11 year old girl presenting with headache, nausea and vomiting

Martin Ollenschleger, MD

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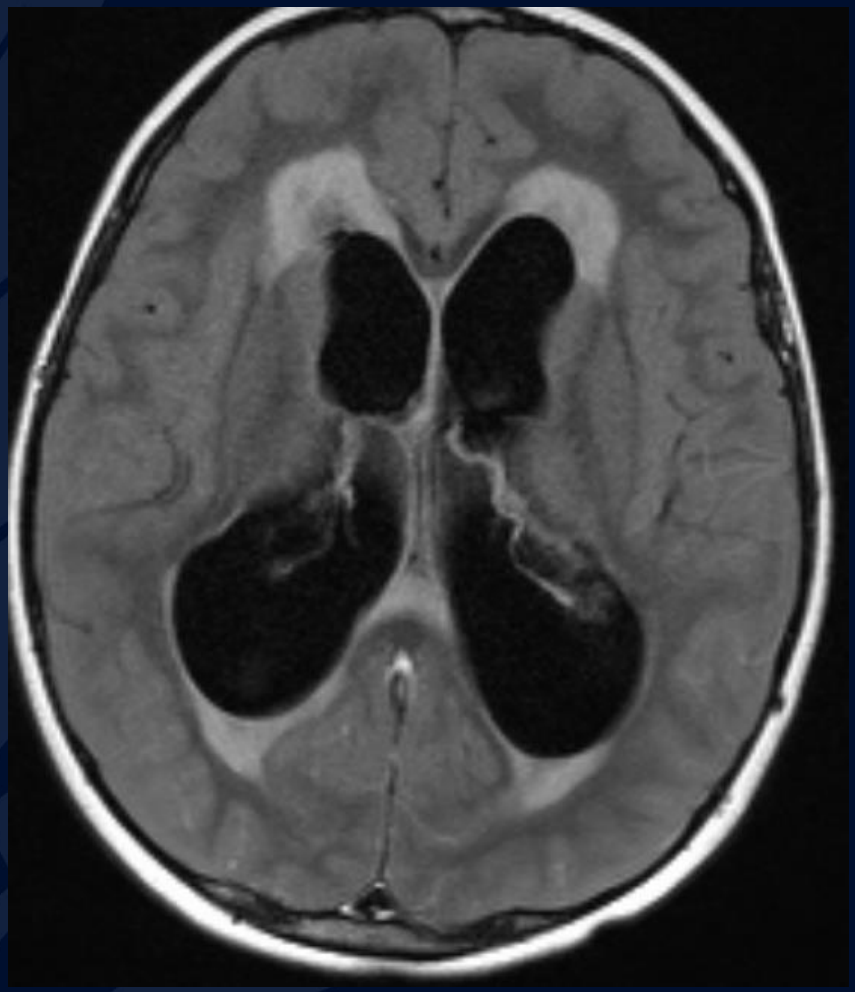

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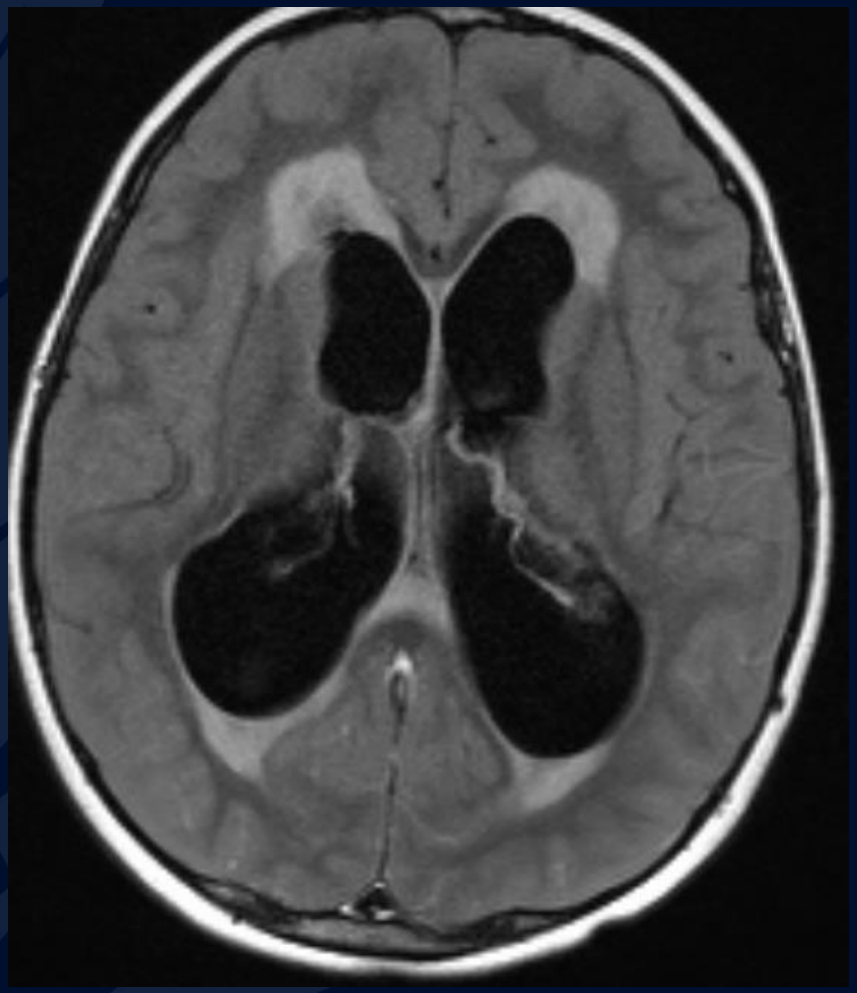

