

HYDROCEPHALUS

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DEFINITION

Hydrocephalus is the abnormal accumulation of cerebrospinal fluid in the intracranial spaces.

Or

Hydrocephalus is an abnormal accumulation of cerebrospinal fluid (**CSF**) in the ventricles and cavities of brain. This causes increased intracranial pressure inside the skull and may cause progressive enlargement of the head



INCIDENCE:-

It is found in 1-3 of every 1000 born children
in
worldwide

CEREBROSPINAL FLUID

The normal amount of CSF is about 150 ml
CSF formed by choroid plexuses
Absorbed by arachnoids villi
Normally about 500 ml of CSF formed
everyday
and an equal amount is absorbed

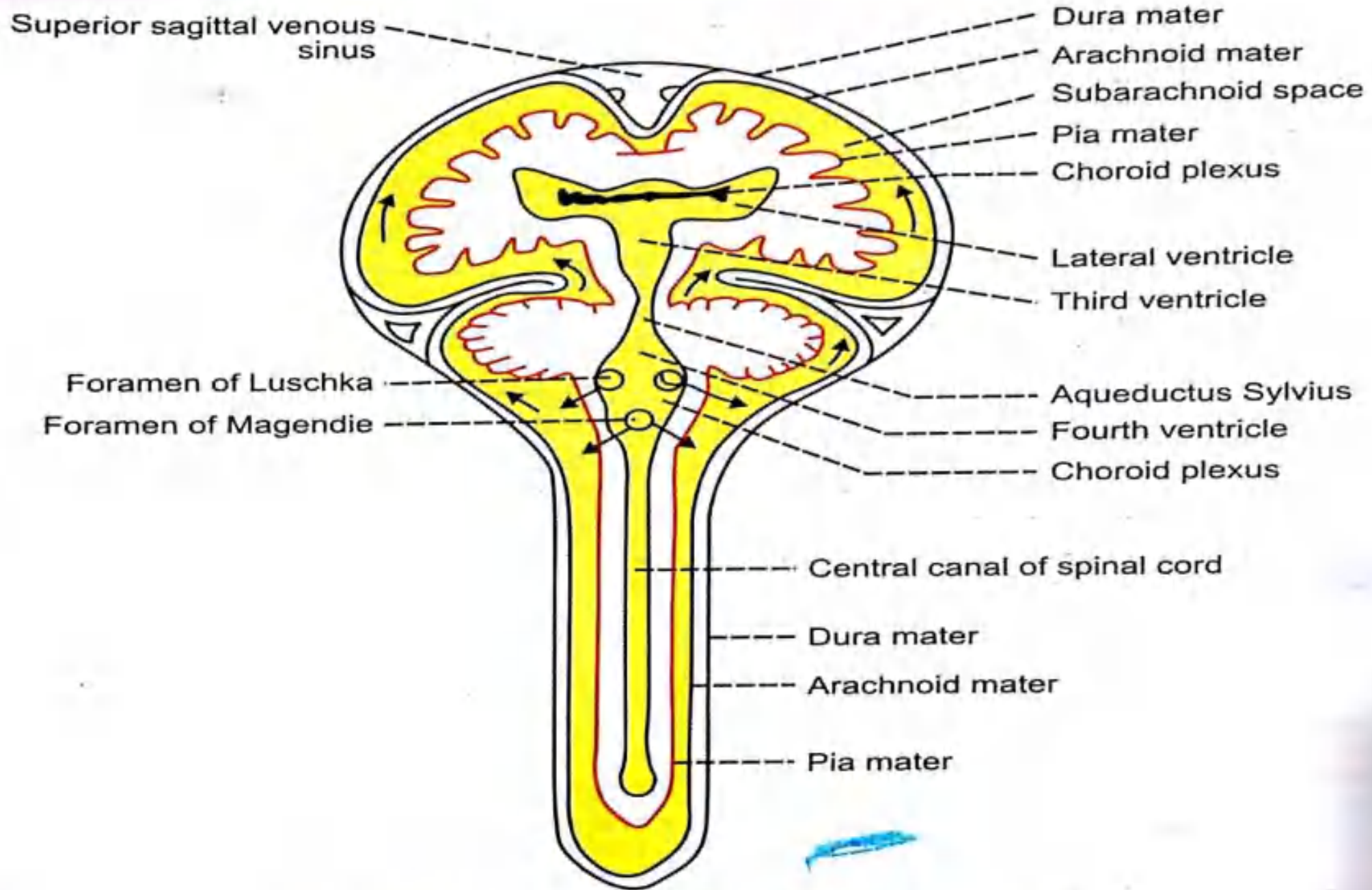
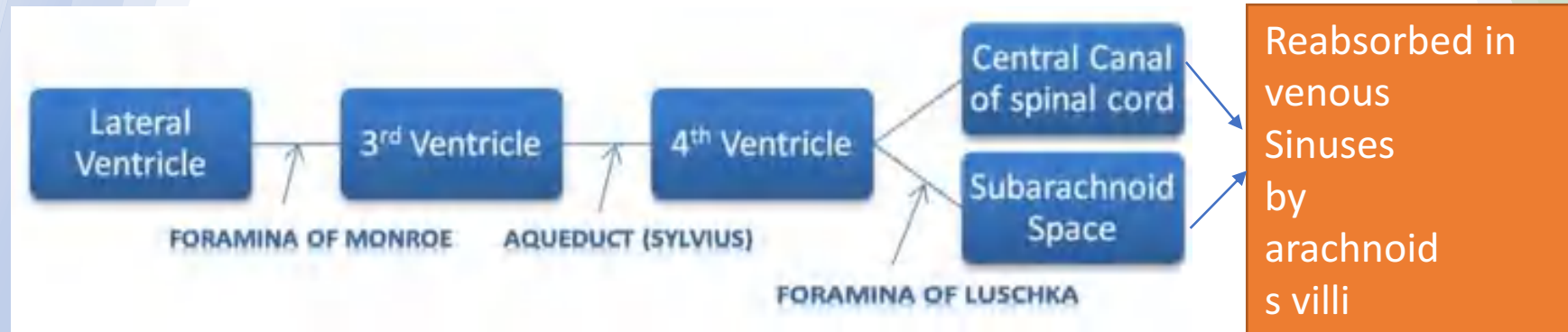


