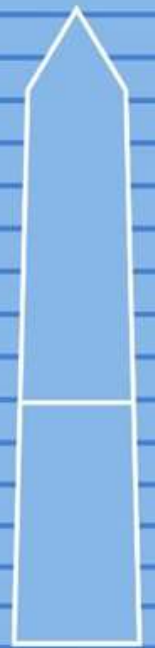


# Future <sup>OF</sup> Pediatrics

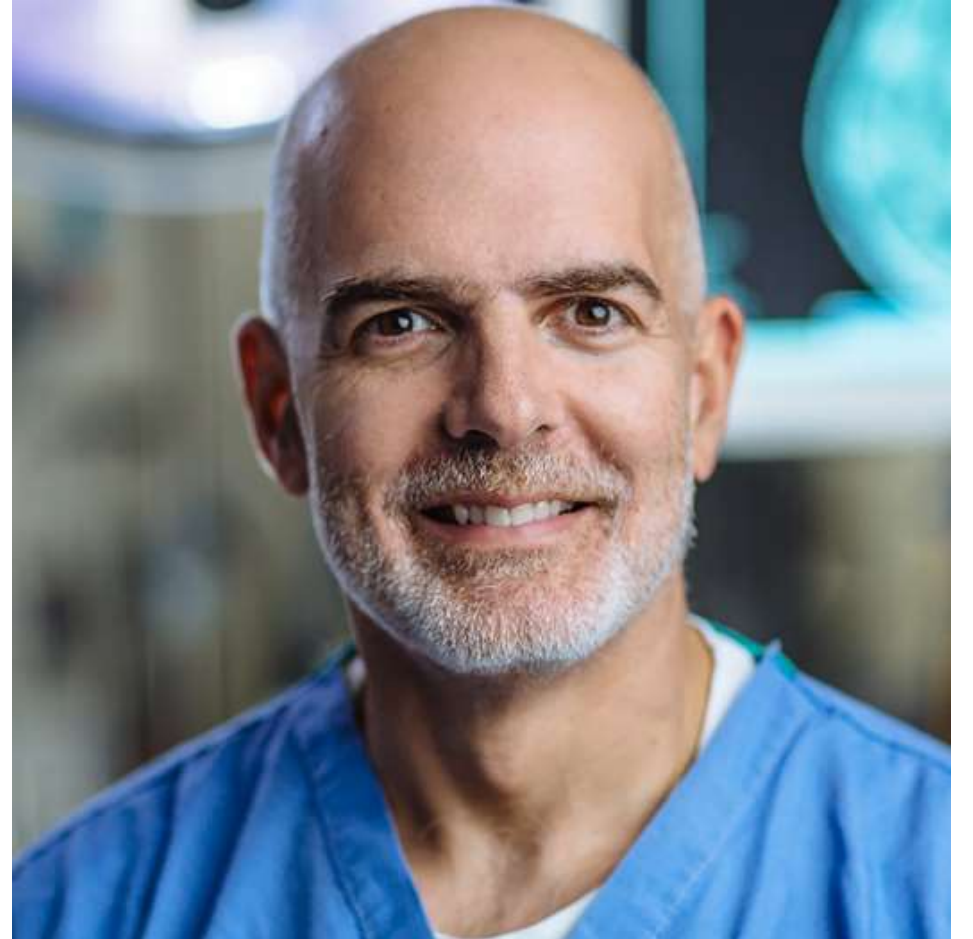
Pediatric Health Network

 Children's National.



