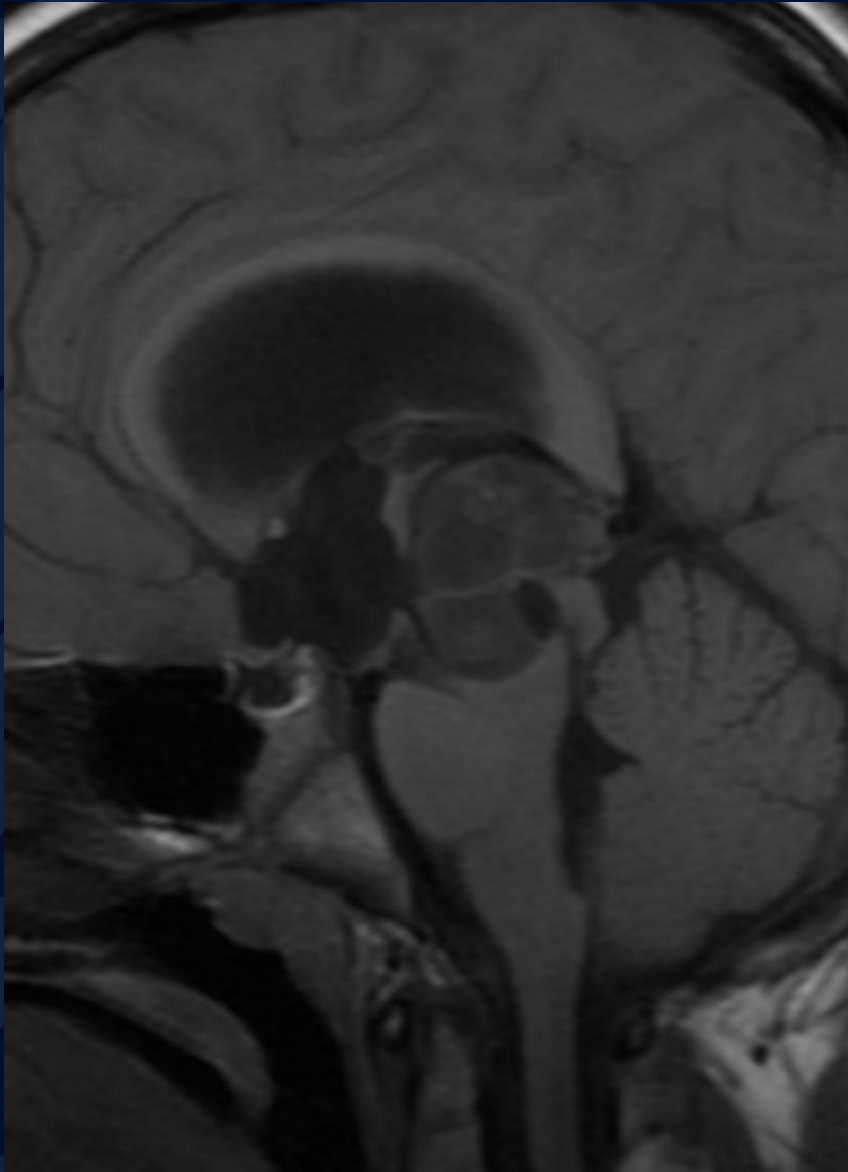
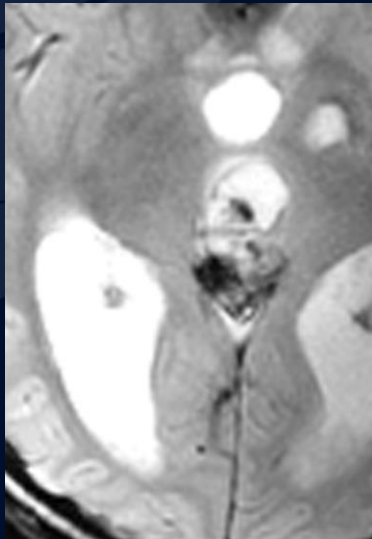
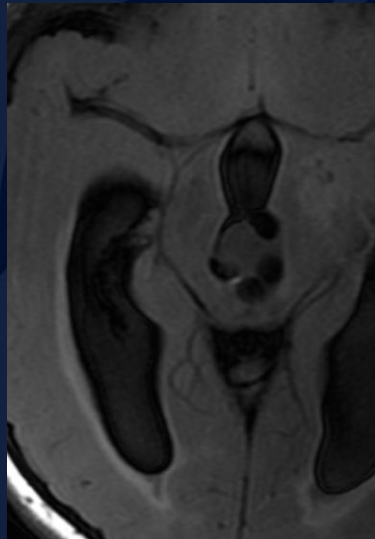
