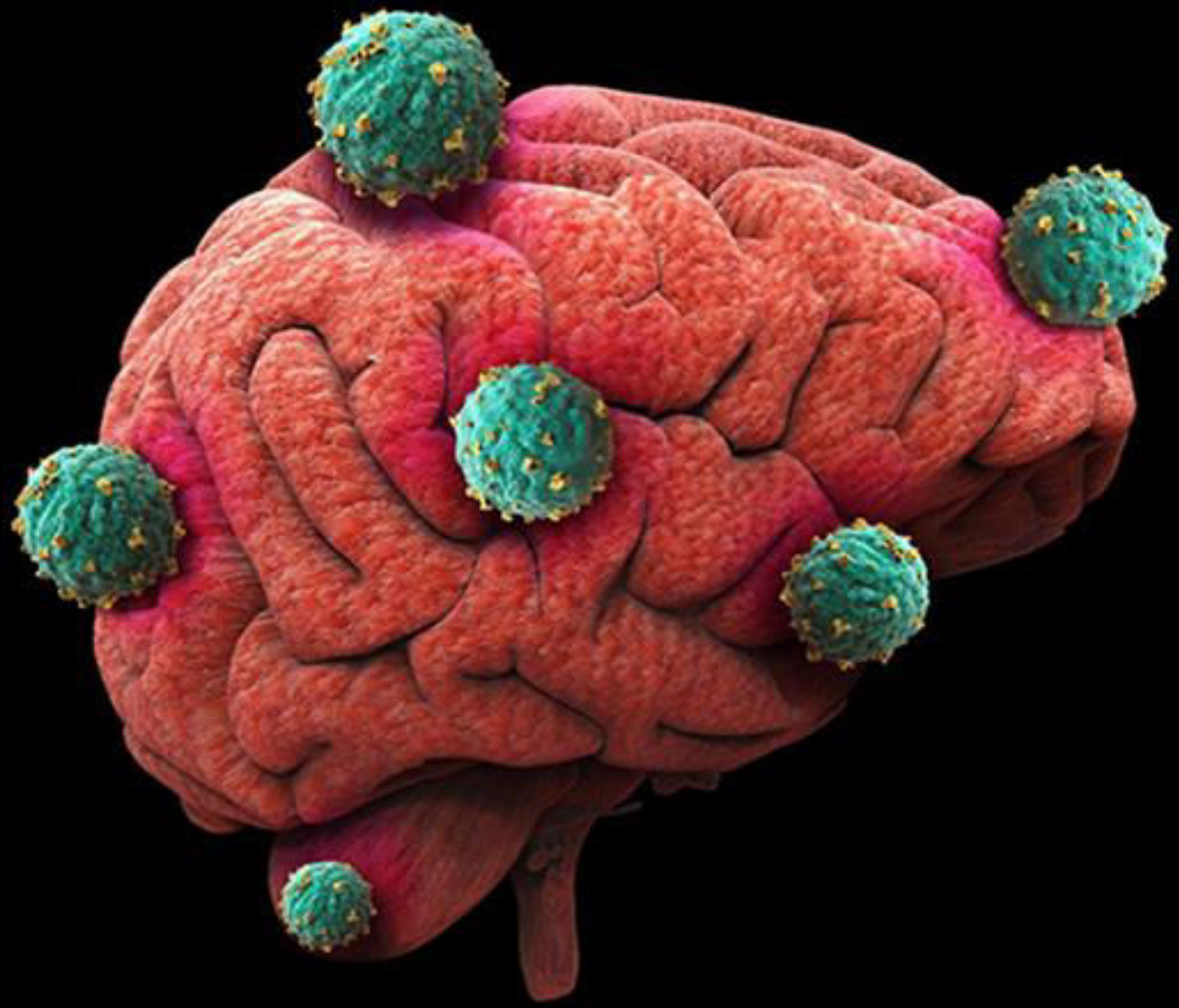
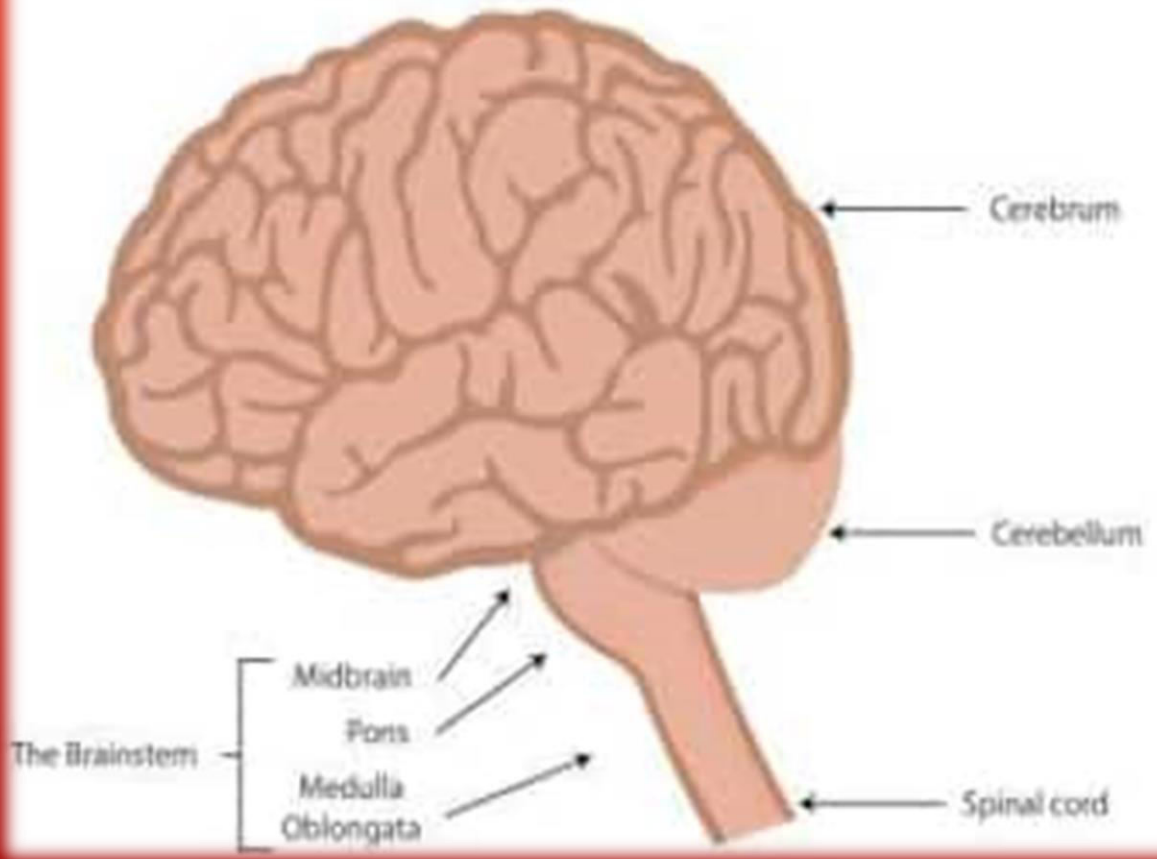