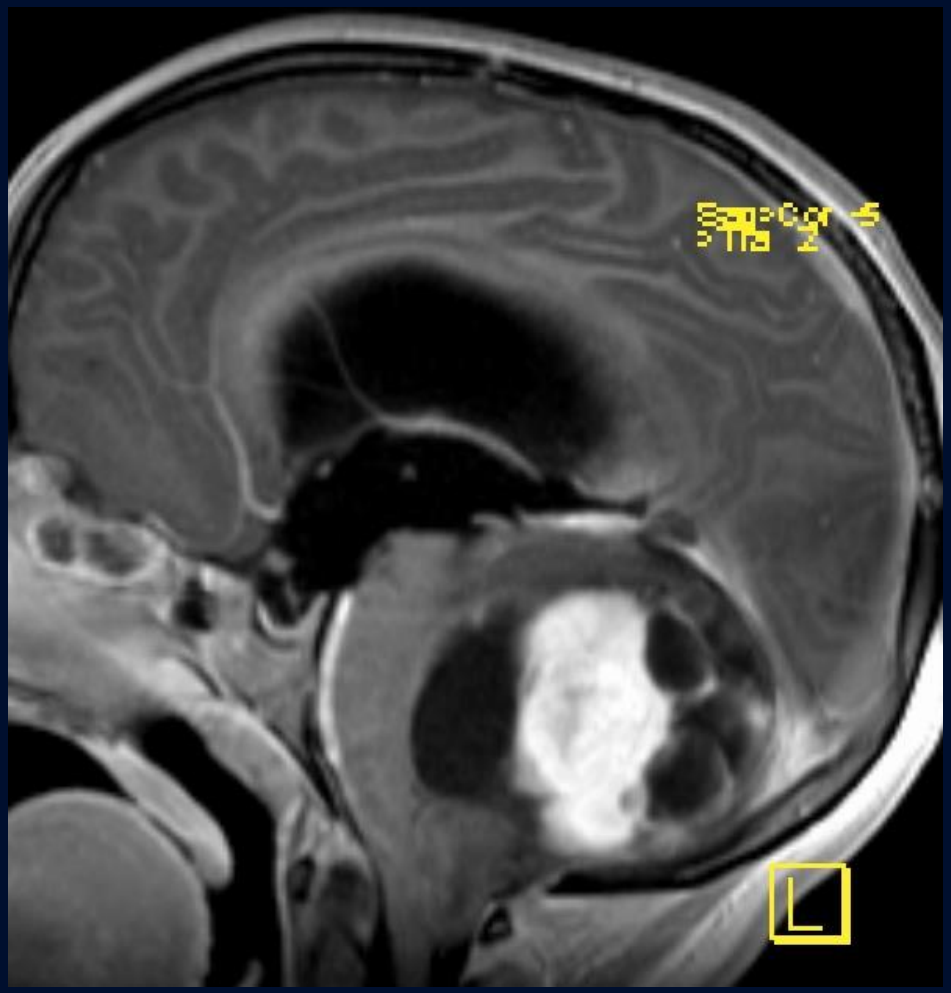

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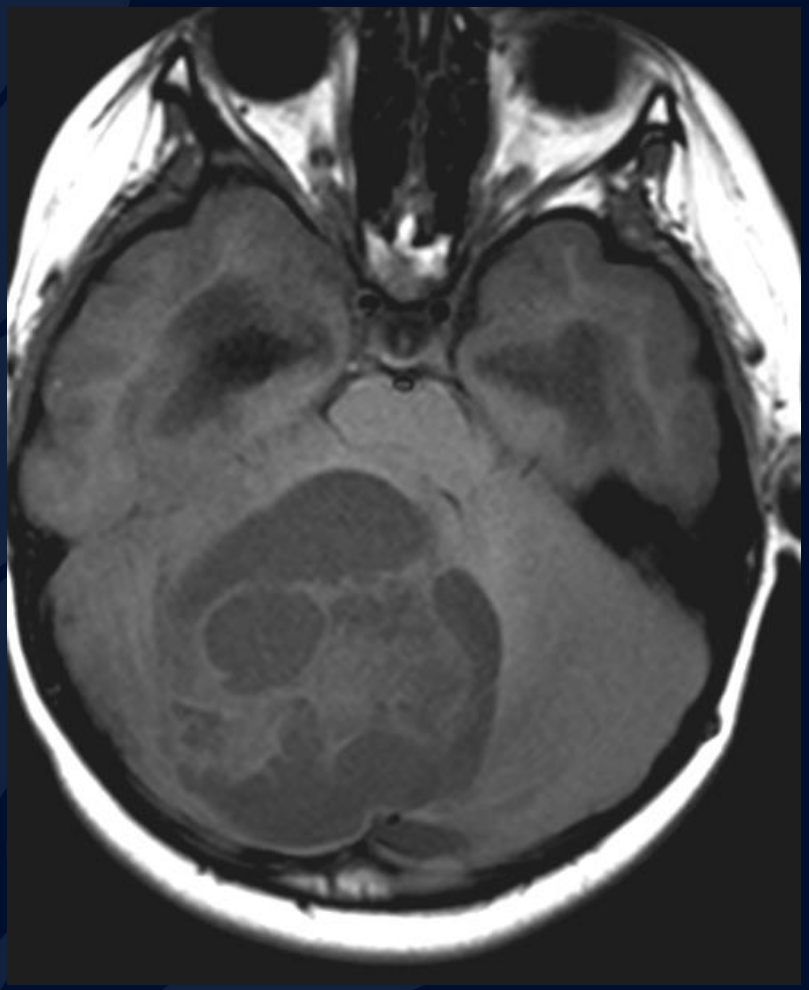