# Big Heads & Brain Tumors

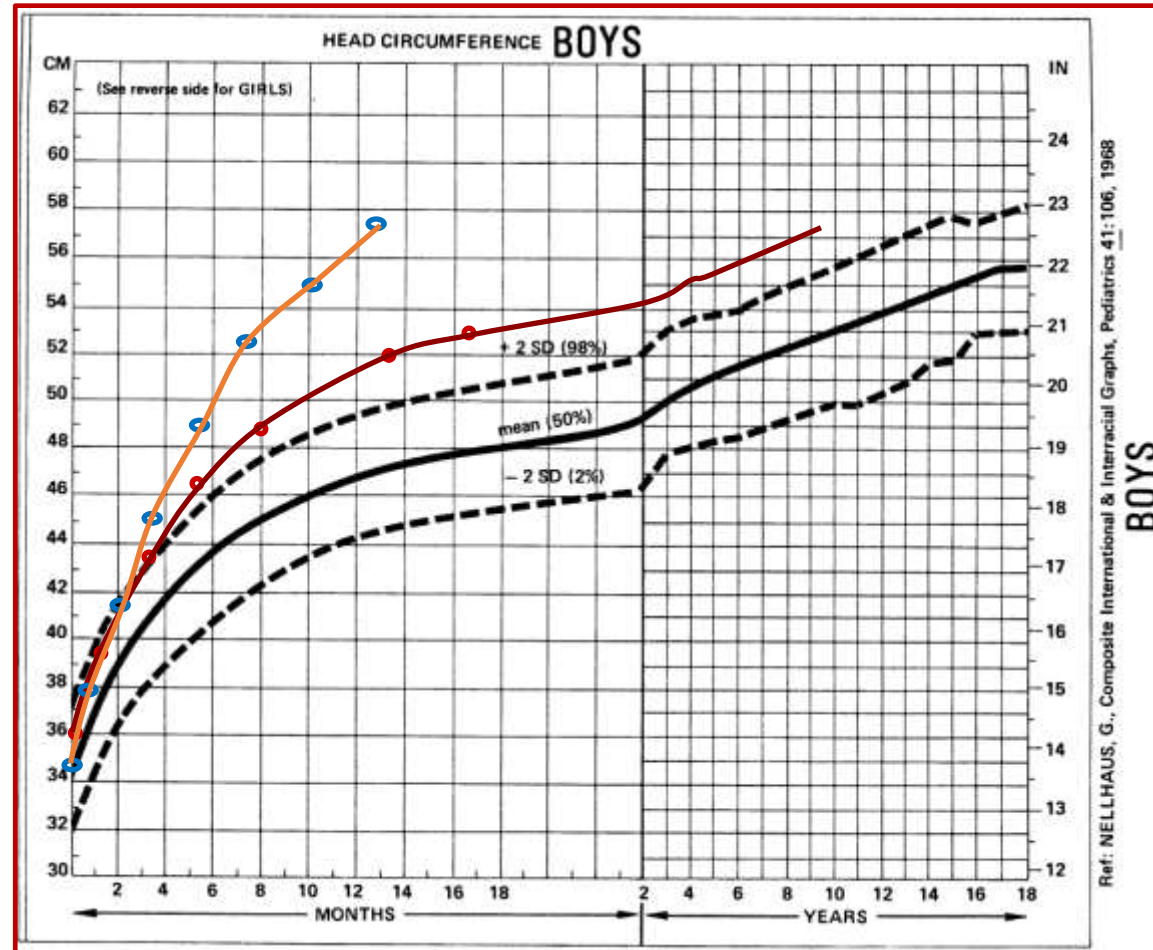
John Myseros, MD, FACS, FAAP  
*Vice Chief, Neurosurgery*



# Disclosures

NONE

# Head Circumference



# Benign Macrocephaly

## Benign Enlargement of the Subarachnoid Spaces

- Excess CSF in frontal subarachnoid space
- Head growth acceleration early on
- Normal developmental milestones
- Re-establishment of large but normal head growth curve vs. [communicating hydrocephalus](#)
- Often familial