FIGURE 163-2: Circulation of cerebrospinal fluid

NORMAL CSF CIRCULATION



TYPES

A. COMMUNICATING
HYDROCEPHALUS

B. NONCOMMUNICATING
HYDROCEPHALUS

COMMUNICATING HYDROCEPHALUS

Communicating hydrocephalus is a condition that results when the arachnoid villi are unable to adequately reabsorb CSF.

Intraventricular or subarachnoid haemorrhage
Infectious processes such as meningitis may also render the arachnoid villi to be nonfunction.

May also be due to the overproduction of CSF.
This is rare and is usually associated with a choroid plexus papilloma or a choroid plexus carcinoma.

NON-COMMUNICATING HYDROCEPHALUS

Non communicating hydrocephalus is a condition that results when the ventricular system does not communicate with the arachnoid villi due to some obstruction in the normal pathways of CSF flow. Consequently, CSF is produced in the ventricular system but cannot flow to the arachnoid villa to be reabsorbed.

Such obstruction can occur when pathways are blocked by a tumor, congenital abnormalities of the brain, cysts, inflammation from infection, or any other condition that interferes with the patency of these pathways.

ETIOLOGY OF HYDROCEPHALUS

Congenital-

- Intrauterine infections
Mainly in rubella, toxoplasmosis,
cytomegalovirus.
- Congenital brain tumor
- Intracranial hemorrhage.
- Congenital malformation
- Malformations of arachnoid villi