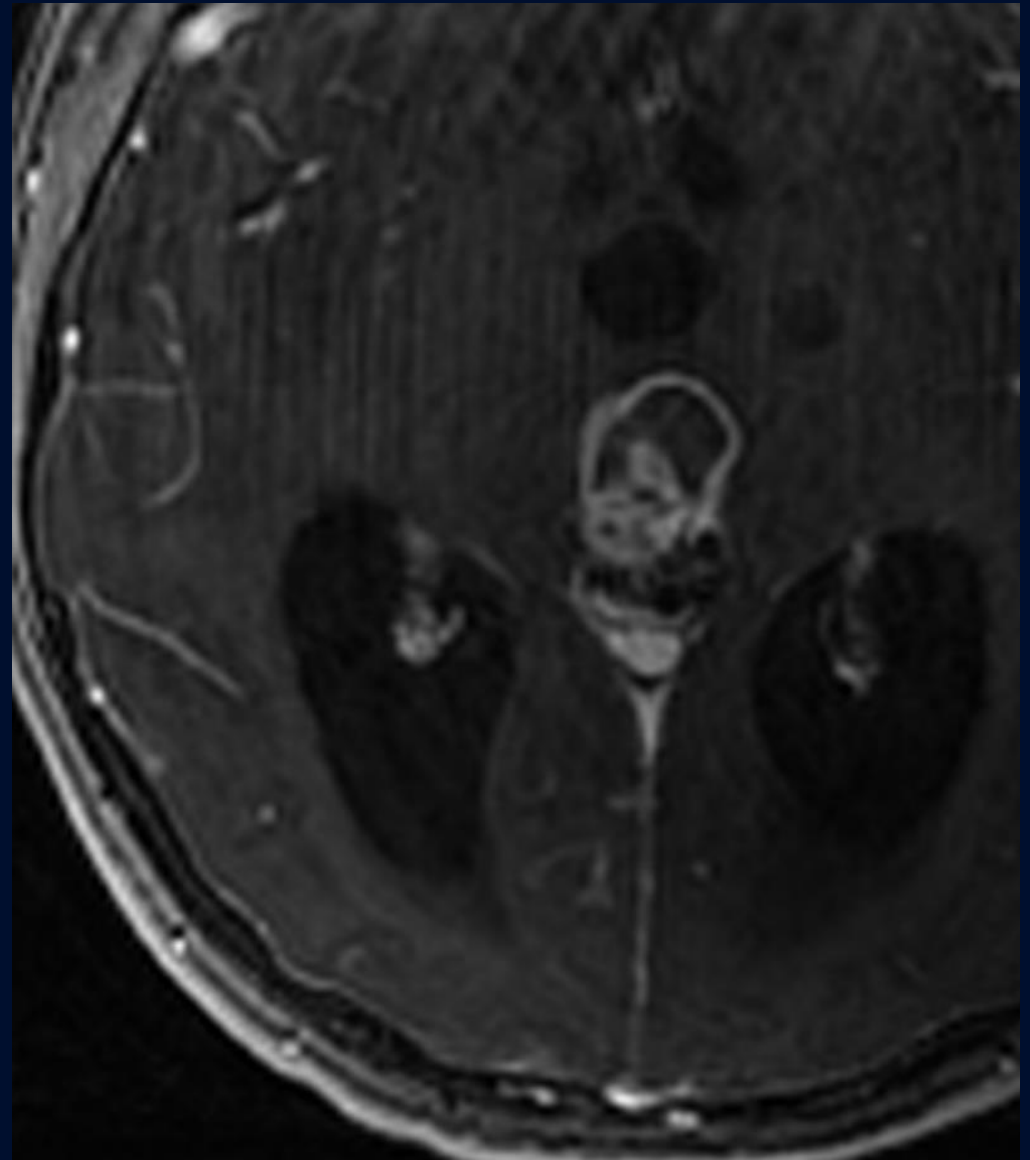
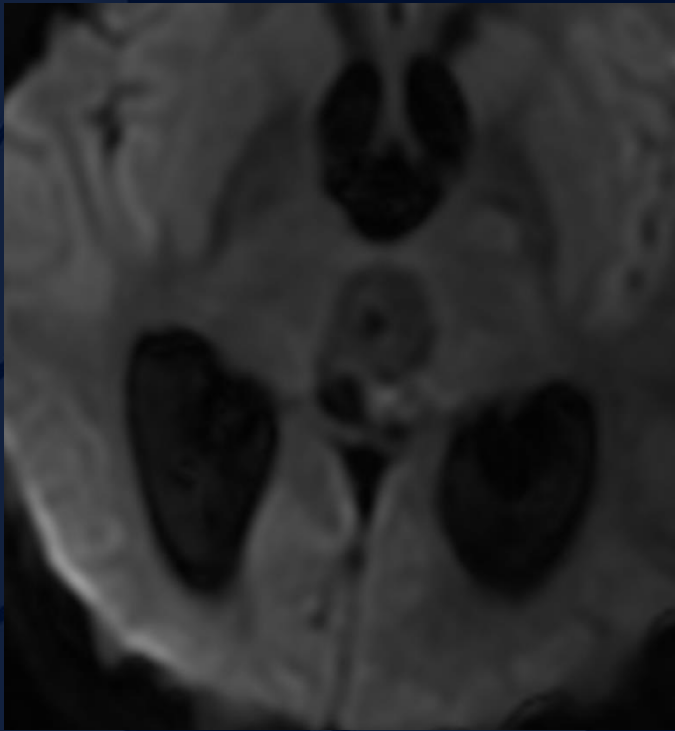


