CARE OF THE CHILD WITH NEUROLOGICAL PROBLEMS

(Hydrocephalus)

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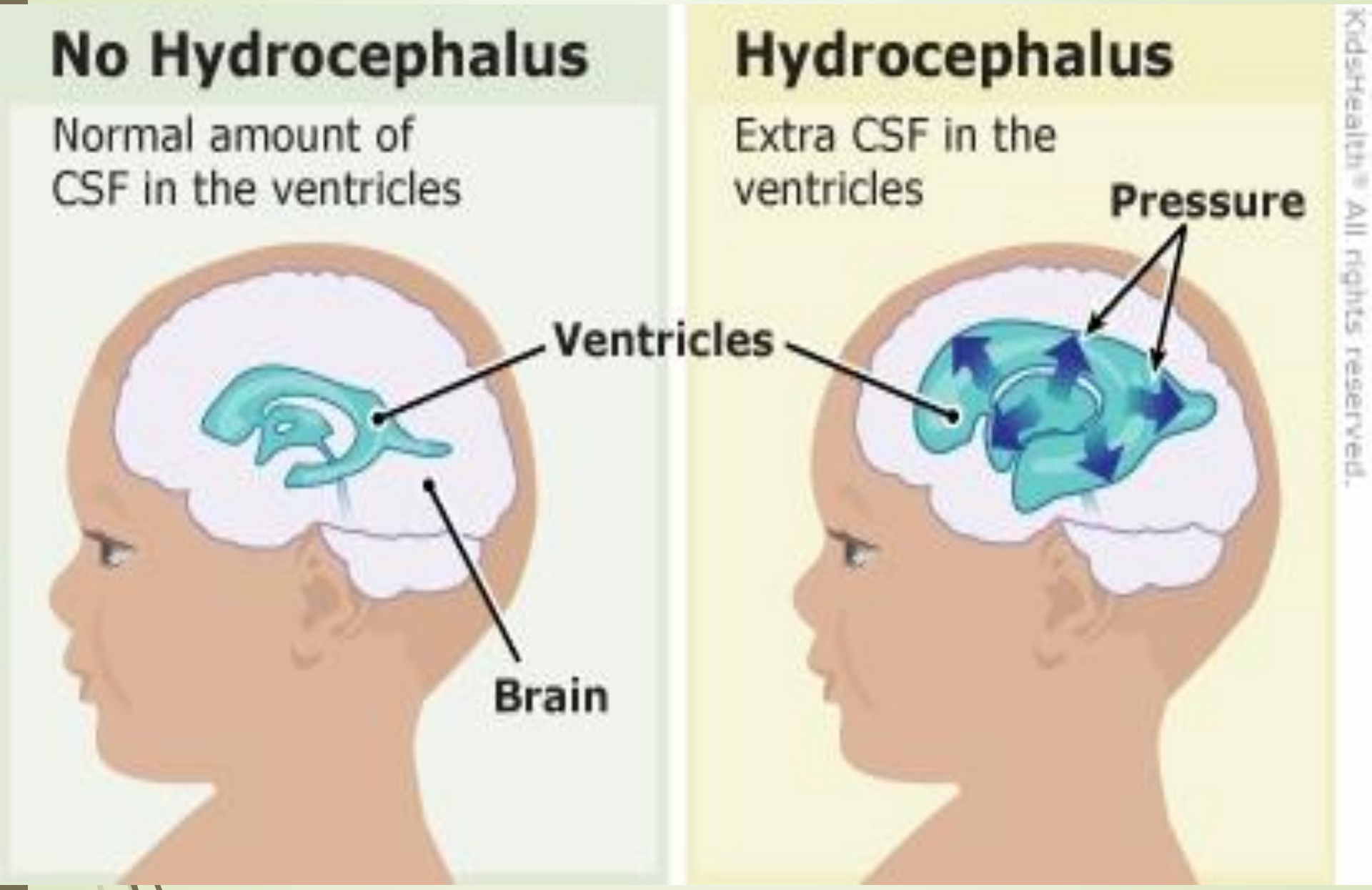
DEFINITION

- Hydrocephalus is a central nervous system disorder characterized by excessive accumulation of cerebrospinal fluid (CSF) in the ventricles of the brain.
- It is caused by an imbalance in the production and absorption of the CSF in the ventricular system

- (CSF)performs vital functions, including providing nourishment, waste removal, and protection to the brain.