# Pathologic Macrocephaly

- Hydrocephalus

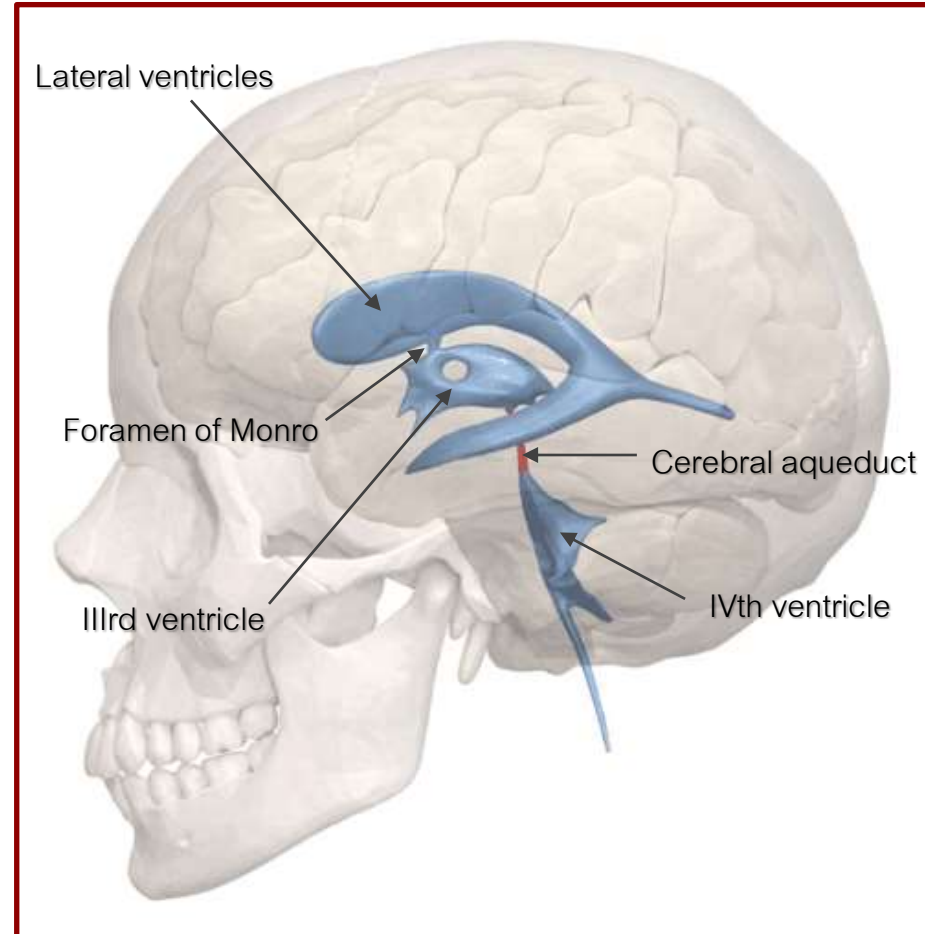
  - Arachnoid Cyst

    - Brain Tumor

# Hydrocephalus - Definition

- Inadequate absorption (Communicating) or circulation (Obstructive) of cerebrospinal fluid resulting in increased intracranial pressure
- To be differentiated from [ventriculomegaly](#)

