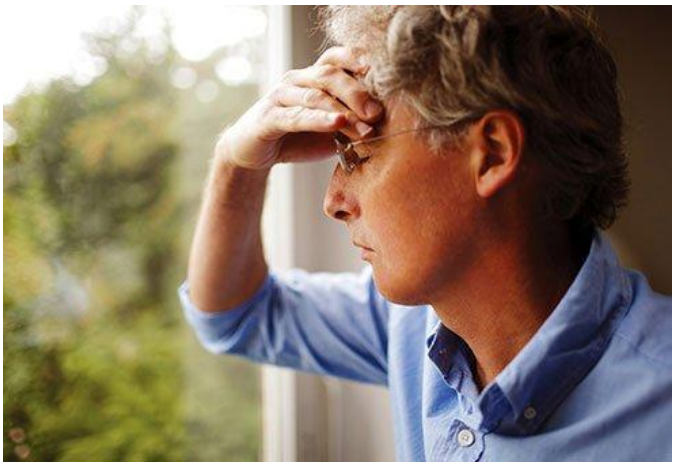
Other Types of Primary Brain Tumors

Meningiomas, gliomas, and glioblastomas are the main kinds of primary brain tumors but there are others. They arise from different areas in the brain. Adenomas are tumors that occur in the pituitary gland. Chordomas are primary brain tumors that occur in the spine and skull. Sarcomas are primary brain tumors that arise from the dura (a meninx, a tissue layer that lines the spine and skull), cartilage, or bones. Medulloblastomas are primary brain tumors that arise from the cerebellum, which is the part of the brain in the back of the skull.

What Are the Different Grades of Brain Tumors?

Brain tumor grade describes how aggressive a tumor is and how likely it is to spread. Brain tumors may be given a grade of 1 through 4. The lower the grade of a tumor, the better the expected prognosis. Grade 1 brain tumors are considered low grade. They grow slowly, are the least malignant (noncancerous) cells, and are unlikely to spread. Surgically removing these tumors may be curative. Grade 2 tumors have slightly abnormal cells, but they do not contain dead cells or actively dividing cells. Grade 2 tumors are not generally cancerous. Grade 3 tumors are cancerous and contain actively dividing abnormal brain cells. Grade 4 tumors are considered high grade and they are aggressive and cancerous.

Symptoms of a Brain Tumor



Brain tumor symptoms differ depending on the type of growth that the patient has and where it is located in the brain. Symptoms may include unusual behavior, confusion, sleep difficulties, seizures, and balance problems. People with brain tumors may suffer from vision changes, nausea, vomiting, hearing loss, twitching, and memory problems. Some people may even get seizures and lose consciousness. Other symptoms may include muscle weakness, numbness, personality changes, and paralysis. Some people with brain tumors develop headaches that are often worse in the morning.

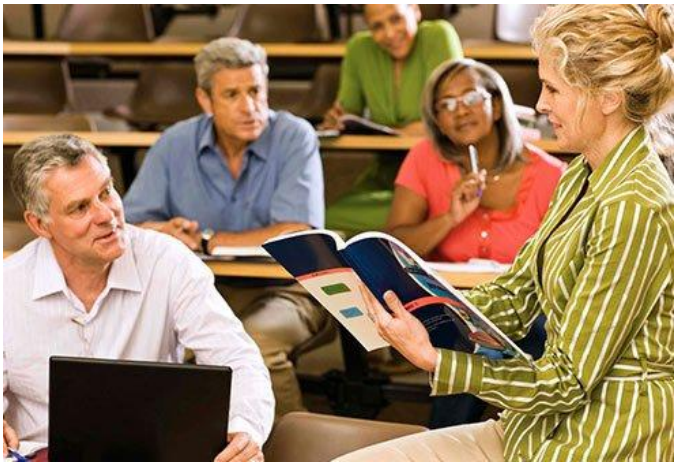
The main parts of the brain are the brain stem, cerebrum, and cerebellum. If a tumor is in the cerebrum, symptoms like personality changes, seizures, weakness, and paralysis may occur. An astrocytoma is a brain cancer that arises from the glial cells in the cerebrum. A tumor in the cerebellum may lead to difficulties with movement. Children and young adults tend to get low-grade astrocytomas while high-grade astrocytomas are more likely to occur in adults. Brain tumor symptoms may include double vision, weakness, and trouble swallowing when the growth is in the brain stem. See your doctor right away if you develop symptoms that may indicate that you have a brain tumor like numbness, loss of balance, confusion, and other troubling symptoms.