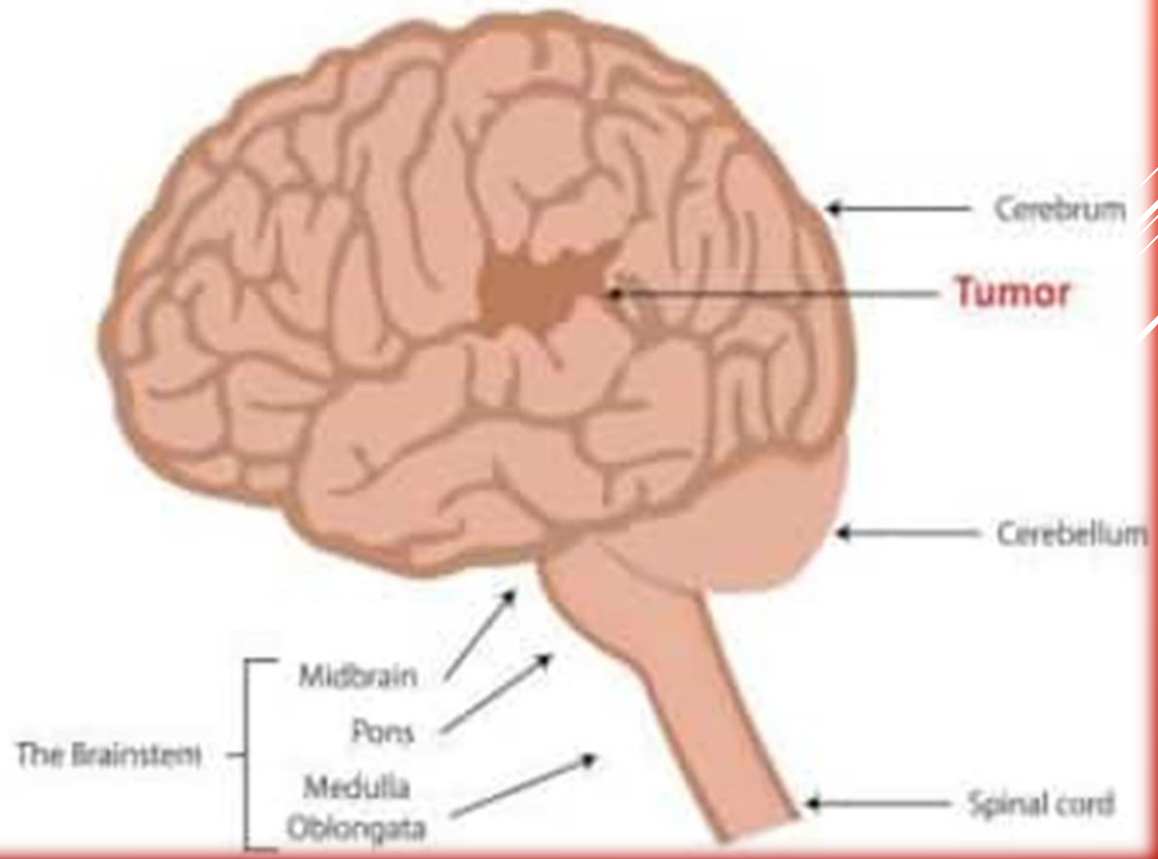


