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HEAD INJURY

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HEAD INJURY

INTRODUCTION.

Traumatic head injuries are a major cause of death, and disability but it might be best to refer to the damage done as traumatic brain injury. The purpose of the head, including the skull and face, is to protect the brain against injury.When an injury occurs, loss of brain function can occur even without visible damage to the head.

DEFINITION

- Head injury refers any trauma to the scalp, skull or brain.
- A head injury is any trauma that leads to injury of the scalp, skull, or brain. The injuries can range from a minor bump on the skull to serious brain injury.
- Traumatic brain injury (TBI) is a non- degenerative, non-congenital insult to the brain from an external mechanical force, possibly leading to permanent or temporary impairment of cognitive, physical, and psychosocial functions, with an associated diminished or altered state of consciousness.

INCIDENCE

Traumatic brain injury (TBI) is the leading cause of death in North America for individuals between the ages of 1 and 45.

ETIOLOGY

- Trauma.
- Adults suffer head injuries most frequently due to falls, motor vehicle crashes, colliding or being struck by an object, and assaults.
- Falls and being struck are the most common causes of head injury in children

TYPES OF HEAD INJURY.

Head injury can be classified into different types based on the location and severity.

SCALP INJURY(MINOR HEAD INJURY).

SCALP LACERATIONS.

Scalp lacerations are an easily recognized type of external head trauma. Because the scalp contains many blood vessels with poor constrictive abilities, most of the scalp lacerations are associated with profuse bleeding.

SKULL FRACTURE.

Skull fracture frequently occurs with head traumas' skull fracture is a break in the continuity of the skull caused by forceful trauma. It may occur with or without damage to the brain. Skull fractures are classified as:

- linear,
- comminuted,
- depressed or basilar,
- simple, and compound.

DESCRIPTION	CAUSES.
❖ LINEAR. Break in the continuity of bone without alteration of relationship of parts.	Low –velocity injuries. Powerful blow
❖ DEPRESSED. Inward indentation of the skull.	Low to moderate impact.
❖ SIMPLE. Linear or depressed skull fracture without fragmentation .	Direct high –momentum impact.
❖ COMMINUTED Multiple linear fractures with fragmentation of bone into many	

DESCRIPTION	CAUSES.
❖ COMPOUND. Depressed skull fractures and scalp lacerations with communicating pathway to intracranial cavity. ❖ BASILAR SKULL FRACTURE. Basilar skull fractures are basically linear fractures that occur in the floor of the cranial vault.	Severe head injury

1.CONCUSSION.

Concussion(a sudden transient mechanical head injury with disruption of neural activity and a change in the LOC) IS considered a minor head injury. The patient may or may not lose total consciousness with this injury.

2.CONTUSSION.

A contusion is the bruising of the brain tissue within a focal area. It is usually associated with a closed head injury. It may contain the areas of hemorrhage,infarction,necrosis, and edema are frequently occurs at the fracture site.

3.LACERATIONS.

It involves actual tearing of the brain tissue and often occur in association with depressed and open fractures and penetrating injuries.

4.DIFFUSE AXONAL INJURY.

It involves widespread damage to axons in the cerebral hemispheres, corpus callosum,and brain stem. It can be seen in mild,moderate,or severe head trauma and results in axonal swelling and disconnection.