Radiation and Tumors

There are several factors that are risk factors for developing primary brain tumors. One known risk factor for brain cancer is exposure to ionizing radiation. People who have been treated with radiation for other medical conditions, like leukemia, are at increased risk of developing a primary brain tumor. Ionizing radiation is a risk factor for cancer because it can cause breaks in genetic material (DNA), and this may lead to mutations that cause cells to change and grow out of control. Abnormal cells are one feature of a malignant brain tumor.

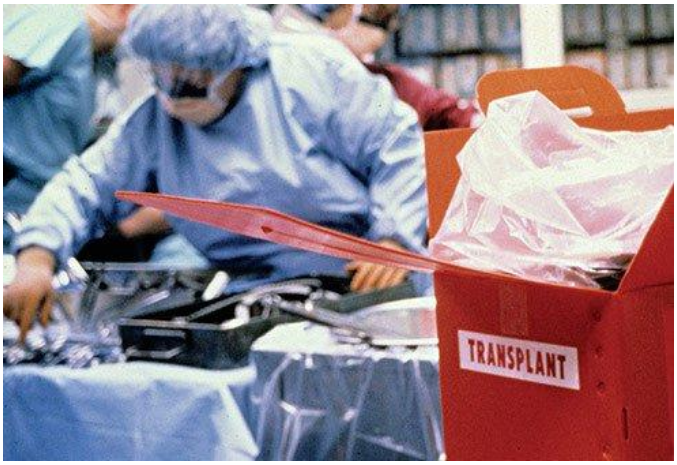
Age Is a Risk Factor

Anyone can develop a brain tumor at any age, but older adults and children are most likely to get brain tumors. Tumors in the brain are the leading cause of death in those that are 0 to 14 years of age. Tumors of the brain and central nervous system (CNS) are the third most common cancer in those ages 15 to 39. They are also the third most common cause of death from cancers in this age group. The median age at the time of diagnosis for people who have primary brain tumors is 59 years old. Adult brain tumors tend to be different from those that occur in children.



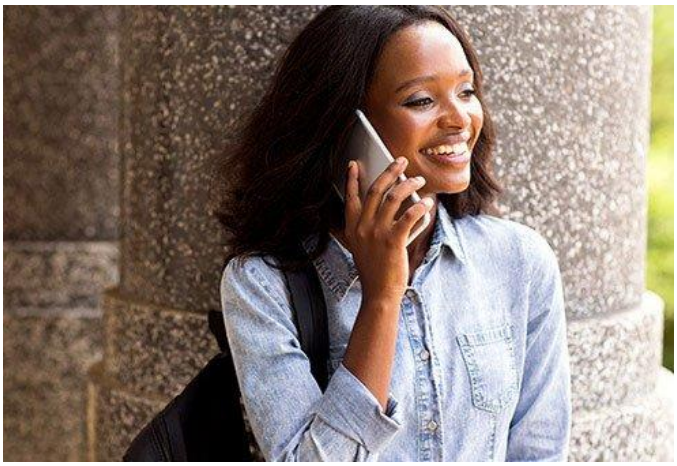
Medical Condition Risk Factors

A minority of brain tumors (approximately 5%) occur due to genetic hereditary conditions or certain medical conditions. These disorders include von Hippel-Lindau disease, neurofibromatosis, tuberous sclerosis, Turcot syndrome, Li-Fraumeni syndrome, and nevoid basal cell carcinoma syndrome. Sometimes multiple people in a family are afflicted with brain tumors due to genetic conditions that run in families. Medical conditions that cause a weakened immune system, like AIDS, also increase the risk of a brain tumor.



Can Cell Phones Cause Brain Cancer?

No conclusive studies have shown a link between cell phones and brain tumors. Long-term studies seek to study the issue more thoroughly. If you are worried about the radiation emitted by cell phones, keep the phone away from your head while talking. Do not carry your cell phone in your pocket. Use a hands-free device or earbuds to further minimize radiation exposure from a cell phone. Limit the length of your phone calls and avoid surfing the Web on your phone for long periods of time.



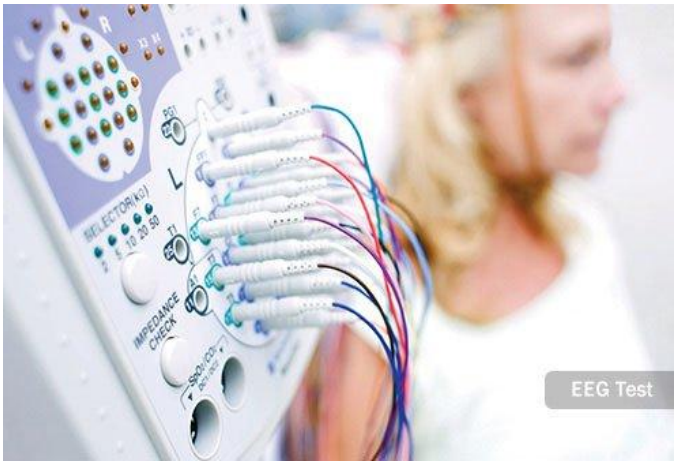
How Is Brain Cancer Diagnosed?