Brain Tumor

Healthy Brain



Brain with a Tumor



BRAIN TUMOR

- A brain tumor is an abnormal growth or mass of cells in or around the brain.
- It is also called a central nervous system tumor.
- Brain tumors can be malignant (cancerous) or benign (not cancerous). Some tumors grow quickly; others are slow-growing.
- Only about one-third of brain tumors are cancerous. But whether they are cancerous or not, brain tumors can impair brain function if they grow large enough to press on surrounding nerves, blood vessels and tissue.

- Tumors that develop in the brain are called primary tumors.
- Tumors that spread to the brain after forming in a different part of the body are called secondary tumors or metastatic tumors.
- There are more than 100 types of primary brain and spinal cord tumors.

- A brain tumor is a collection, or mass, of abnormal cells in brain.
- Skull, which encloses brain, is very rigid.
- Any growth inside such a restricted space can cause problems.

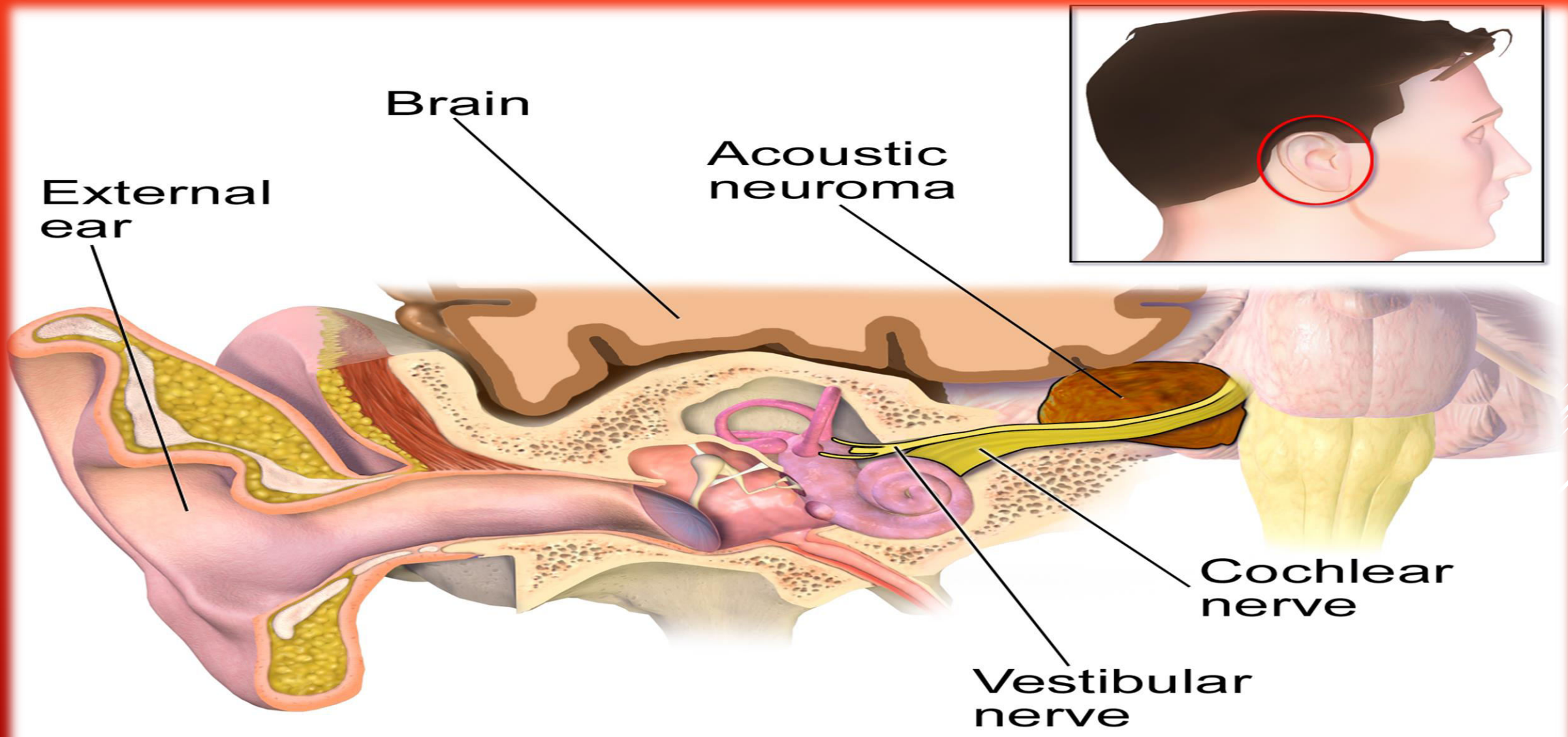
- Brain tumors can be cancerous (malignant) or noncancerous (benign).
- When benign or malignant tumors grow, they can cause the pressure inside skull to increase.
- This can cause brain damage, and it can be life-threatening.

- Brain tumors are categorized as primary or secondary:

- A primary brain tumor originates in the brain. Many primary brain tumors are benign.
- A secondary brain tumor, also known as a metastatic brain tumor, occurs when cancer cells spread to the brain from another organ, such as lung or breast.

TYPES OF BRAIN TUMORS

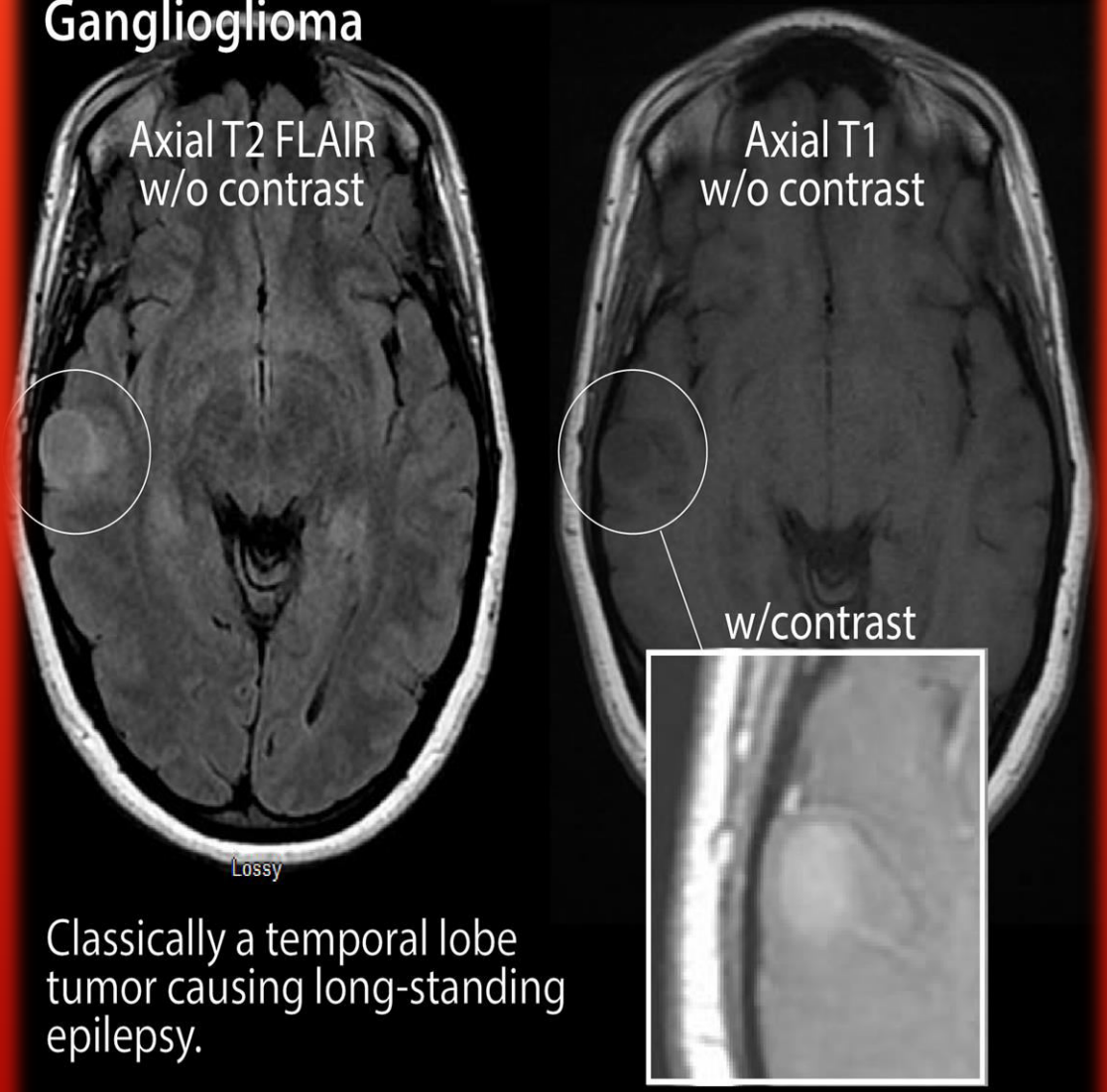
- Doctors classify brain and central nervous system tumors based on where they form and the kind of cells they involve.
- Brain tumors that are usually benign include:
- **Acoustic neuroma:** These tumors occur on the vestibular nerve (the nerve that leads from the inner ear to the brain). Acoustic neuromas are also called vestibular schwannomas.