No Hydrocephalus
Normal amount of CSF in the ventricles
Ventricles
Brain
Hydrocephalus
Extra CSF in the ventricles
Pressure
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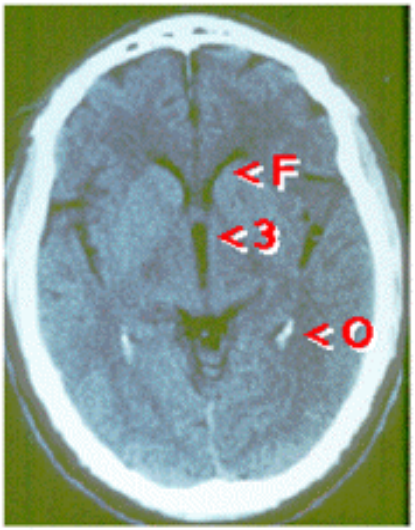
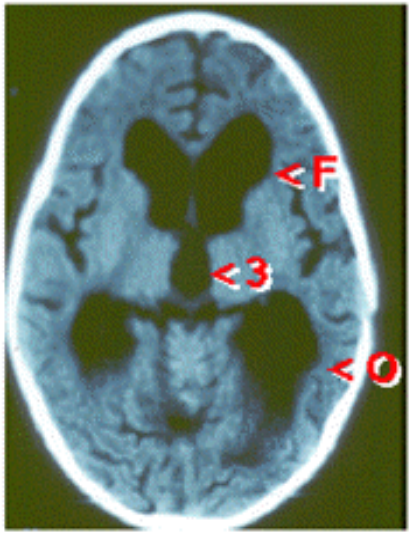
Causes

1. Congenital. As a result of a mal development or an intrauterine infection
2. Acquired. Can be caused by infection, neoplasm, or hemorrhage

normal CT



hydrocephalus



F= frontal horn of lateral ventricle
3 = third ventricle
O =occipital horn of lateral ventricle

Mechanism of SCF imbalance

Causes are variable but the result is either:

1. Impaired absorption of CSF

known as (Communicating hydrocephalus) or

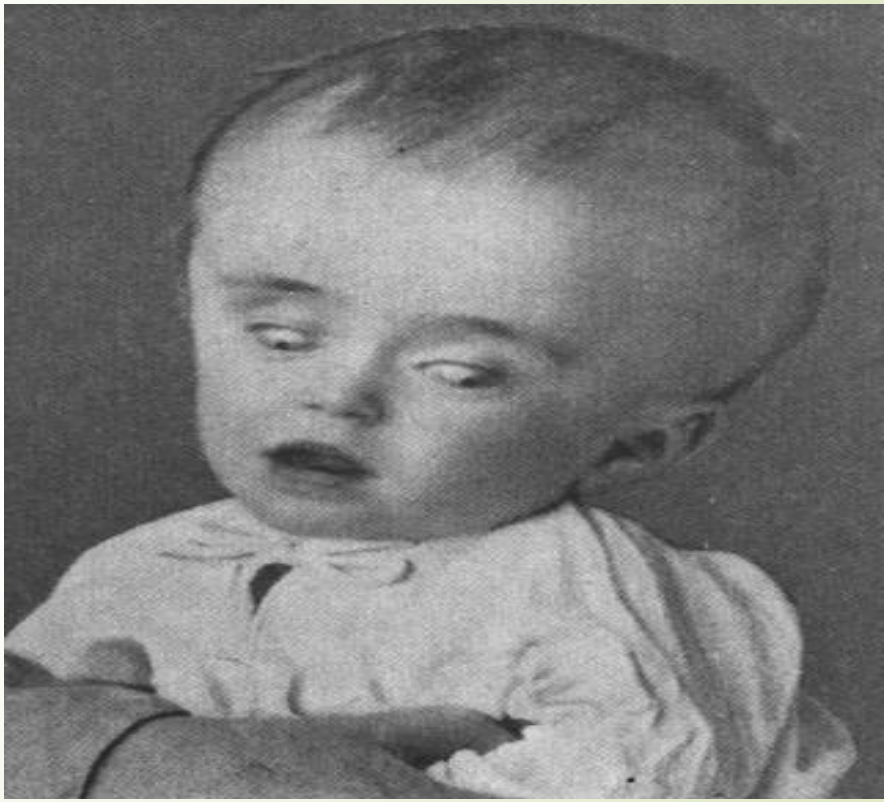
1. Obstruction to the flow of CSF through the ventricular system (Non communicating hydrocephalus