# Ventricular Anatomy





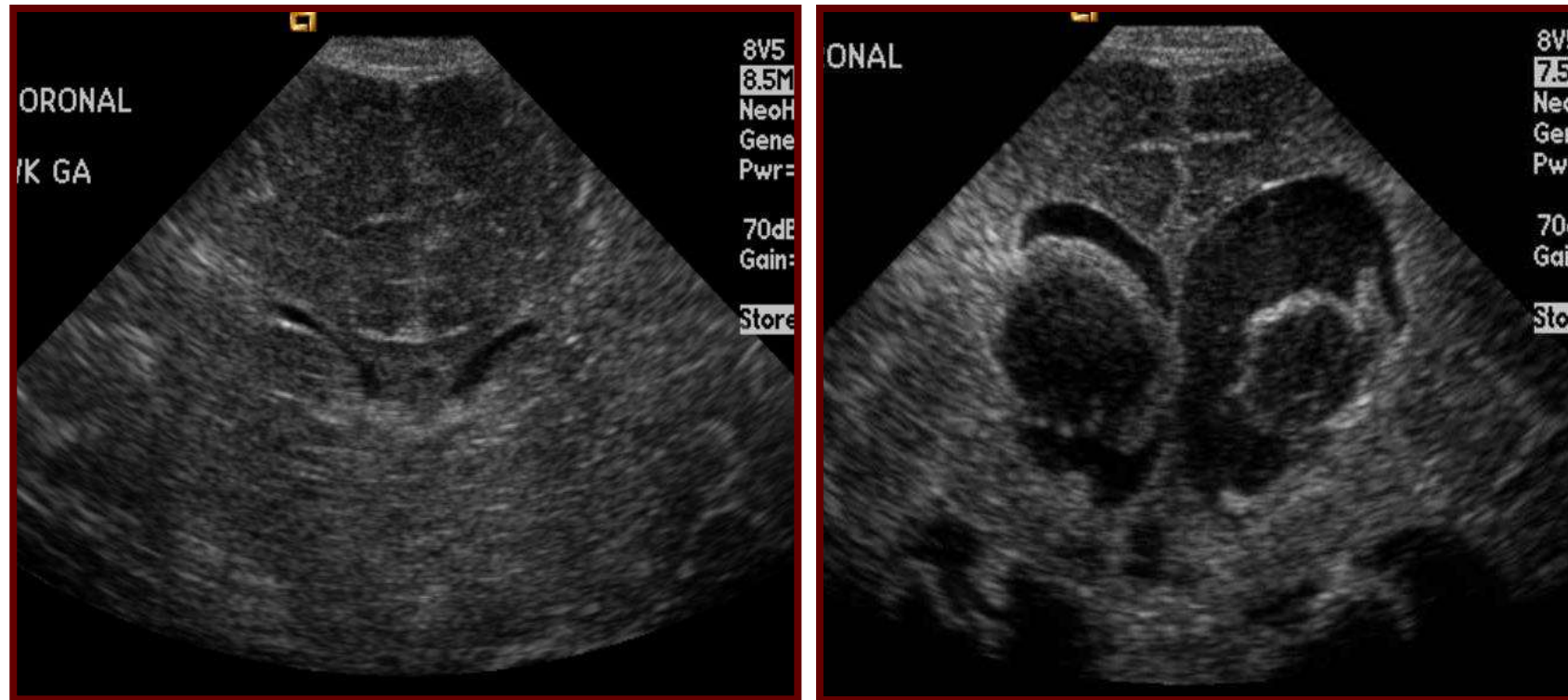
# Acquired Hydrocephalus

- Prematurity and IVH
- Post-natal infection – meningitis
- Post-traumatic hydrocephalus
- Arachnoid or porencephalic cysts
- Brain tumors