Acoustic Neuroma

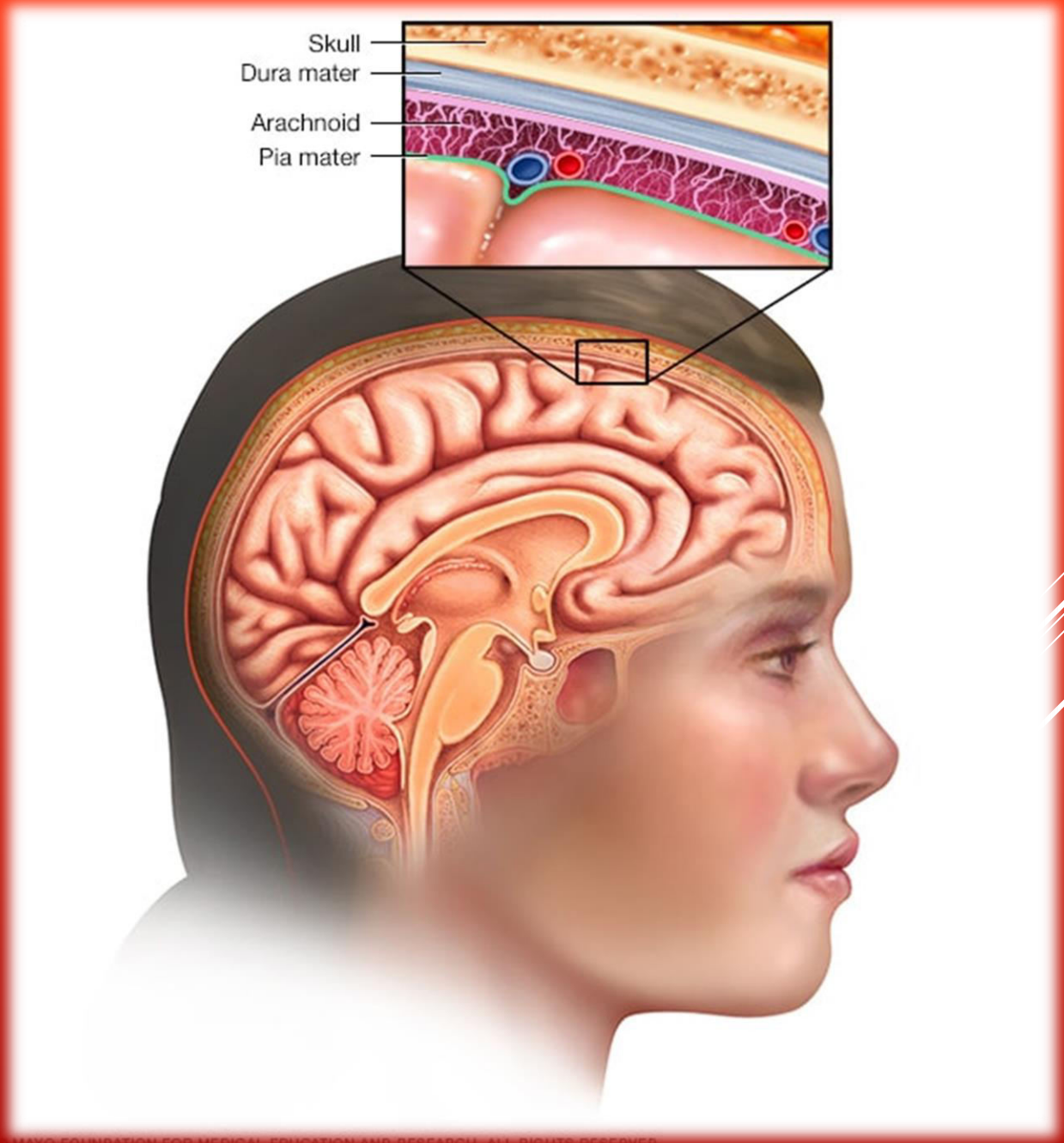
- **Gangliocytoma:** These central nervous system tumors form in neurons (nerve cells).
- **Meningioma:** These are the most common type of primary brain tumors. Meningiomas develop slowly. They form in the meninges, the layers of tissue that protect the brain and spinal cord. In rare cases, a meningioma can be malignant.

