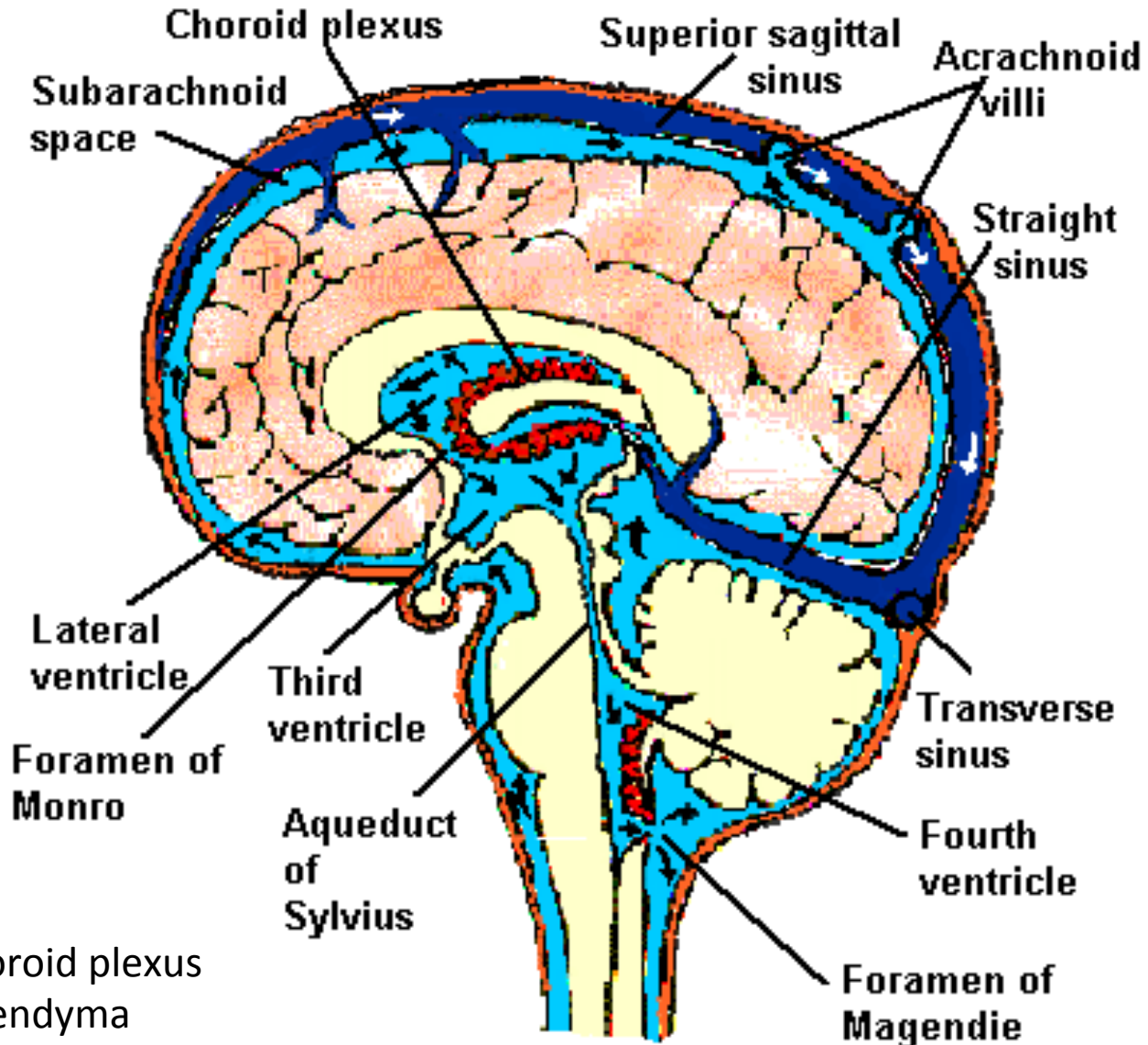


Hydrocephalus

Dr.Ibrahim Erkutlu

CSF formation



%70 choroid plexus
%30 ependyma

Definition

- imbalance in the production and/or absorption of CSF in the ventricular system
- “hydro” means water, and “cephalus” means head--“water on the brain”.
- dilation of the ventricles
- increased intracranial pressure
- Causes convulsion and mental disability
- occurs with a number of anomalies, such as NTD's

Etiologic Classification

- Congenital
 - Chiari malformation
 - Associated with spina bifida
- Acquired
 - space-occupying lesions
 - hemorrhages
 - tumors
 - intracranial infections (abcess)