# Grade III GMH-IVH Early

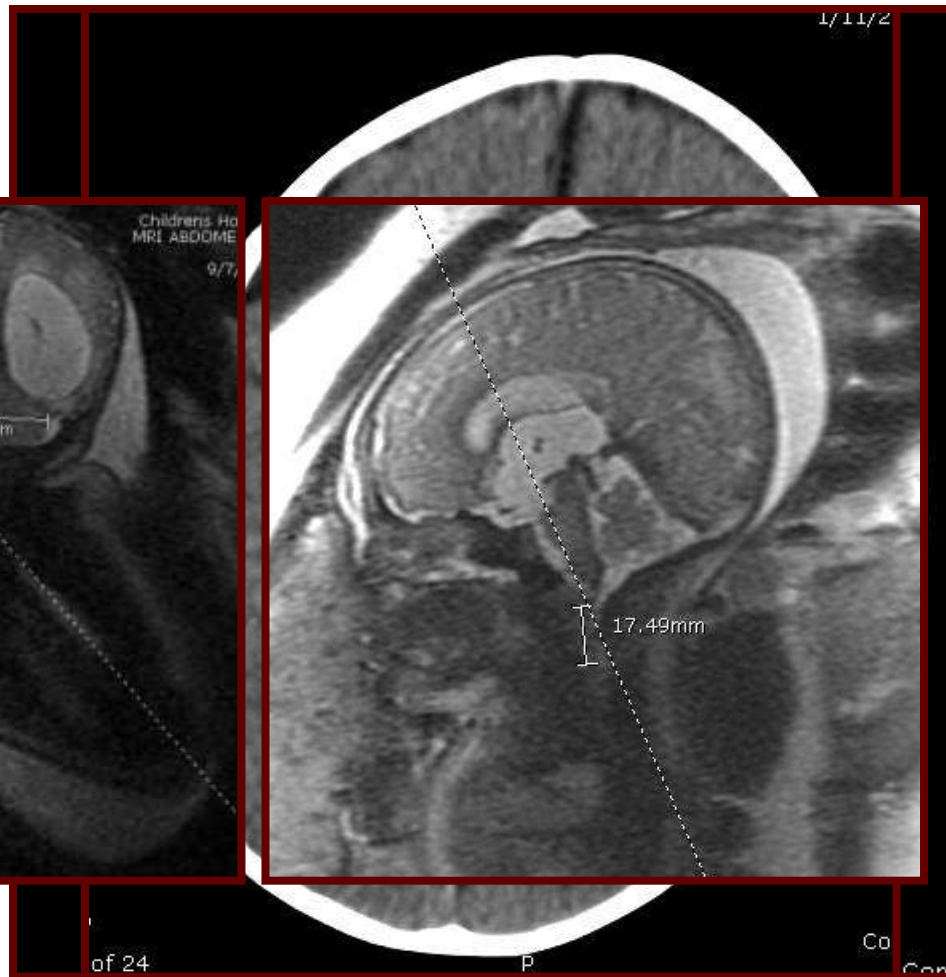
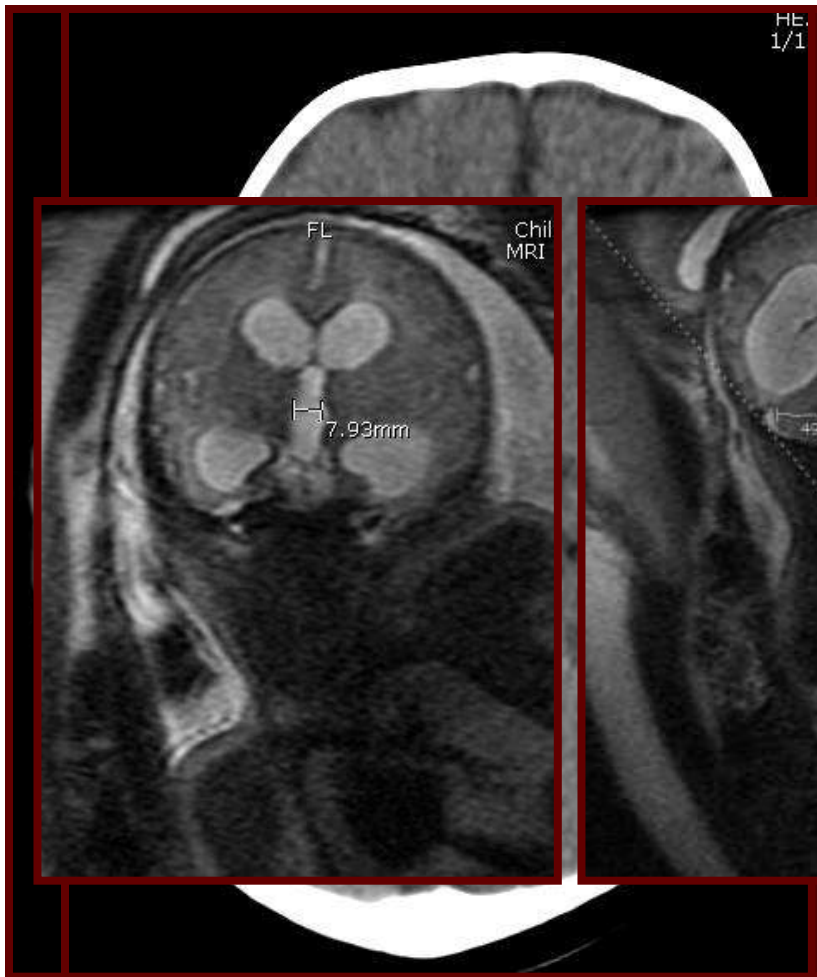