Ganglioglioma

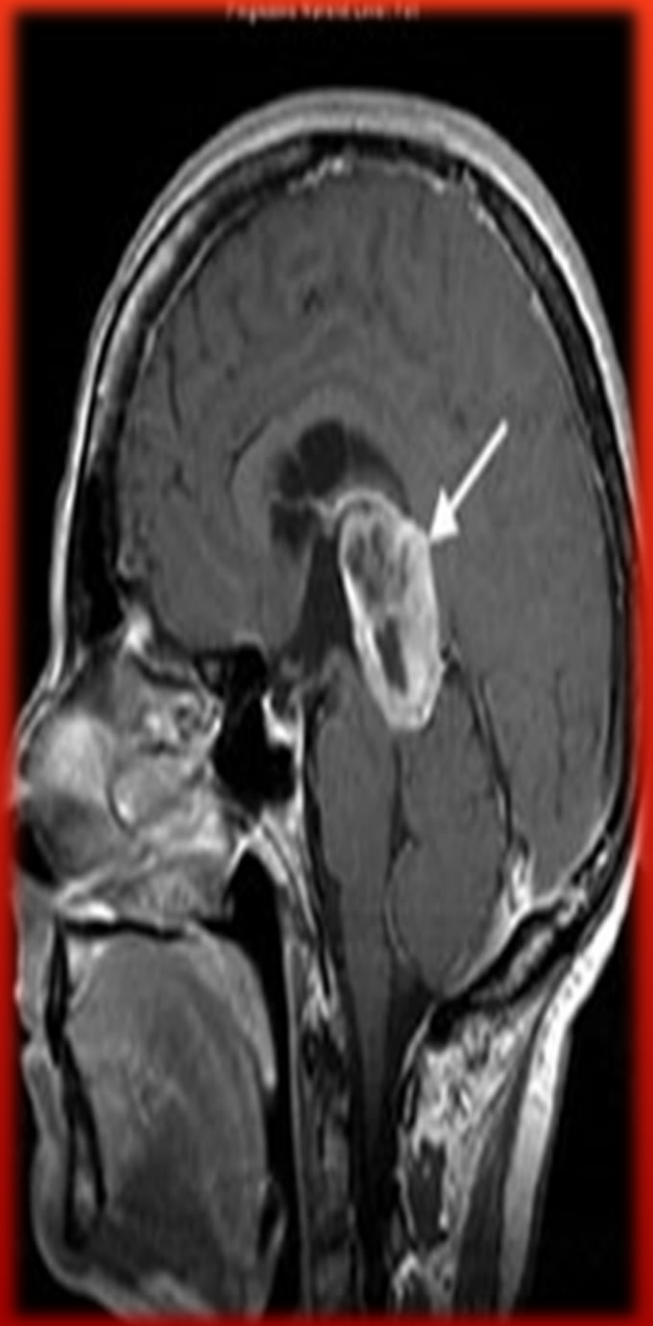


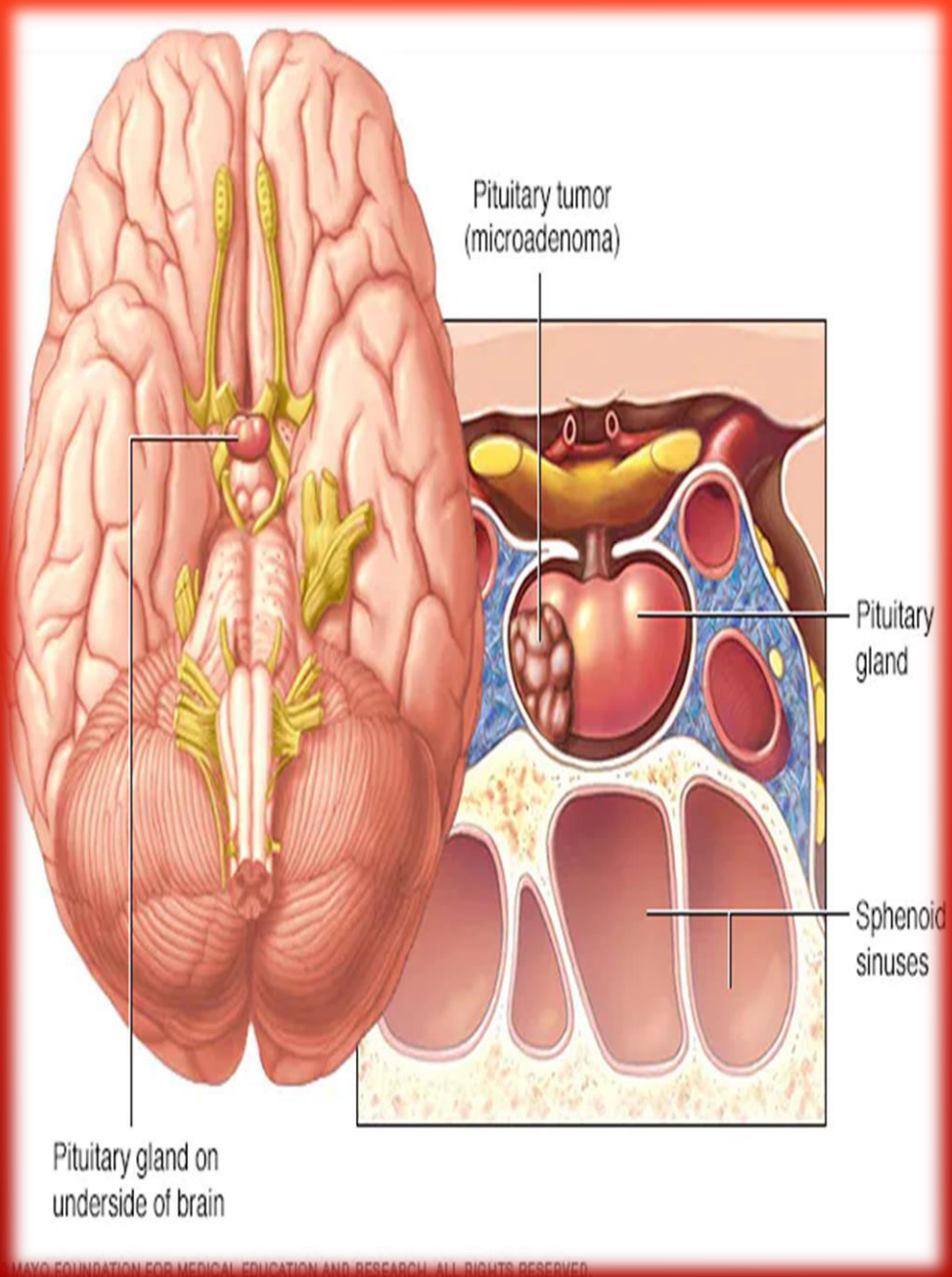
Classically a temporal lobe tumor causing long-standing epilepsy.