Routine screening tests for brain cancer are not performed. Cancer of the brain is usually diagnosed when a patient begins to experience symptoms and then the doctor runs diagnostic tests like a CT or MRI of the brain (see following slide). Once a brain cancer is diagnosed, the doctor can determine a course of treatment. This may include chemotherapy, radiation, surgery, or a combination of approaches. The most appropriate treatment for cancer of the brain depends on the type, location, and size of the tumor as well as the age and overall health of the patient.

What Tests Detect Brain Cancer?

Imaging tests such as magnetic resonance imaging (MRI), a CT scan, a positron emission tomography (PET) scan, and cerebral arteriogram may be used to detect a brain tumor and gather information about its size and location. The doctor may order a neurological, vision, and hearing tests. The doctor may want to take a biopsy of the tumor. The sample may be subjected to molecular testing. A lumbar puncture, spinal tap, neurocognitive assessment, electroencephalography (EEG), and myelogram may also be ordered. A doctor may examine the cerebrospinal fluid of a patient suspected of having brain cancer.

Watchful Waiting May Be Appropriate



If a patient's brain tumor is slow growing and is not causing any problems, it may not require immediate treatment. In these cases, watchful waiting may be appropriate. This involves monitoring the tumor with testing and tracking the patient's symptoms. If the tumor increases in size and/or starts to cause new symptoms, further treatment may be necessary.

Brain Cancer Surgery

Some tumors may be partially or completely removed surgically. If a surgeon is able to access a tumor, surgery is often the first step in the treatment of a brain tumor. If a tumor is relatively small, it may be completely resected (cut out). If the tumor is close to delicate brain tissue, it may not be possible to remove it completely. In these cases, it may be possible to remove part of the tumor to help relieve symptoms. Cutting out as many cancer cells as possible may help relieve symptoms. Some people experience nausea and vomiting from anesthesia used during surgery.

Chemotherapy

One treatment for brain cancer is chemotherapy. These are powerful drugs that kill or damage cancer cells. Chemotherapy may be administered as pills, shots, or via intravenous (IV) drip. Sometimes a patient receives a catheter or a port where the IV medication is administered usually after surgical removal of the tumor. These drugs usually work by affecting the cells ability to grow and divide. One or more chemotherapy drugs may be used at the same time. The medications are administered in a series of cycles. Some types of chemotherapy are administered as a wafer directly into the brain. This wafer administers medication slowly over a period of time, delivering the dose directly to the tumor. Nausea and vomiting are potential side effects of chemotherapy.

Radiation Treatment

Radiation therapy may be used in conjunction with surgery and chemotherapy in the treatment of brain cancer. High energy beams from X-rays are directed toward the tumor. Newer types of radiation therapy use a more highly concentrated beam. This directs the maximum dose of radiation directly to the tumor while sparing surrounding healthy tissue. People typically undergo radiation therapy after surgery according to a treatment regimen of a certain amount of sessions over a series of time. Sometimes implants are placed in the brain to administer internal radiation therapy. This is called brachytherapy. Radiation therapy to the brain may produce nausea and vomiting.

Targeted Therapy

Cancer cells do not behave the same as normal cells. Targeted therapy is a mode of treatment that exploits the unique characteristics of cancer cells to attack them. Targeted therapies are medications that inhibit activities cancer cells rely on to survive. Targeted therapy seeks to minimize side effects because it only goes after the cancer cells. One type of targeted therapy inhibits a tumor from developing new blood vessels that it needs to grow.

What Happens After Treatment?

After you have undergone treatment for brain cancer or a brain tumor, the doctor may monitor your progress with regular tests to ensure the cancer has not recurred. Surgery, chemotherapy, radiation, and other treatments likely impair the ability of the brain to function. You may need speech therapy to improve your ability to speak and swallow. Physical therapy can help you develop strength and full range of movement. Occupational therapy can help you if you have difficulty doing everyday activities and tasks at work.

The National Cancer Institute conducts clinical trials for people with brain tumors and other cancer types. Clinical trials offer patients the ability to be treated with new and experimental cancer treatments when other approaches have not worked. Ask your doctor about clinical trials if you believe you or a loved one may benefit from one.

Sources:

This tool does not provide medical advice.

See additional information:

Source slideshow on OnHealth

https://www.medicinenet.com/brain_cancer_symptoms_diagnosis_treatment/article.htm