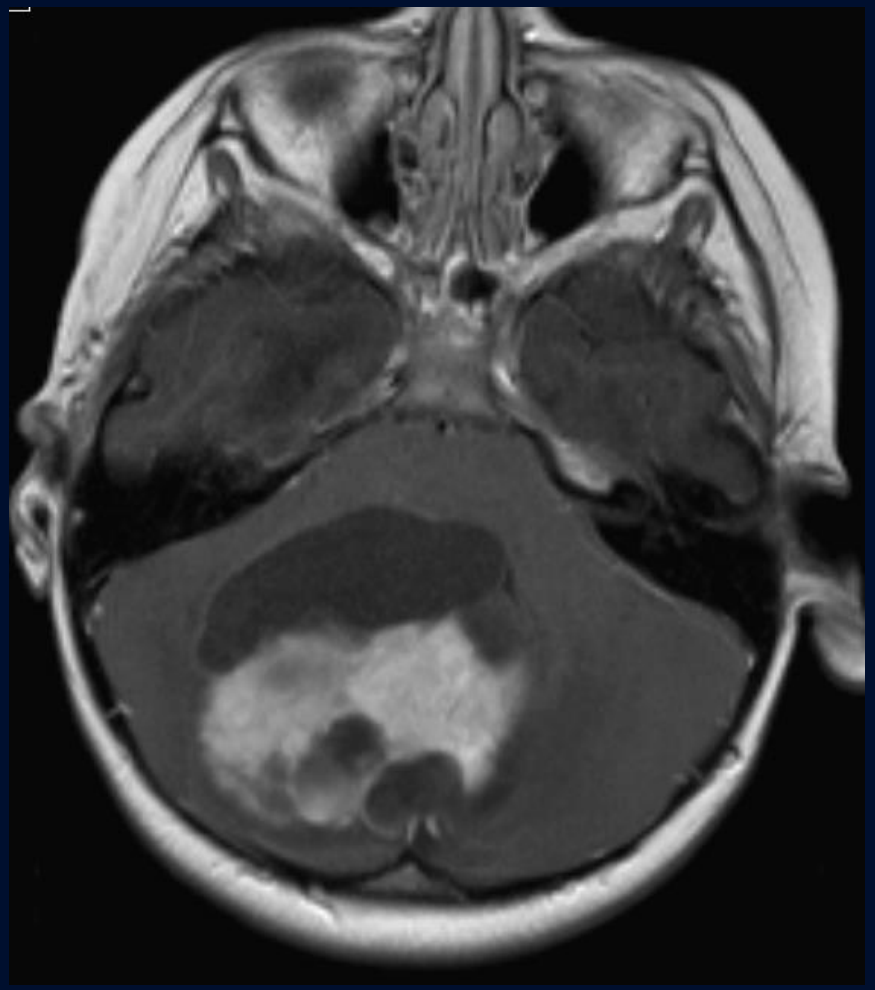

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Pilocytic Astrocytoma (Juvenile Pilocytic Astrocytoma)