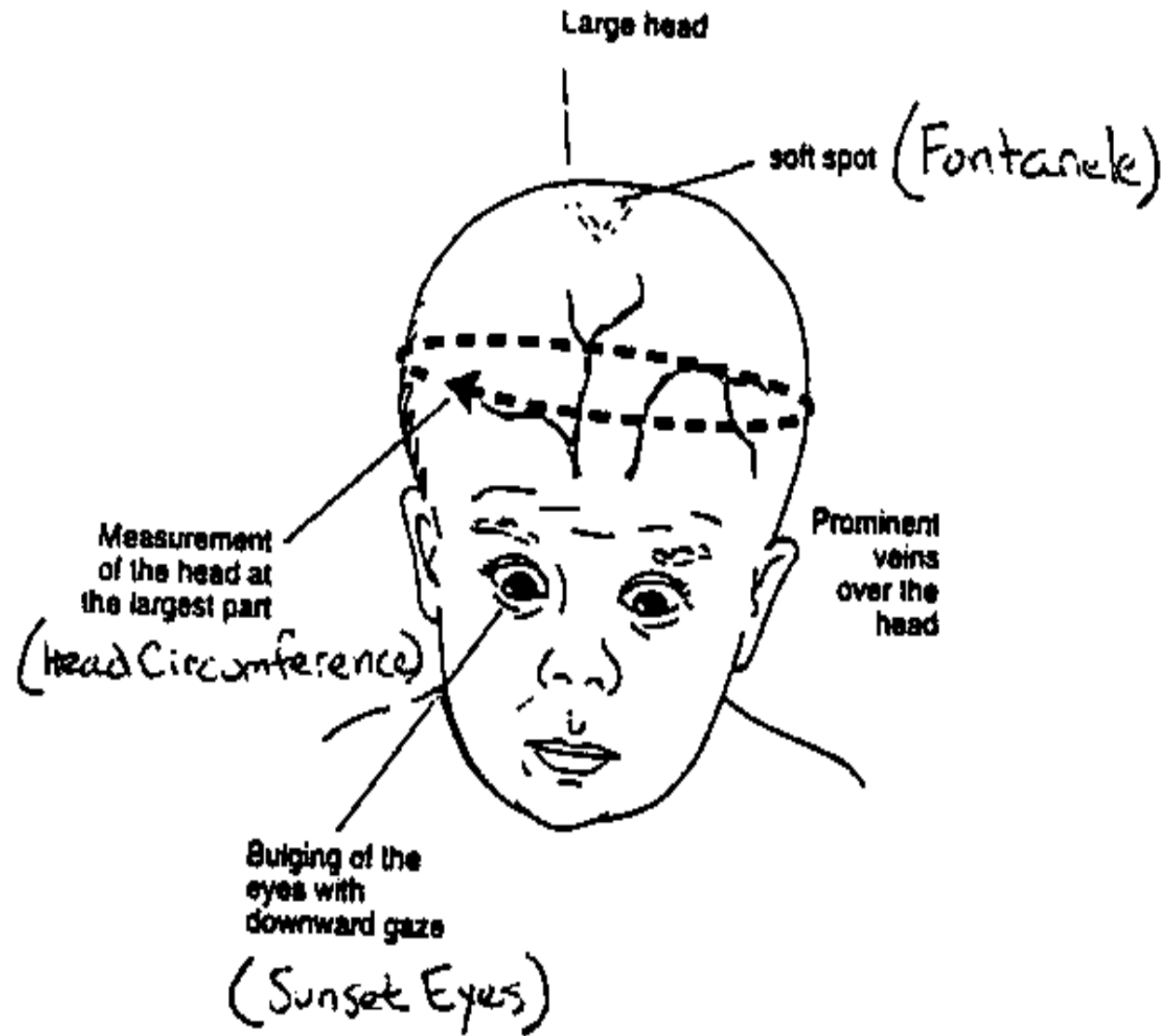
Acquired

- Inflammation
- Trauma
- Neoplasm space occupying lesions like tuberculoma, subdural hematoma or abscess, gliomas, ependymoma, astrocytoma, choroid plexus papilloma, pseudotumor cerebri.
- Chemical – hypervitaminosis 'A'
- Connective tissue disorder- Hurler syndrome, achondroplasia.
- Degenerative atrophy of brain
- Arteriovenous malformations, ruptured aneurysm, cavernous sinus thrombosis.

CLINICAL FEATURES



CLINICAL FEATURES



CLINICAL MANIFESTATIONS

- An unusually large head
- A rapid increase in the size of the head
- A bulging or tense soft spot (fontanel) on the top of the head
- Macewen sign
- Eyes fixed downward (sunsetting of the eyes)

Shiny scalp with prominent scalp vein.

- Poor feeding
- Seizures
- Deficits in muscle tone and strength, responsiveness to touch, and expected growth
- Vomiting
- Sleepiness
- Irritability

DIAGNOSTIC EVALUATION

- Physical examination
- Positive transillumination of infant head
- Typical cracked-pot sound (Macewen sign) of the skull bone
- Ophthalmoscopy
- MRI
- CT scan
- Cranial ultrasonography and
- X-ray skull

MEDICAL MANAGEMENT

Management of hydrocephalus directed toward:-

- Reducing intra cranial pressure
- Prevention and Management of complication
- Managing problems caused by pathology
- Medical Management include the use of osmotic

diuretics and loop diuretics to reduce CSF production .medical management is temporary relief but main management is surgery

SURGICAL MANAGEMENT

- A shunt is made up of radio plastic and has ventricular cathetar, pressure valve, pumping chamber, and distal catheter that directs the flow of CSF from the ventricles to other areas of body from where it is absorbed.

Endoscopic Third Ventriculostomy

- Choroid plexectomy
- Ventriculo-peritoneal shunt (V-P shunt).
- Ventriculoatrial shunt
- Ventriculopleural shunt
- Ventriculogallbladder shunt.

PROGNOSIS

- Prognosis depends on early diagnosis and prompt therapy.
- With improved diagnostic and management techniques, the prognosis is becoming considerably better.
- Approximately two- thirds of patients will die at an early age if they do not receive surgical treatment.