15-year-old male presents with headache

John J. DeBevits, IV MD

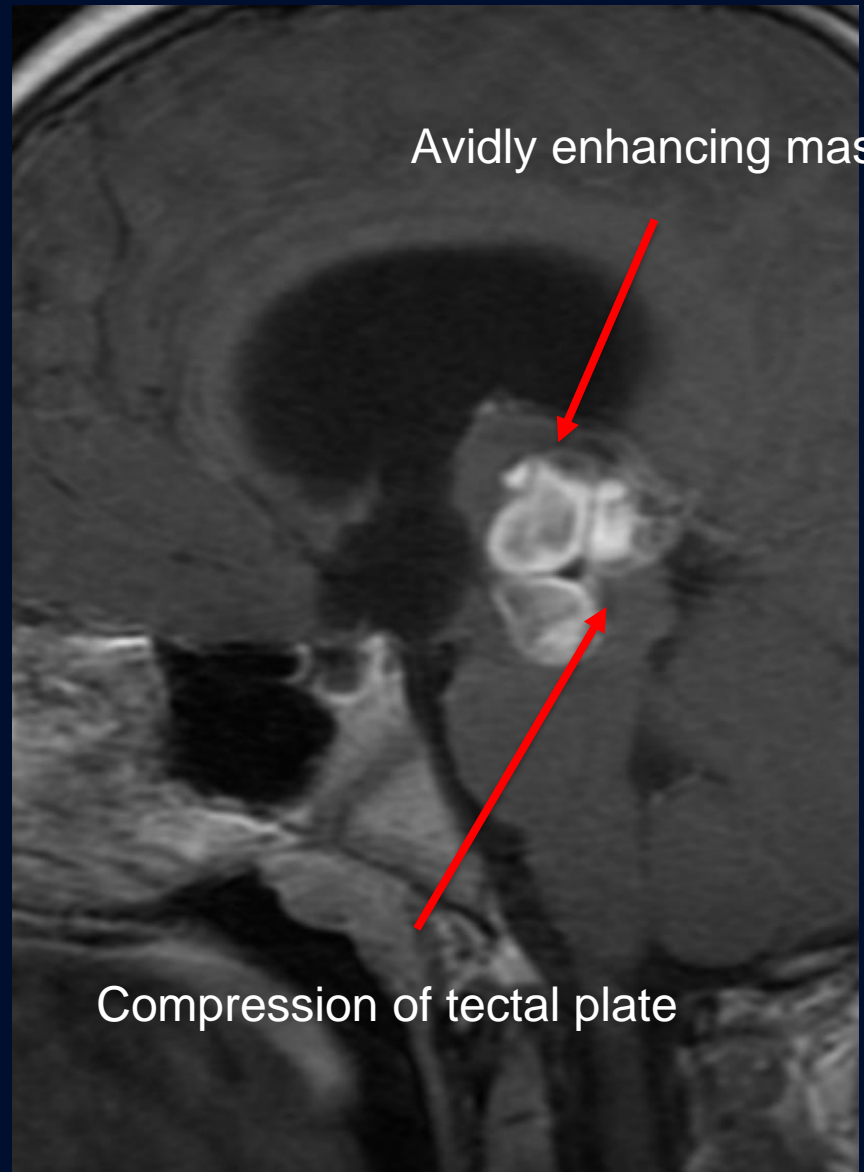
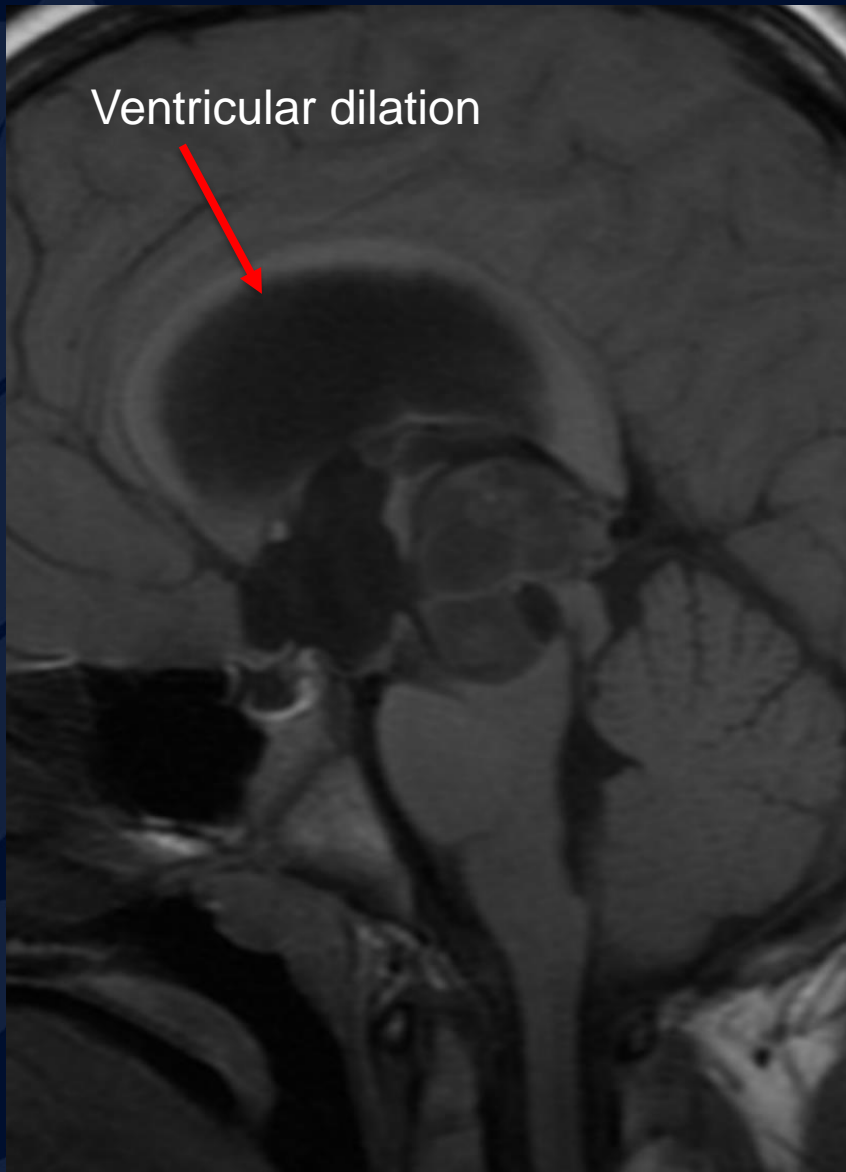