# Grade III GMH-IVH Later



# Congenital Hydrocephalus

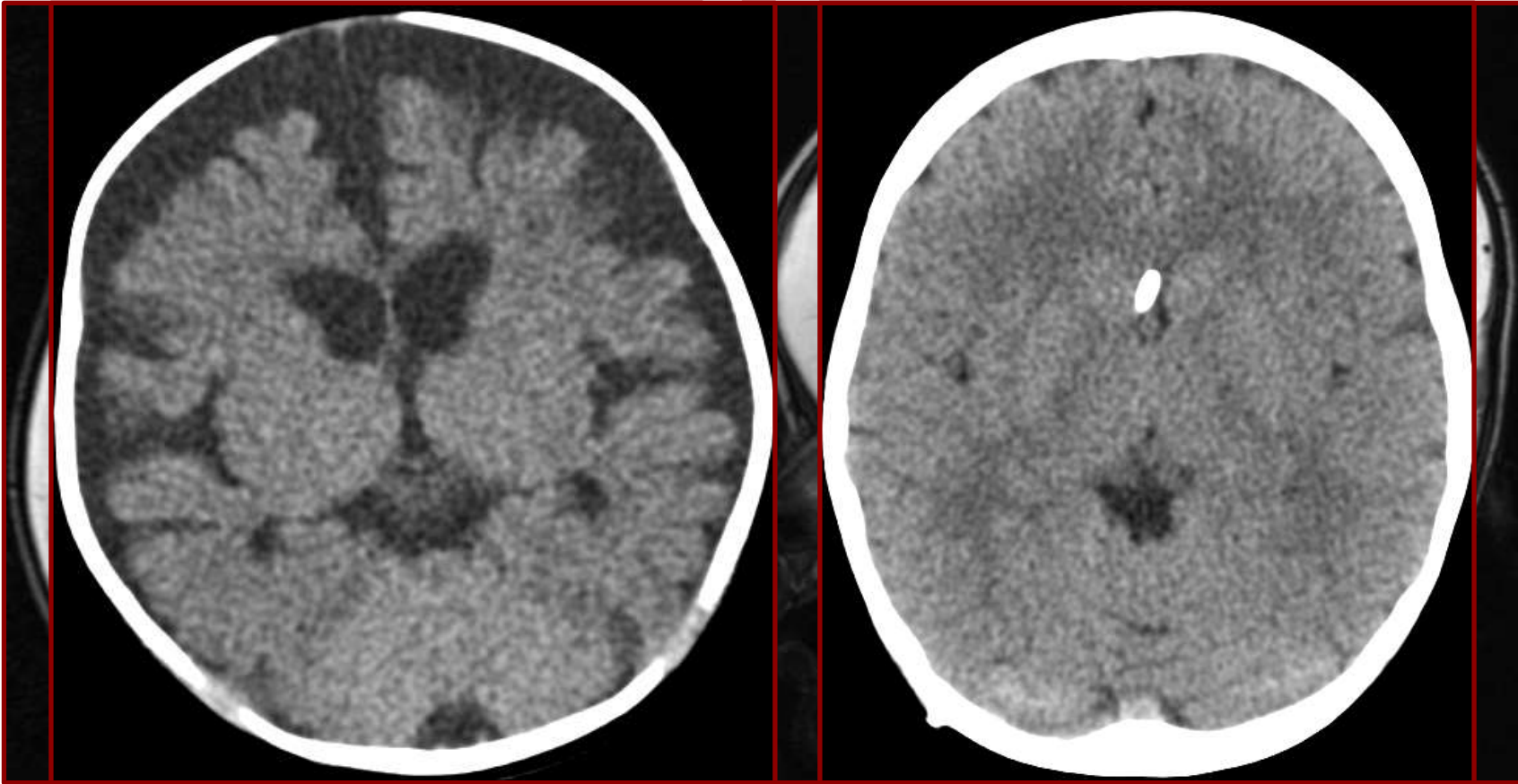
- 4-10 / 100,000 births
- Intra-uterine
- In-utero infection
- Aqueductal stenosis- (small number x-linked)
- Myelodysplasia
- Dandy-Walker malformations
- **Prenatal screening**



# Communicating Hydrocephalus

- Normal circulation
- Dilated ventricles including IVth
- Absorptive deficit at the level of arachnoid granulations
- Amenable to access from spinal subarachnoid space

# Communicating



# Patient JC

- 12 month
- Macrocephaly
- Persistent head growth acceleration
- Not sitting, not walking
- Happy
- SOFT fontanelle

