2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

CASE PRESENTATION - 2

- 36 yr female

- Presenting complaint:
  headache x 5-10 years, b/l eye pain x 1 week

- Past history:

No comorbidities

Surgical history:

Appendicetomy, LSCS, Fallopian tube excision

- o/e:

Vitals - stable

Neurological examination - b/l papilledema

- Investigations:
- Lumbar puncture drainage was done, 30 ml CSF drained
- CSF opening pressure-22 cm H2O
- CSF analysis-WNL

CLINICAL DD

- Idiopathic intracranial hypertension
- Brain tumour
- CVT
- Hydrocephalus

- To exclude above causes MRI Brain (Headache protocol) was done

Headache protocol

Pre contrast

- DWI / ADC (5 mm)
- T2 axial, coronal, sagg (5 mm)
- 3D T1 sagg (1.4 mm); T1 axial, coronal (3 mm)
- FLAIR CUBE sagg (1.6 mm); FLAIR axial, coronal, sagg (5 mm)
- T2 CUBE sagg (1.2 mm); T2 CUBE axial, coronal (0.5 mm)
- FIESTA / CISS axial (0.8 mm) (fast imaging employing steady state acquisition)
- SWAN axial (3.4 mm), minIP SWAN (8 mm)
- 3D TOF (1.4 mm)

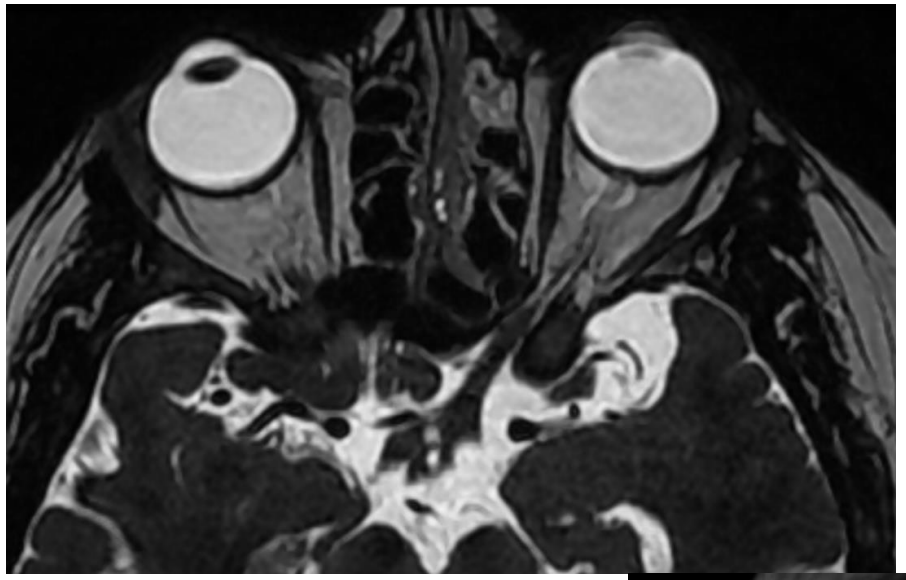
Post contrast

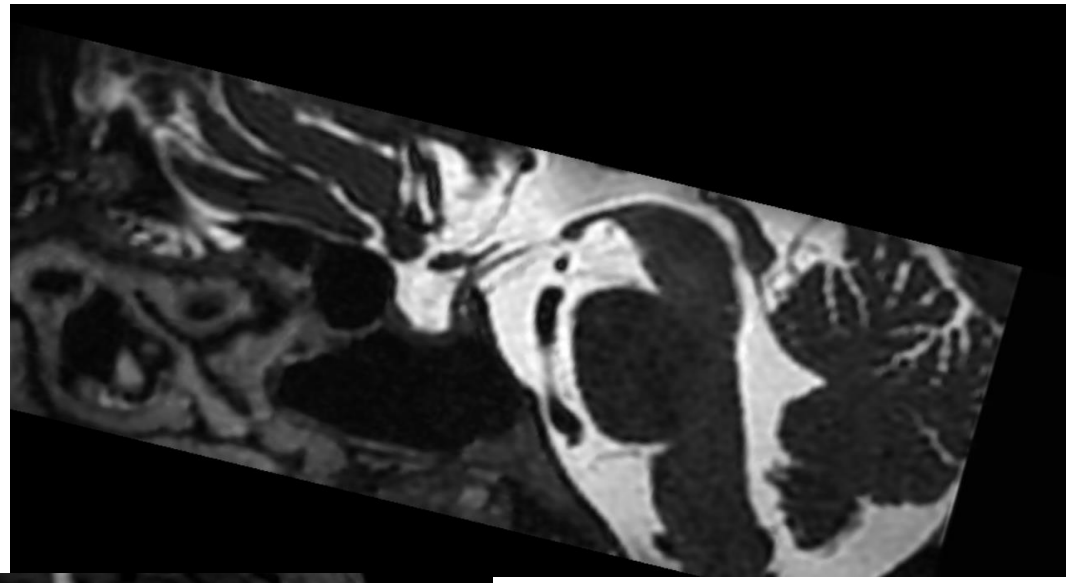
- 3D T1 sagg (1.4 mm); T1 axial, coronal (3 mm); T1 axial, coronal (0.5 mm)
- FLAIR axial (5 mm)
- MR angiogram
- MR venogram