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Obstructive hydrocephalus with transependymal CSF

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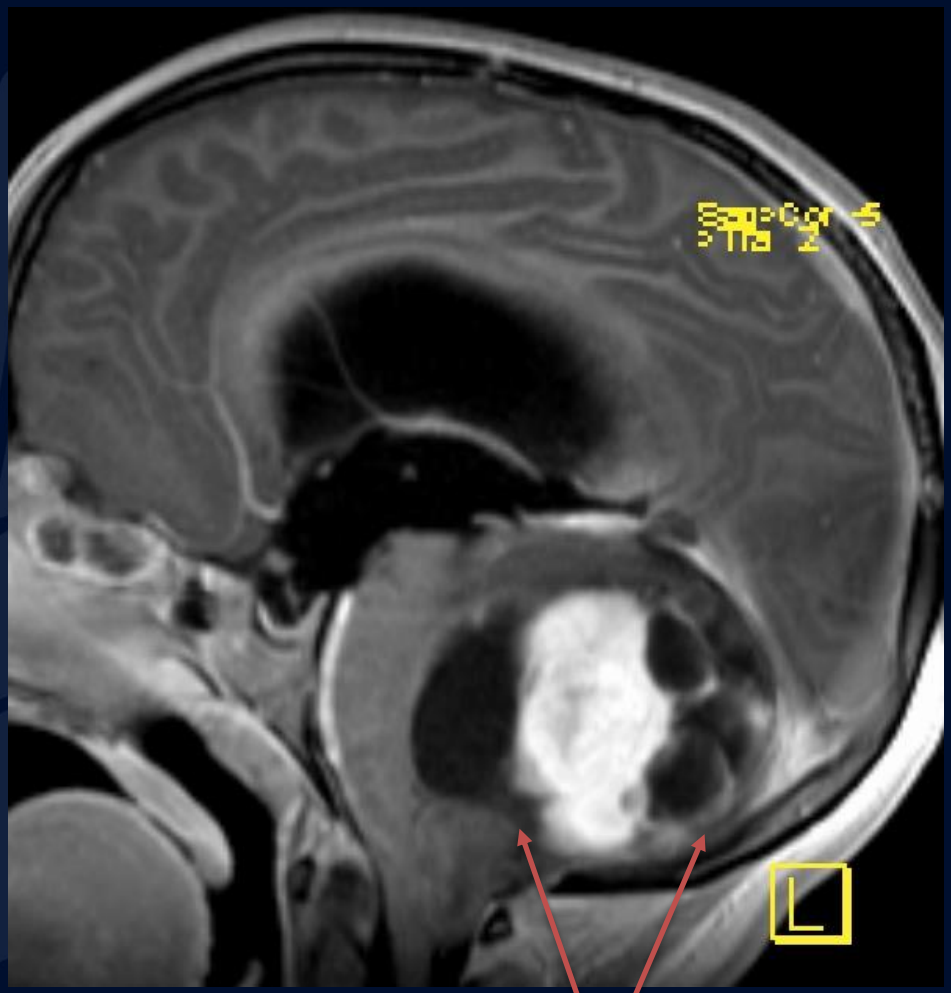