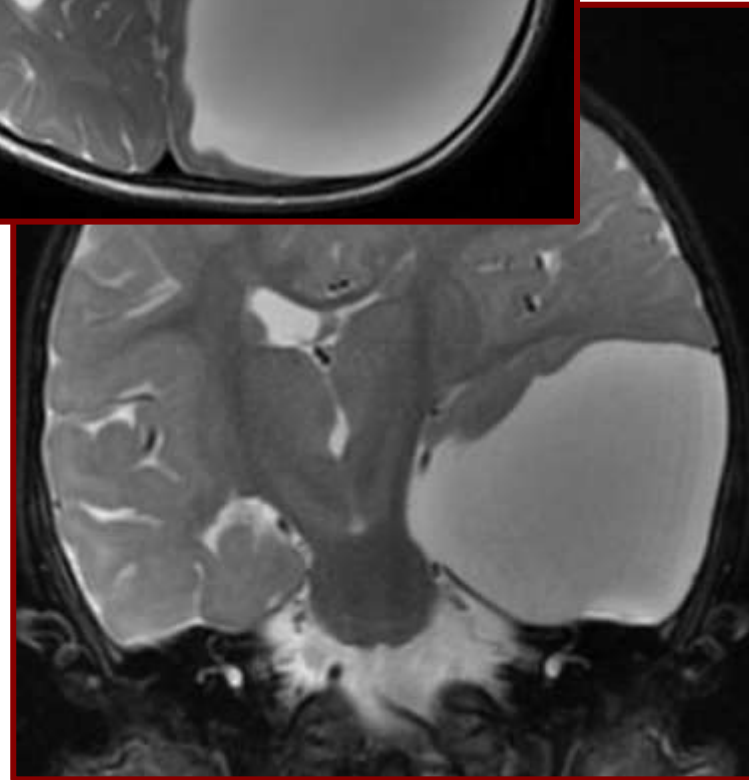
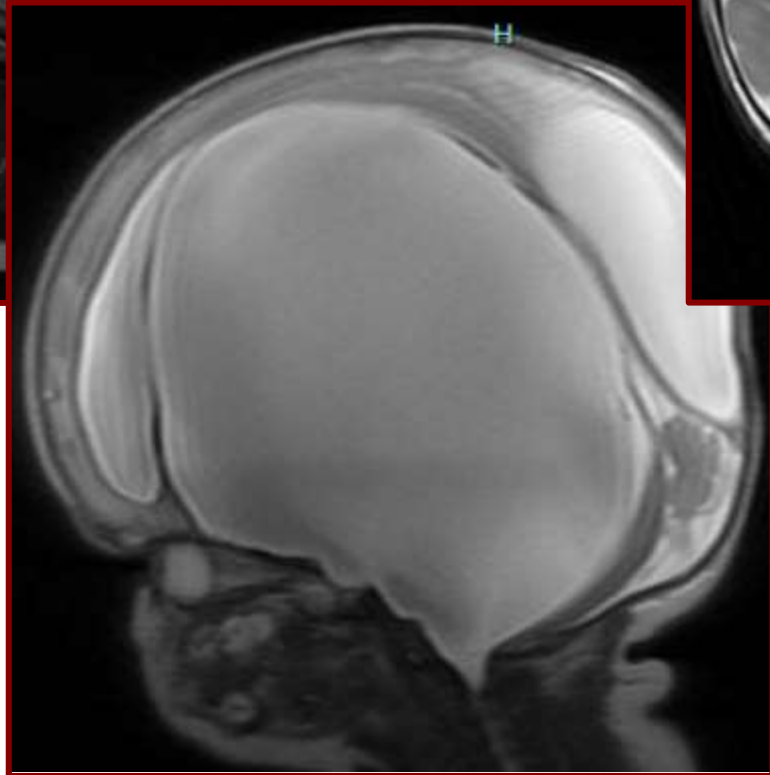
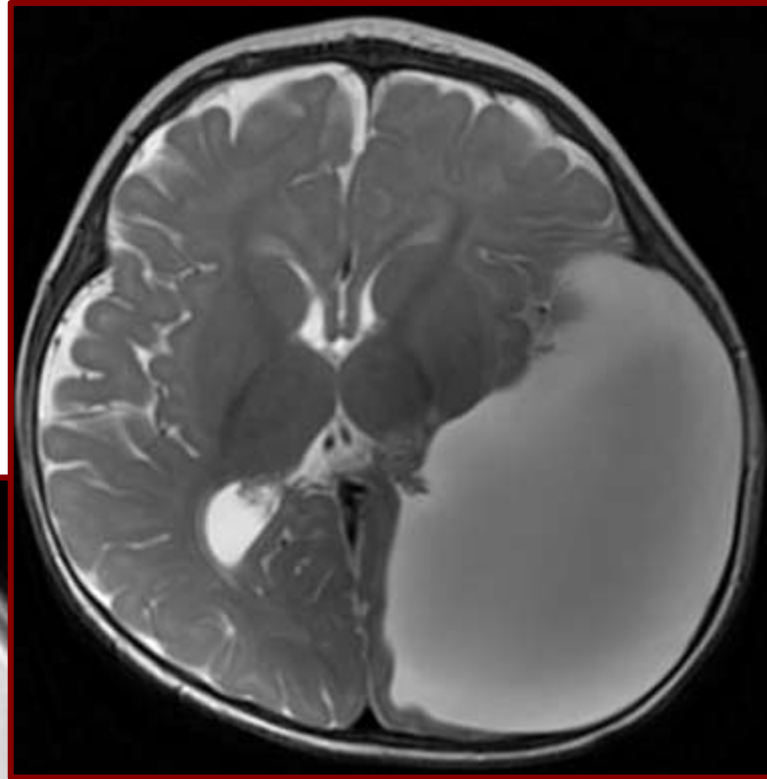
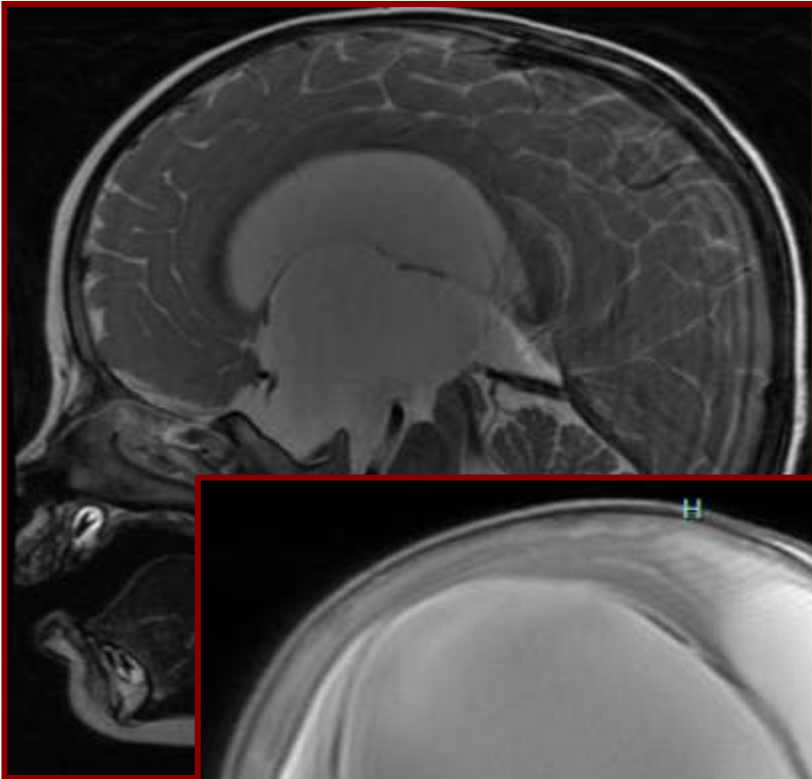


# Patient JC



# Arachnoid Cyst

- CSF trapped
- Redundant arachnoid
- Incidental- typically temporal fossa
- Treatment
  - Shunt
  - Fenestration



# Patient JG

- 3-month-old boy with head growth acceleration
- Full fontanelle
- Asymptomatic

# JG - Imaging





# Brain Tumors in Children

- Cancer is 2<sup>nd</sup> cause of death in children < 15
- CNS tumors are 2<sup>nd</sup> most common neoplasm
- The most common solid tumors in children
- 20 - 25% of all childhood cancers
- Deadliest childhood cancer
- About 5000 new brain tumors in ages 0-19 per year

# Histopathology

- Astrocytoma, incl. diffuse pontine glioma
- PNET: Medulloblastoma, ATRT
- Craniopharyngioma, Pituitary tumors
- Germ cell tumors- +/- germinoma
- Ependymoma
- Other intraventricular tumors
  - papilloma, meningioma, central neurocytoma



# Location of Tumor

- Supratentorial
- Infratentorial
- Sellar/Suprasellar
- Pineal Region