Classification of Hydrocephalus

- **Communicating (non-obstructive)**
 - **Congenital-genetic**
 - **Some times Acquired**
 - hemorrhages, infections,, type II Chiari malformation, aqueduct atresia and stenosis, Dandy-Walker malformation
- **non-communicating (obstructive)—most common!!!**
 - CNS infections, meningitis, brain tumors, head trauma, intracranial hemorrhage
 - **Congenital**
 - **Acquired**

Pathophysiology of Hydrocephalus

- impaired absorption
 - communicating hydrocephalus
- obstruction to the flow
 - noncommunicating hydrocephalus

Communicating (non-obstructive)

- Subarachnoid/intraventricular hemorrhage,
- Meningitis
- Chiari malformation,
- Congenital absence of arachnoidal granulations (**Pacchioni's granulations**).
- prenatal maternal infections,
- meningeal malignancy
- tuberculosis
- **NPH**

Non-communicating (obstructive)

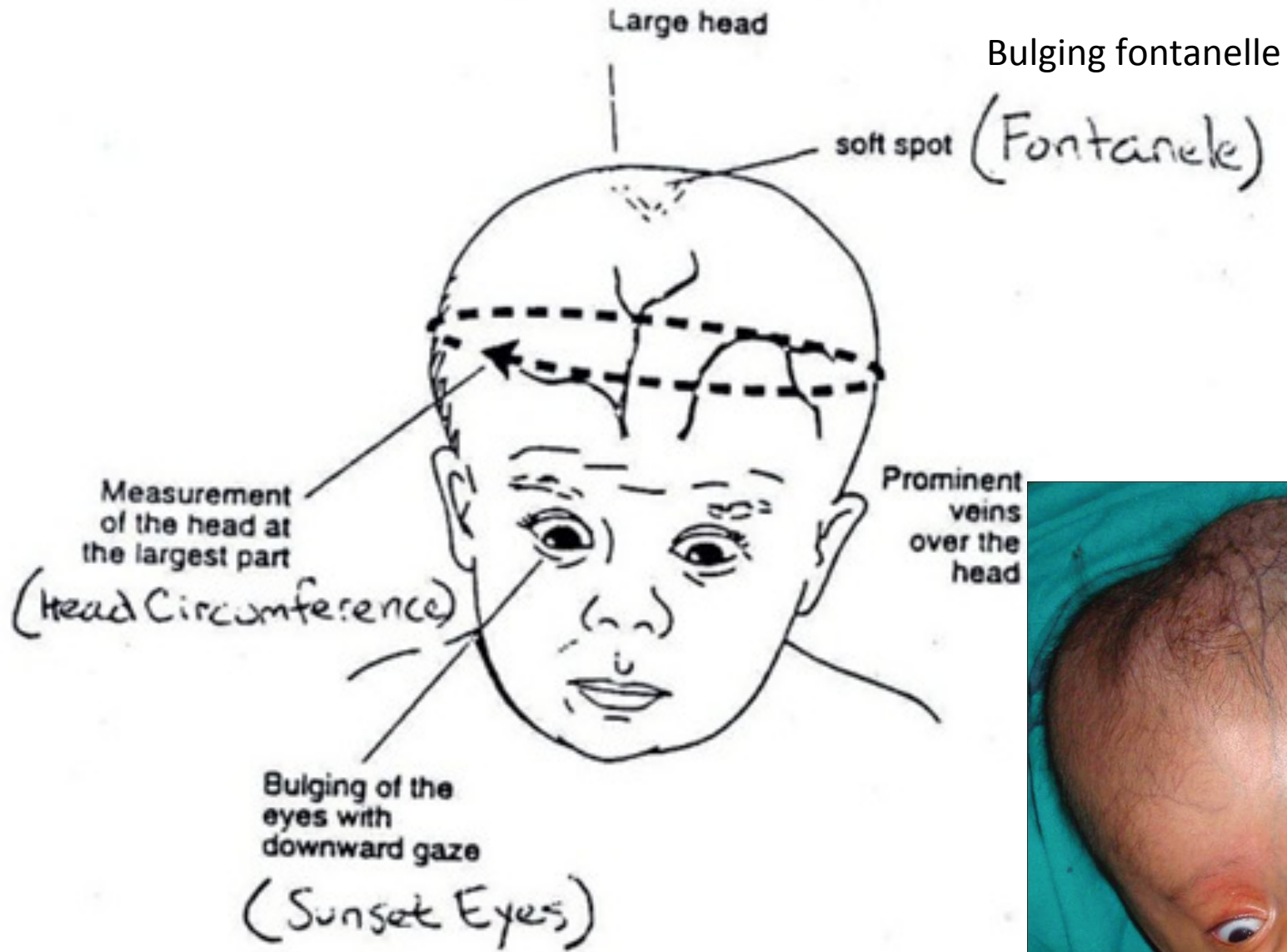
- **Foramen of Monro obstruction**
 - **MONOVENTRICULAR** hydrocephalus
- **aqueduct of Sylvius obstruction**
 - **BIVENTRICULAR** hydrocephalus
- **Fourth ventricle obstruction**
 - **TRIVENTRICULAR** hydrocephalus
- **foramina of Luschka and foramen of Magendie obstruction**
 - Dandy-Walker malformation
 - **TRI/TETRAVENTRICULAR** hydrocephalus
- **subarachnoid space obstruction**
 - inflammatory or hemorrhagic fibrosing meningitis
 - **TETRAVENTRICULAR** hydrocephalus