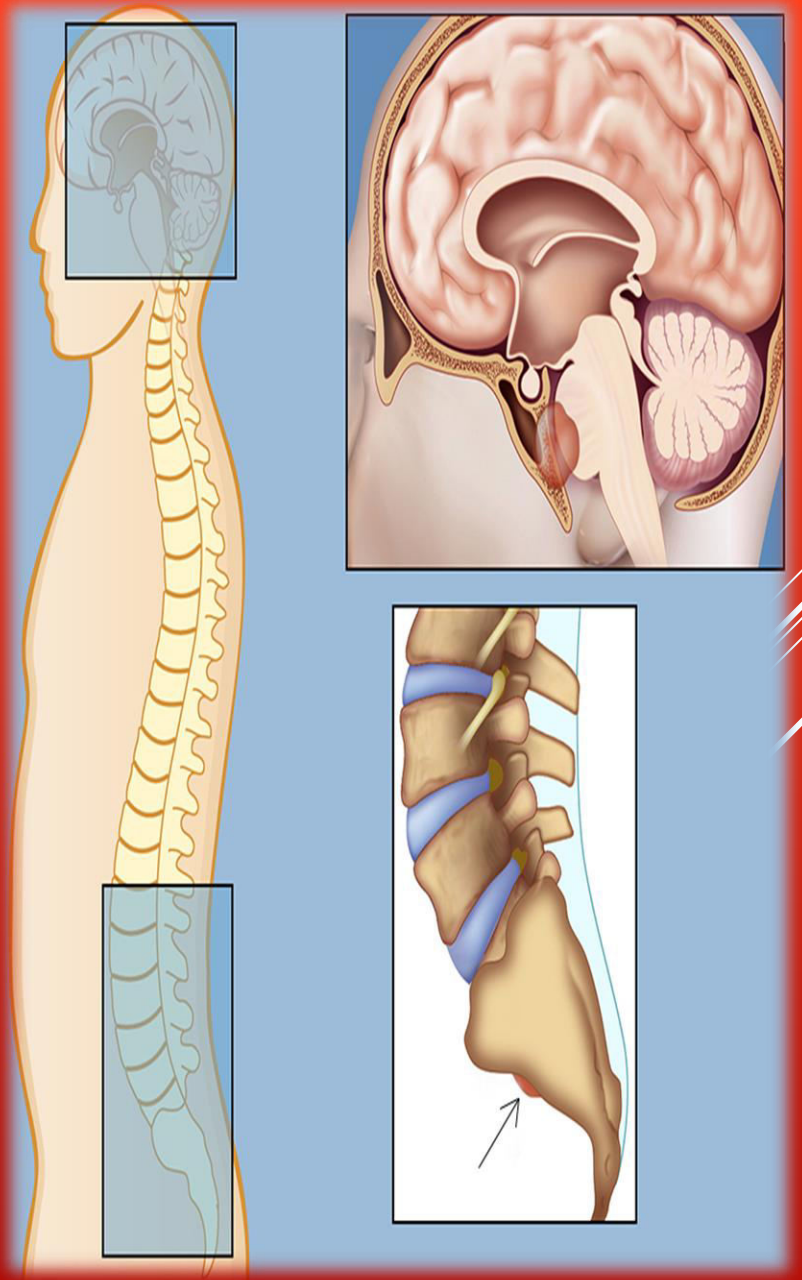
Most often will be cystic with a mural nodule but can also be a circumscribed/solid variably enhancing mass that expands the gyrus and causes thinning of the overlying bone.



- **Pineocytoma:** These slow-growing tumors form in the pineal gland, which is located deep in the brain and secretes the hormone melatonin.
- **Pituitary adenoma:** These tumors form in the pituitary gland, which is located at the base of the brain. The pituitary gland makes and controls hormones in the body. Pituitary adenomas are usually very small.
- **Chordoma:** These slow-growing tumors typically begin at the base of the skull and the bottom part of the spine. They are mostly benign (not cancerous).