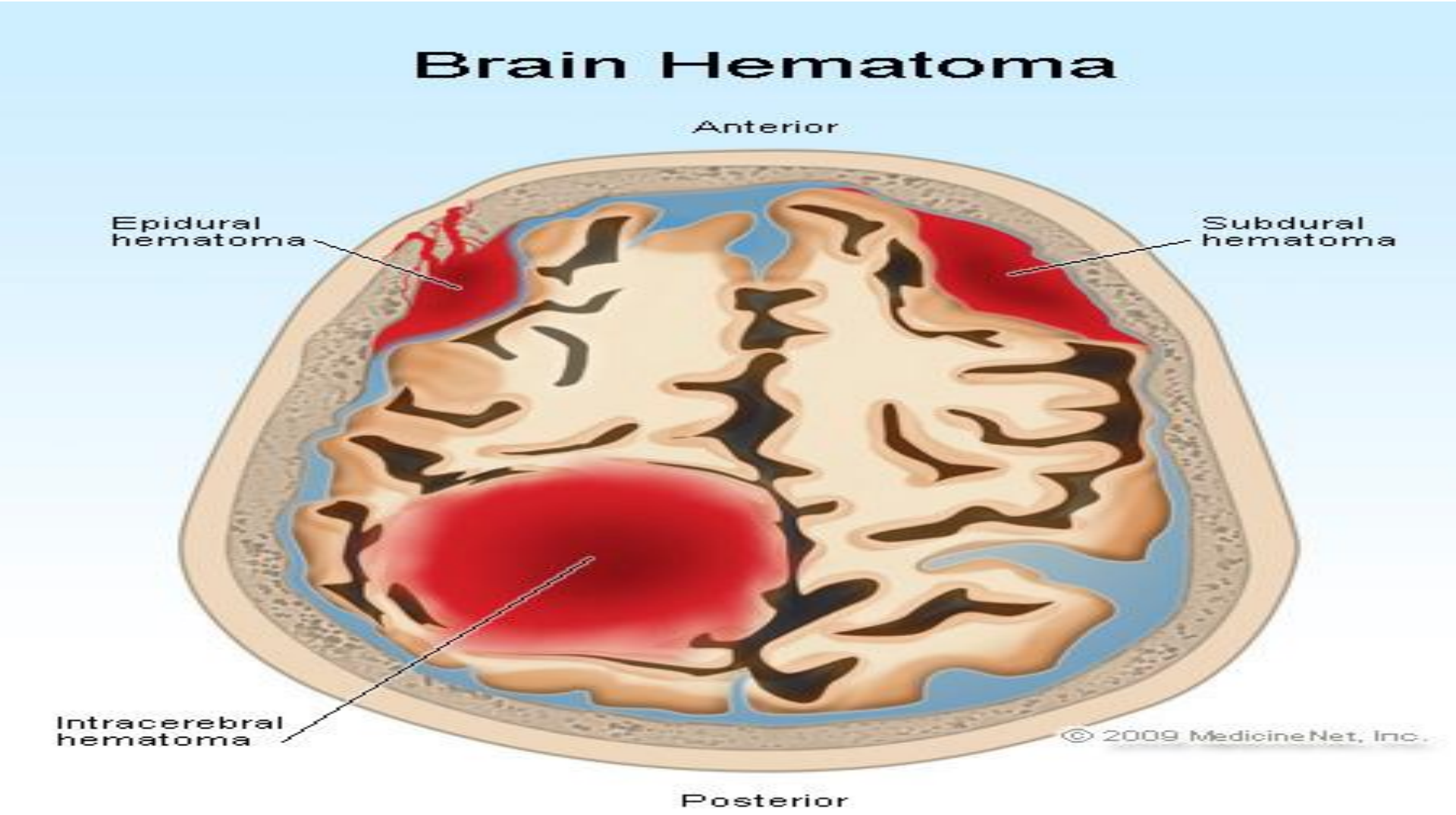
5.INTRACRANIAL BLEEDING

- Intracranial (intra=within + cranium=skull) describes any bleeding within the skull.

6.SUBDURAL HEMATOMA

When force is applied to the head, bridging veins that cross through the subdural space (sub=beneath +dura= one of the meninges that line the brain) can tear and bleed

Picture of an epidural, subdural, and intracerebral hematomas



7.EPIDURAL HEMATOMA

- If the head trauma is epidural (epi=outside +dura) the blood is trapped in a small area and cause a hematoma or blood clot to form.

8.SUBARACHNOID HEMORRHAGE

- In a subarachnoid hemorrhage, blood accumulates in the space beneath the inner arachnoids layer of the meninges.

Clinical features

- CSF rhinorrhea.
- Per orbital ecchymosis(raccon eyes),optic nerve injury.
- Battle's sign(oval shaped bruise behind ear in mastoid region),CSF otorrhea,
- middle meningeal artery disruption, epidural hematoma.
- Deafness, bulging of tympanic membrane caused by blood or CSF, facial paralysis, loss of taste.

- Memory loss
- Attention problems
- Emotional disturbances
- Difficulty with motor coordination
- Numbness
- Loss of ability to understand or express speech
- Dizziness
- Ringing in the ears

- **Thinking and remembering**
  - Not thinking clearly
  - Feeling slowed down
  - Not being able to concentrate
  - Not being able to remember new information
- **Physical**
  - Headache
  - Fuzzy or blurry vision

- **Emotional and mood**
  - Easily upset or angered
  - Sad
  - Nervous or anxious
  - More emotional
- **Sleep**
  - Sleeping more than usual
  - Sleeping less than usual
  - Having a hard time falling asleep

DIAGNOSIS

- **X-Ray**: Radiation view bone structure
- **CT Scan** (CAT scan): Different type of X-ray shows brain and soft tissue (15-30 min)
- **MRI** (magnetic resonance imaging): Large magnet and radio waves used
- **Angiogram**: views damaged blood vessels by injecting dye into an artery through a catheter, 1-3 hours
- **ICP Monitor**: measures intracranial pressure by inserting small tube into/on top of brain through small hole in skull

- **EEG** (electroencephalograph): measures electrical activity in brain by placing electrodes on head, painless and time varies.

MEDICATIONS

- MANNITOL (OSMITROL, RESECTISOL)
- PHENYTOIN (DILANTIN)
- MAGNESIUM SULFATE
- PENTOBARBITAL (NEMBUTAL)
- Nimodipine (Nimotop)
- LEVODOPA (DOPAR, LARODOPA)

MANAGEMENT OF BRAIN INJURIES.

SUPPORTIVE MEASURES.

- Ventilator support
- Seizure prevention.
- Fluid and electrolyte maintenance.
- Nutritional support.
- Pain and anxiety management.
- Maintaining body temperature.
- Maintaining skin integrity.

NURSING MANAGEMENT.

- Monitoring vital signs.
- Assessing the level of conscious.
- Following GCS scale.
- Maintaining the airway.
- Assessing the motor functions.
- Maintaining intake and out put chart.
- Providing adequate nutrition.
- Preventing injury.
- Maintaining body temperature.
- Maintaining skin integrity.

NURSING DIAGNOSIS.

- Ineffective airway clearance and impaired gas exchange related to brain injury.
- Ineffective cerebral tissue perfusion related to increased ICP and decreased CCP.
- Acute pain related to trauma and cerebral edema.
- Deficient fluid volume related to decreased LOC and hormonal dysfunction.
- Imbalanced nutrition less than body requirement ,related to metabolic changes ,fluid restriction, and inadequate intake.