Other forms of HCP

- **Normal pressure hydrocephalus (NPH)**
 - intermittently elevated cerebrospinal fluid pressure
 - increased viscosity of the cerebrospinal fluid
 - In diagnosis dynamic compliance studies helpful
- ***Hydrocephalus ex vacuo***
 - Dementias
 - post-traumatic brain injuries
 - schizophrenia

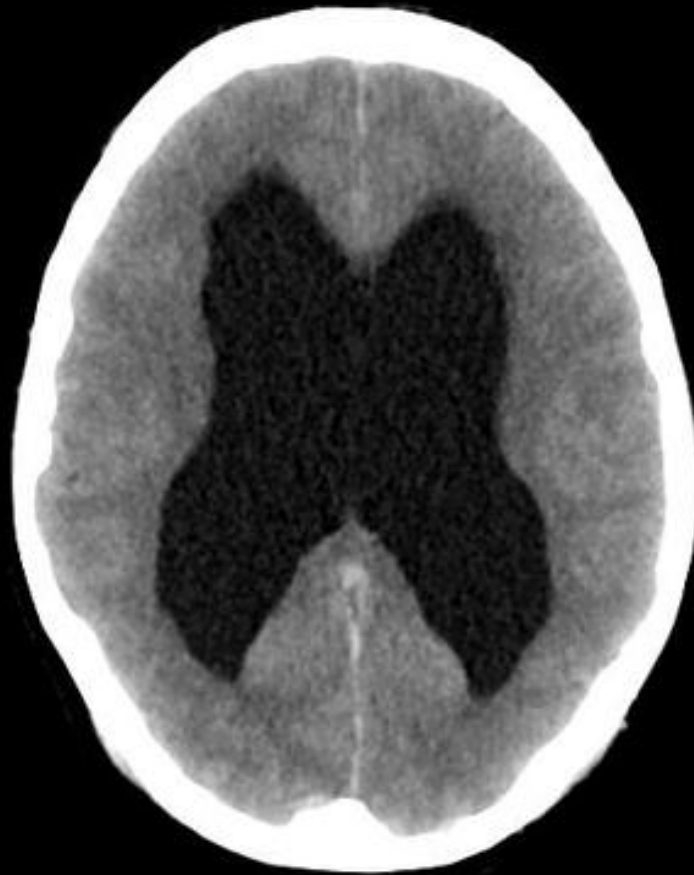
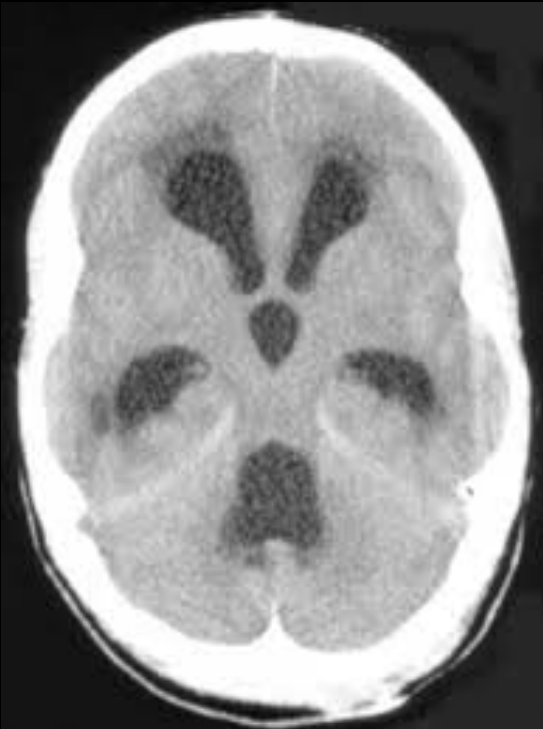
Clinical Manifestations