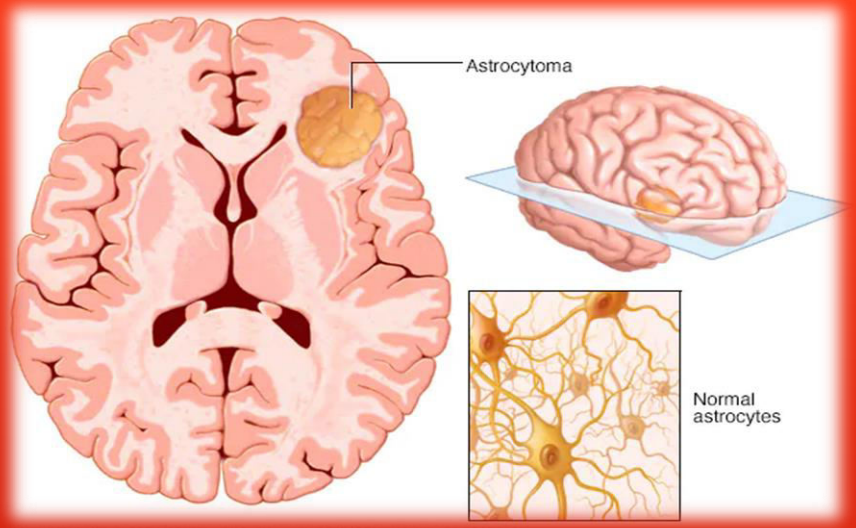


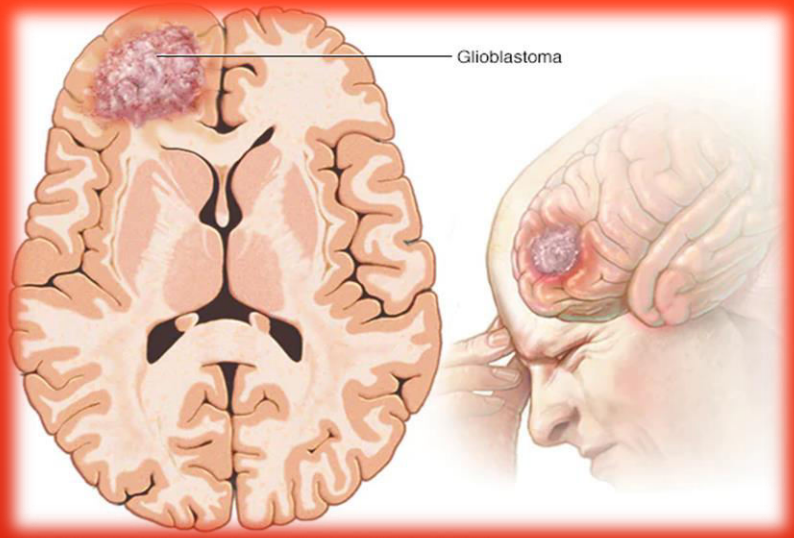


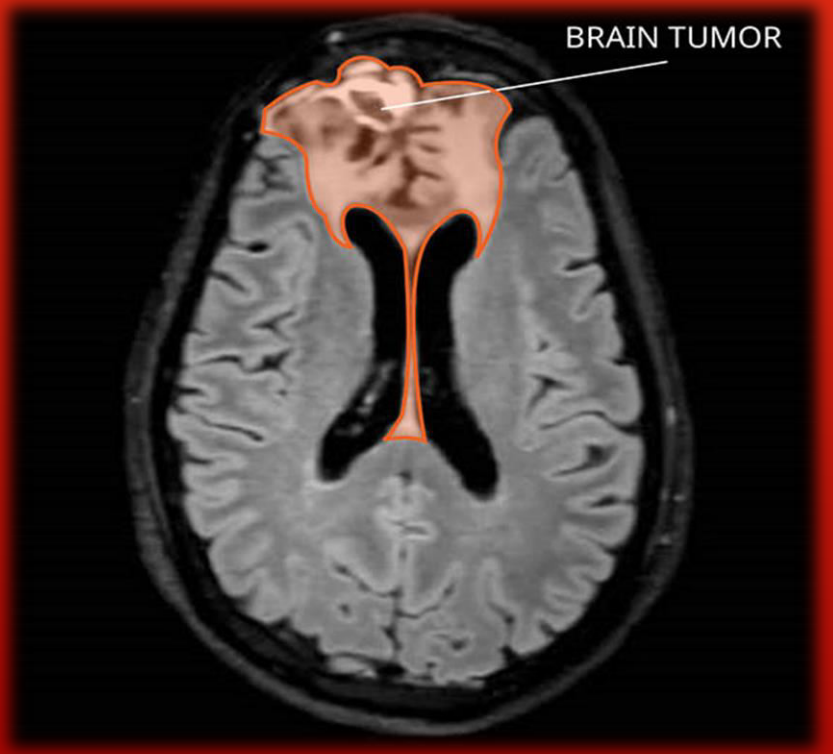


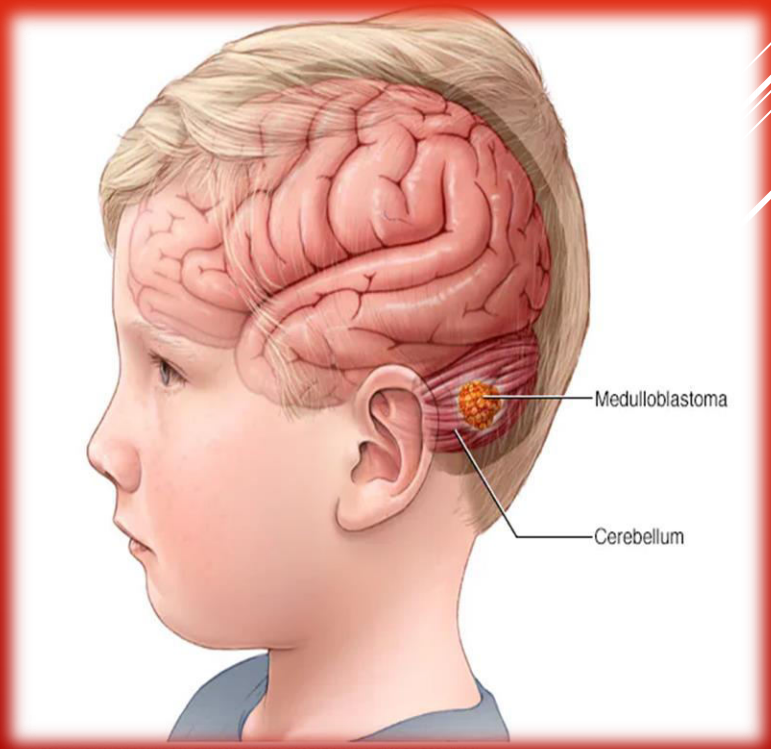
- Cancerous brain tumors include:
- **Glioma:** These tumors develop in glial cells, which surround and assist nerve cells. Two-thirds of cancerous primary brain tumors are gliomas. Types of gliomas include:
  - **Astrocytoma:** Astrocytomas form in glial cells called astrocytes.
  - **Glioblastoma:** Aggressive astrocytomas that grow quickly are glioblastomas.
  - **Oligodendroglioma:** These uncommon tumors begin in cells that create myelin (a layer of insulation around nerves in the brain).
- **Medulloblastoma:** Medulloblastomas are fast-growing tumors that form at the base of the skull. These are the most common cancerous brain tumors in children.