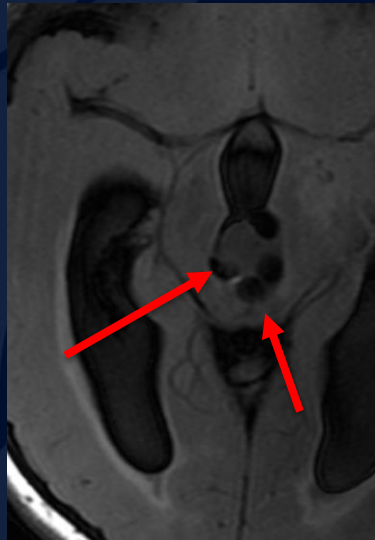
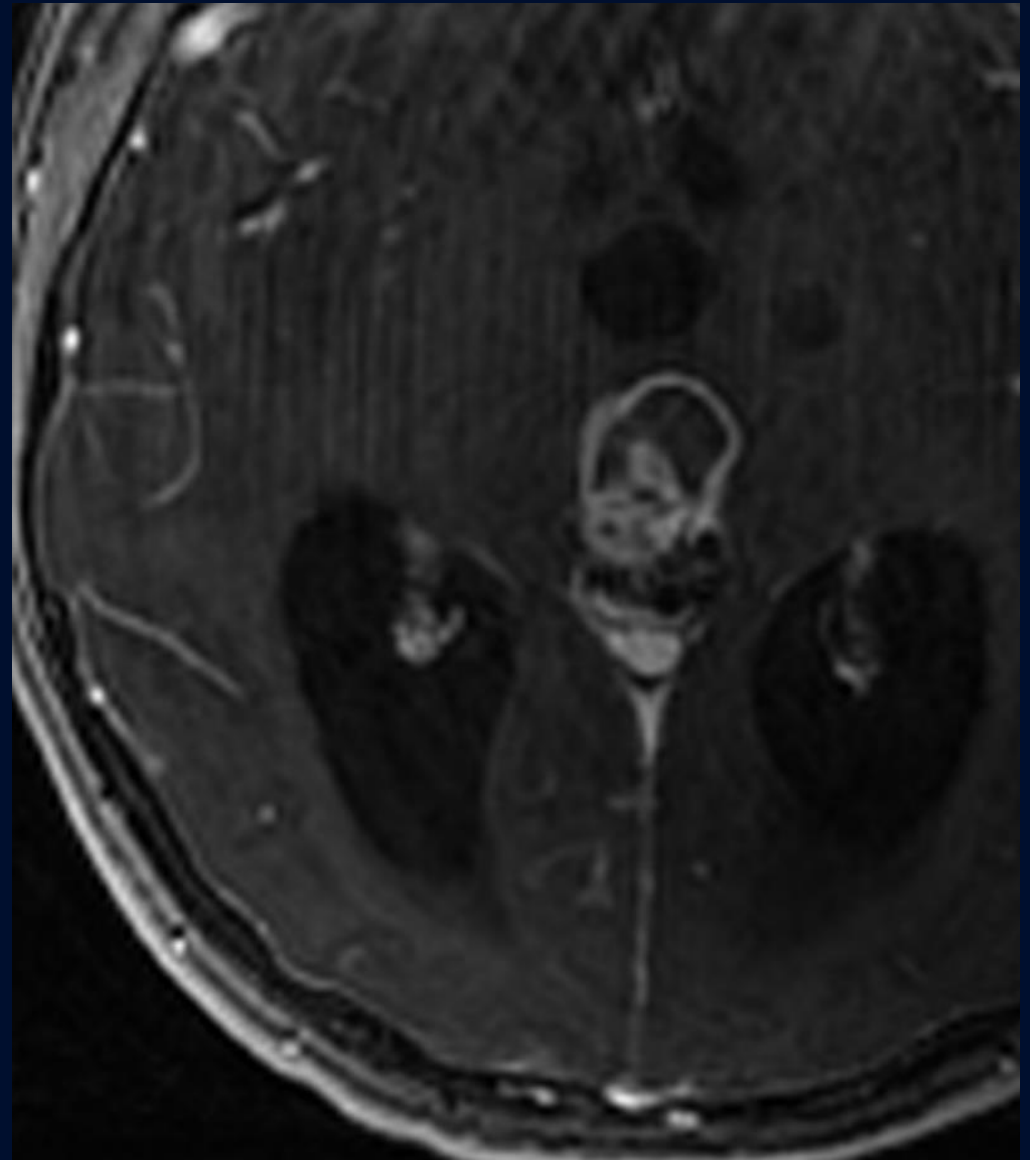
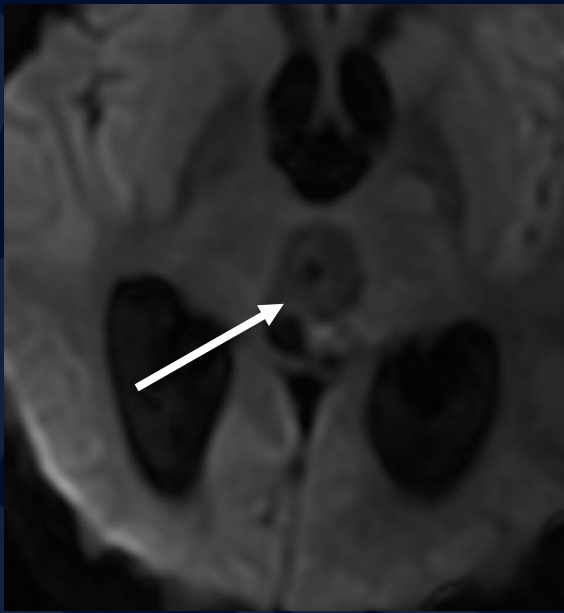
A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. It features a prominent central vein and several smaller veins branching out, with a scalloped edge.