Obstructive hydrocephalus is caused by an extensive infratentorial mass

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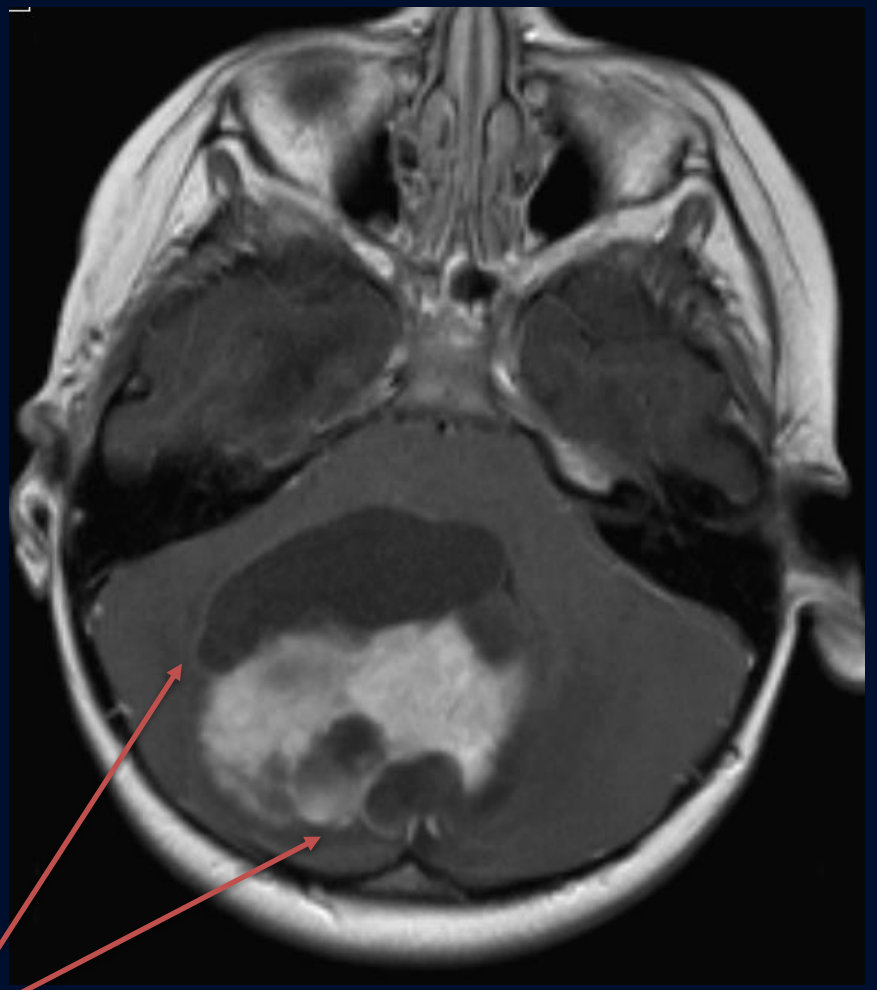

Large mass with cystic and solid enhancing components

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Pilocytic Astrocytoma

(Juvenile Pilocytic Astrocytoma)

- Pilocytic Astrocytoma ("Juvenile" is no longer added in the 2016 WHO classification) is the most common primary pediatric posterior fossa tumor
- Peak age from 5 to 13 years of age.
- Arises from the cerebellum, most commonly midline or just off midline.
- JPA is most commonly a benign and slow growing tumor (>80% WHO grade 1) with a very good prognosis.

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Pilocytic Astrocytoma

(Juvenile Pilocytic Astrocytoma)

- Imaging characteristics
  - Overall appearance
    - 50% predominantly cystic with an enhancing mural nodule
    - 40% solid appearing with central cystic areas
    - 10% solid homogeneous enhancement
  - T1: solid component hypo or isointense to grey matter
  - T2: solid component hyperintense to grey matter with hyperintense cystic/necrotic components.
  - Enhancement is variable, though most commonly the solid component enhances homogeneously & prominently
  - Often associated with 4th ventricle compression & obstructive hydrocephalus

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Juvenile Pilocytic Astrocytoma

- Differential Diagnosis
  - Medulloblastoma
    - Younger age group (bimodal age peak at 3-4 and 8-9 years)
    - Midline, dorsal to 4th ventricle
    - Highly cellular, demonstrates diffusion restriction
  - Ependymoma
    - Younger age group (peak age 3-5 years)
    - Arises within ependymal lining of 4th ventricle, filling the ventricle and extending out of ventricular foramina, rather than displacing it

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References

- A Poretti, et al. Neuroimaging of Pediatric Posterior Fossa Tumors Including Review of the Literature. Journal of Magnetic Resonance Imaging 35:32-47 (2012)
- Ollenschleger M. Pilocytic Astrocytoma. Radiology Online (2020)

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