- Abnormal rate of head growth
- Tense anterior fontanelle (often bulging and nonpulsatile)
- Dilated scalp veins
- Setting sun sign
- Sluggish and unequal pupils
- Irritability and lethargy with varying LOC
- Abnormal infantile reflexes
- Possible cranial nerve damage (CN6)
- headache on awakening with improvement following standup
- papilledema,
- strabismus,
- ataxia,
- irritability,
- lethargy,
- Apathy
- confusion



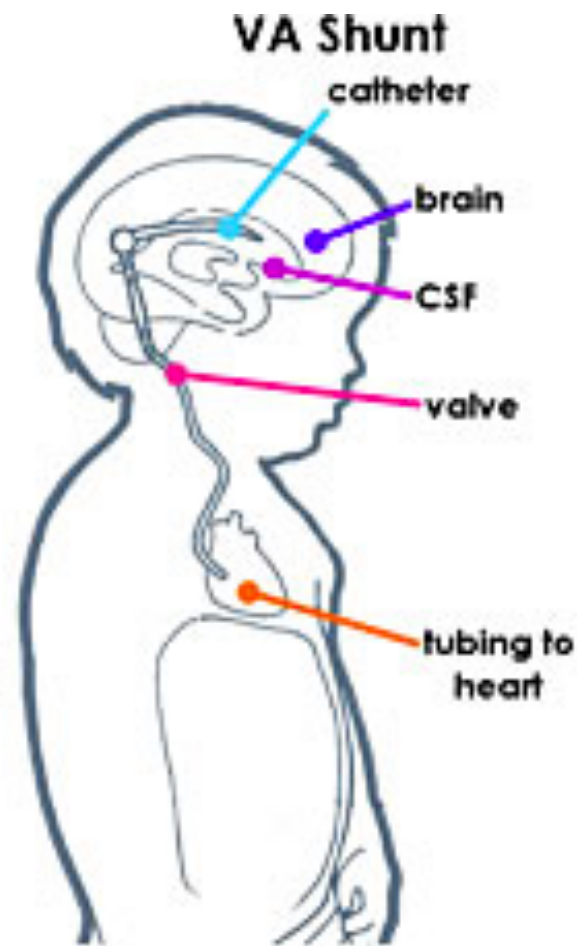
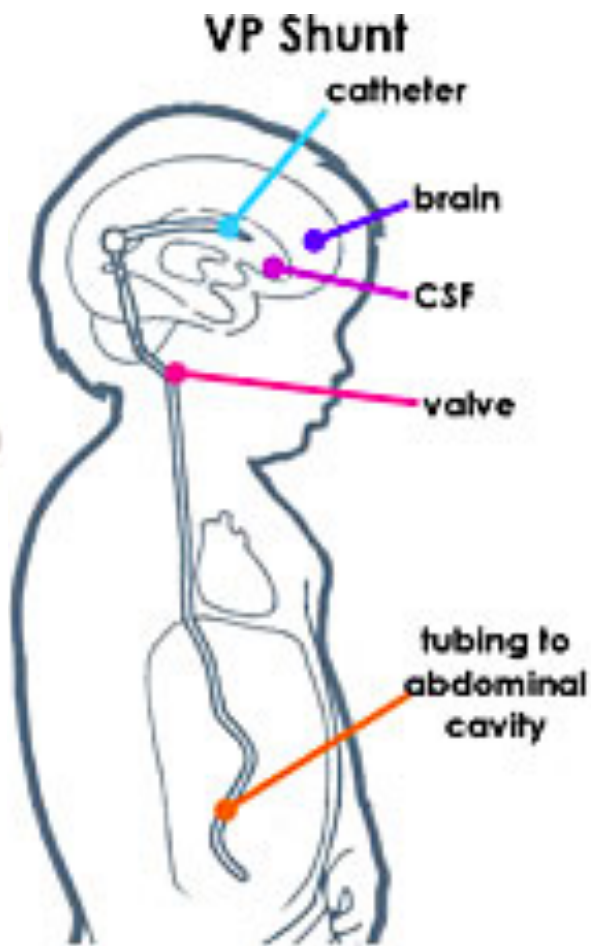
Laboratory and Diagnostic Study Findings

- Ultrasonography----prenatal
- CT scan----- postnatal
- MRI----- for complex lesions



Treatment

- Surgery



- **hydrocephalus** does not cause any intellectual disability if recognized and properly treated.

Thanks....