2. Rarely a tumor of the arachnoid plexus causes increase of CSF production

Clinical manifestations of hydrocephalus

Infancy, early:

- Abnormally rapid head growth
- Bulging fontanels
- Tense - Non pulsating fontanels
- Dilated scalp veins
- Separated sutures
- Thinning of the skull bones



Infancy, late:

1. Frontal enlargement or “bossing”
2. Depressed eyes
3. Setting sun sign eye balls
4. Pupils sluggish with unequal response to light

- May also display:
  - Change in the level of consciousness
  - Lower extremities spasticity
- Advanced cases may have:
  - Difficulty in sucking
  - brief high-pitched cry

Childhood manifestations:

- Headache on awakening
- Papillidema
- Irritability
- Lethargy
- Apathy
- Confused
- Often incontinence
- Head circumpherance one or more above grid lines of the measurement chart within 2-4 weeks
- Associated neurological signs that are progressive
- Signs of <u>increased intracranial pressure</u>

Investigations:

- CT scan and MRI the primary diagnostic tools

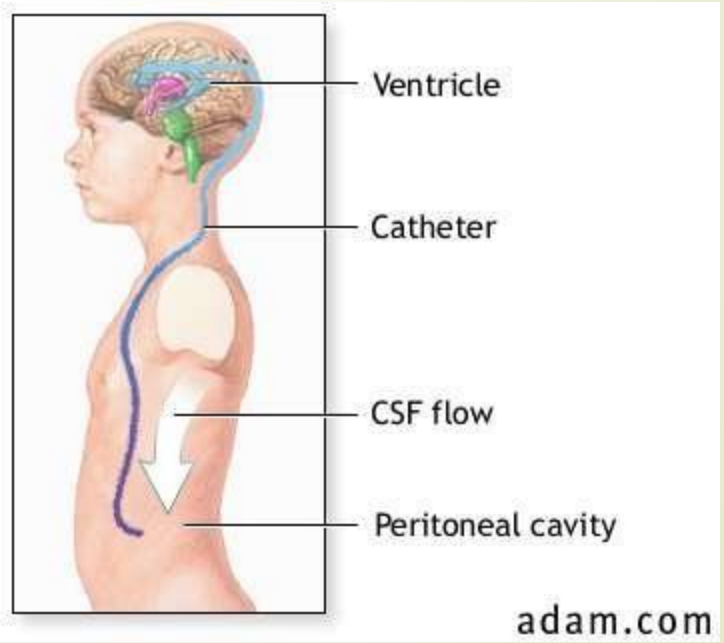
Treatment

1. Treatment is usually surgical
2. If it is caused by tumor the tumor is removed
3. A shunt procedure to drain the CSF from the ventricles to an extracranial compartment usually the peritoneum

Medical treatment:

Incase of increased production of CSF, medication is given to help decrease the production

- **Ventriculo-peritoneal-shunt**



Nursing considerations for V.P shunt:

Assessment:

- Head circumference
- Palpation of fontanels and suture lines gently for size, signs of bulging, tenseness, and separation.
- Behavior changes
- Altered vital signs and feeding behavior
- Signs of increased intra cranial pressure

Nursing diagnosis:

1. High risk for infection R/T presence of mechanical drainage system
2. High risk for impaired skin integrity R/T pressure area, paralysis, relaxed sphincter.
3. Altered family process R/T situational crises (child with a physical defect)

Implementation

- Maintain adequate nutrition, requires flexible feeding schedules; small frequent feeds are better tolerated.
- Prepare the child for diagnostic tests
- If surgery is anticipated I.V. lines should **not** be placed in the scalp veins of hydrocephalus
- Support of the head when the child is fed or moved to prevent extra strain on the child's neck muscles
- Measures to prevent pressure sores.

Post operative care

1. Child is placed on unoperated side to prevent pressure on the shunt valve and pressure areas
2. The position is maintained according to the surgeon's indications, the head may be elevated to decrease ICP to allow gravity flow through the shunt
3. Sedations are avoided to observe the level of consciousness (LOC)

- Observe for signs of increased ICP which indicate obstruction of the shunt (dilated pupils, neurological signs and increased B/P)
- Observe for signs of abdominal distension, because CSF may cause peritonitis or ileus
- Signs of infection ; fever, poor feeding, vomiting, decreased responsiveness, and seizures

- **Family support**
- Education about the problem
- Education about treatment and management
- Decrease their anxiety by answering their questions
- Encouraging their participation

Thank you