?

Pineal Germinoma



T1 pre- and postcontrast sagittal images show a lobulated, avidly enhancing mass. It is inferior to the splenium and causes compression of the tectal plate, confirming its geographic location within the pineal gland. There is dilation of the lateral and 3rd ventricles with a normal sized 4th ventricle.



T1 pre (bottom left) and postcontrast (right) images demonstrate a partially cystic mass in the pineal gland whose solid portions avidly enhance. There is a somewhat “speckled” enhancement pattern. DWI (top left) shows a suspicious area of curvilinear restricted diffusion in a solid portion of the mass (white arrow). Susceptibility images show several hypointense areas, the largest of which (yellow arrow) may be related to “engulfed” calcium from within the pineal gland.

Pineal Germinoma

- Tumor of primordial germ cells (intracranial germ cell tumor)
- M>>>F ~ 15:1, 90% of pts <20yo
- Typically small, 1-3cm
- Presents with headache, Parinaud syndrome
- May have increased serum and CSF HCG
- Favorable prognosis (5-year survival >90%)
- Suprasellar, BG are other common sites of origin whose presentations may be different
 - Suprasellar can present with diabetes insipidus, vision changes
 - BG will often be much larger at presentation

Findings

- CT: hyperattenuating solid components
 - Localized “engulfed” Ca^{2+}
- MR: suprasellar, pineal, or BG mass
 - Cystic regions common
 - Avidly enhancing +/- “speckled” pattern
 - Bithalamic extension, peritumoral edema
 - DWI restricted diffusion of solid components
 - SWI hypointense regions due to the engulfed Ca^{2+}

Differential Diagnosis

DDx Pineal Mass

- Pineoblastoma
 - Typically younger, Ca²⁺ is scattered/"exploded" rather than "engulfed"
 - Trilateral retinoblastoma
- Pineocytoma
 - More adult population
- Pineal cyst
 - Small (<1cm), does not enhance, no solid components
- Tectal plate/corpus/midbrain glioma
 - No restricted diffusion, does not enhance, no cystic regions
- Meningioma
- Mets

References

- 1. Neuroimaging diagnosis of pineal region tumors-quest for pathognomonic finding of germinoma. [Neuroradiology](#). 2014 Jul;56(7):525-34**
- 2. Conventional and advanced MRI features of pediatric intracranial tumors: posterior fossa and suprasellar tumors. [AJR Am J Roentgenol](#). 2013 May;200(5):1115-24**