Glioma


Astrocytoma
Normal astrocytes

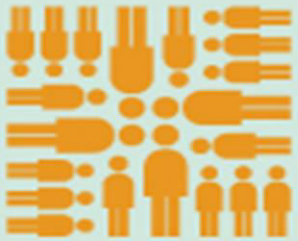

Glioblastoma


BRAIN TUMOR


Medulloblastoma
Cerebellum

Brain Tumor: Causes & Risk factors

Family History



5 - 10 % cancers are hereditary

Age & Race

Older people, Caucasians, African-Americans

Exposure to Chemicals or Radiation

Certain chemicals & ionising radiation

No history of chickenpox

History of chicken pox decreases the risk.

SYMPTOMS

- Some people with a brain or central nervous system tumor have no symptoms.
- In some cases, doctors discover a tumor during treatment for another issue.
- As a brain tumor grows and presses on surrounding nerves or blood vessels, it may cause symptoms.
- Signs and symptoms of a brain tumor vary depending on the tumor's location and type, size and what the affected part of the brain controls.
- They can include,

- Headaches that are ongoing or severe; or that occur in the morning or go away after vomiting.
- Behavior or personality changes.
- Confusion.
- Difficulty with balance or coordination.
- Trouble concentrating.
- Nausea and vomiting.
- Numbness, weakness or tingling in one part or side of the body or face.
- Problems with hearing, vision or speech.
- Seizures.
- Unusual sleepiness.
- Trouble with memory, thinking, speaking or understanding language.

9 Warning Signs of Brain Tumor

Obstructive communication

Hearing abnormality

Memory dysfunction or confusion

Changes in personality, behavior and thought

Balancing problem

Nausea, Vomiting and Drowsiness

Numbness on the hands and legs

Blurred vision or double vision

Seizure incident

DIAGNOSIS

- **Physical exam and medical history:** Your doctor will perform a general health exam, looking for signs of diseases or illnesses. Your doctor will also ask questions about past and current health conditions, surgeries and medical treatments and family history of disease.
- **Biopsy:** Through a small hole in the skull, a doctor uses a needle to take a sample of tissue from the tumor. A laboratory studies the sample to identify details from the tumor, including how fast it is growing and whether it is spreading.
- **Imaging tests:** CTs, MRIs, SPECTs and PET scans help doctors locate the tumor and determine if it is cancerous or benign. Your doctor may also look at other parts of the body, such as the lungs, colon or breasts, to identify where the tumor started.

- **Neurological exam:** During a neurological exam, your doctor will look for changes in your balance, coordination, mental status, hearing, vision and reflexes. These changes can point to the part of your brain that may be affected by a tumor.
- **Spinal tap:** A doctor uses a small needle to remove fluid from around the spine. A laboratory examines this fluid to look for cancer cells, which can indicate a malignant tumor somewhere in the central nervous system.

GRADES BRAIN CANCER

Brain cancer is categorized into four grades. They are,

- **Grade 1 brain cancer:** The tumor grows slowly and rarely spreads into nearby tissues. It may be possible to completely remove the tumor with surgery.
- **Grade 2 brain cancer:** The tumor grows slowly but may spread into nearby tissues or recur.
- **Grade 3 brain cancer:** The tumor grows quickly, is likely to spread into nearby tissues, and the tumor cells look very different from normal cells.
- **Grade 4 brain cancer:** The tumor grows and spreads very quickly, and the tumor cells do not look like normal cells.
- **Brain metastasis:** Secondary brain tumors, which have spread to the brain from another location in the body, are much more common than primary brain tumors. These tumors are also becoming increasingly more common as individuals do better with cancer treatment and live longer, giving the original cancer the opportunity to spread to the brain.

TREATMENT

- Brain tumor treatment depends on the tumor's location, size and type. Doctors often use a combination of therapies to treat a tumor.
- treatment options might include:
- **Surgery:** When possible, surgeons remove the tumor. They work very carefully, sometimes doing surgery when you are awake, to minimize damage to functional areas of the brain.
- **Radiation therapy:** High doses of X-rays destroy brain tumor cells or shrink the tumor. Some people have radiation before surgery to shrink a brain tumor so that the surgeon can remove less tissue.

- **Chemotherapy:** Anti-cancer drugs kill cancer cells in the brain and throughout the body. Patient might receive chemotherapy through an injection into a vein or take as a pill. In some cases, doctors use chemotherapy before surgery to make the tumor smaller. doctor may recommend chemotherapy after surgery to kill any cancer cells left behind or to prevent remaining tumor cells from growing.
- **Immunotherapy:** Immunotherapy, also called biological therapy, is a type of treatment that uses body's own immune system to fight cancer. The therapy mainly consists of stimulating the immune system to help it do its job more effectively.
- **Targeted therapy**: Drugs target specific features in cancer cells without harming healthy cells. doctor may recommend targeted therapy if patient have trouble tolerating the side effects of chemotherapy, such as fatigue and nausea.
- **Laser thermal ablation:** This treatment uses lasers to heat and destroy tumor cells.
- **Watchful waiting/active surveillance:** A doctor closely monitors the tumor for signs of growth with regular testing, but does not take any other action.

COMPLICATIONS

- Some people with a brain tumor — whether it is benign or malignant — experience complications as the tumor grows and presses on surrounding tissue. These complications include:
- Decreased alertness.
- Difficulty speaking.
- Faster or slower breathing and pulse rates.
- Numbness that interferes with feeling pressure, heat or cold on the body.
- Weakness or inability to move a leg or arm on one side of the body.
- Vision, hearing and smelling problems.

Nursing Diagnosis

1. Impaired tissue perfusion related to cerebral edema
2. Acute pain related to cerebral edema and increased ICP
3. Self care deficit related to neuromuscular dysfunction
4. Anxiety
5. Risk for altered cerebral tissue perfusion
6. Ineffective individual coping
7. Risk for altered thought process
8. Anticipatory grief


Thank
you