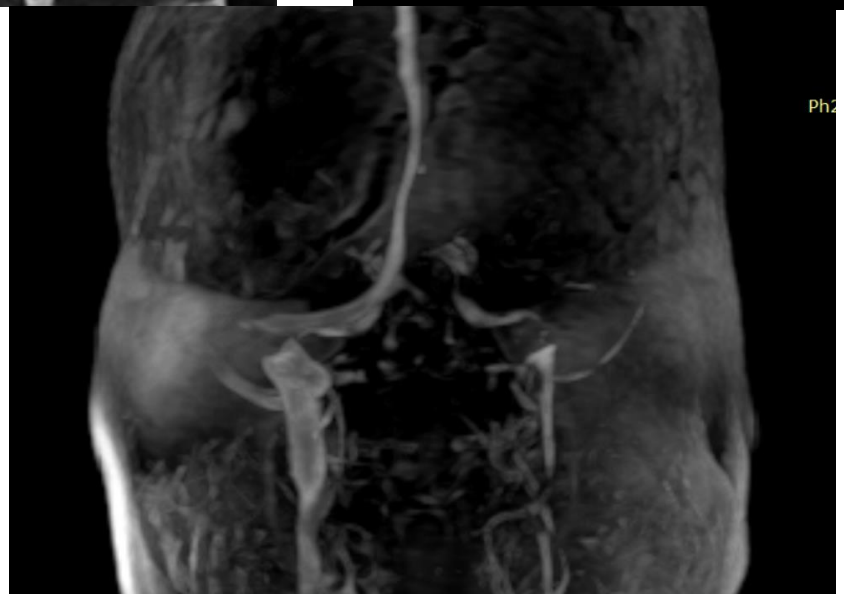
Findings

1. Prominent subarachnoid space around bilateral optic nerve
2. Vertical tortuosity of bilateral optic nerve
3. Mild flattening of bilateral posterior sclera with minimal protrusion of bilateral optic nerve heads
4. Partially empty sella tursica
5. Hypoplastic left transverse and sigmoid sinuses
6. Focal narrowing in junction of bilateral transverse and sigmoid sinuses

→ Findings are consistent with clinical diagnosis of idiopathic intracranial hypertension





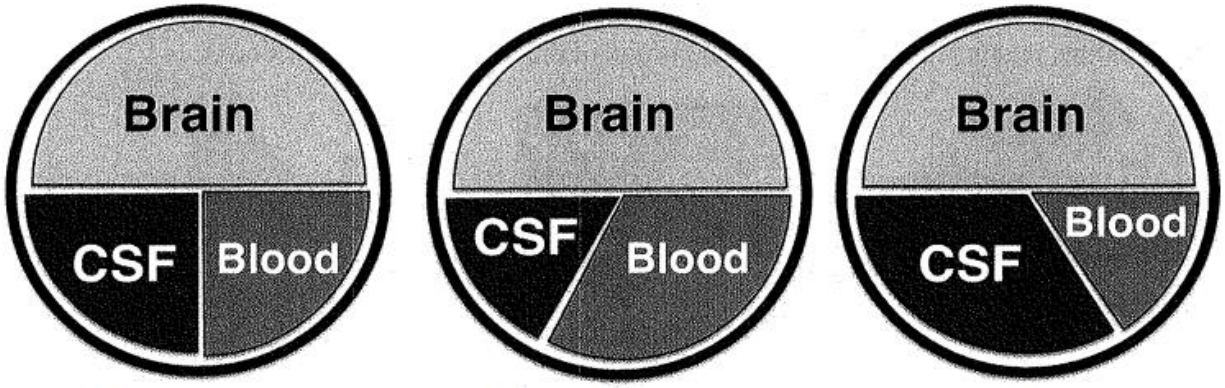


Monro-Kellie Hypothesis

- Head is a closed shell
- 3 major components in dynamic equilibrium

1. Brain
2. Blood (arterial & venous)
3. CSF

- Volume of one goes up, the volume of other must go down



Normal Situation

Leaking CSF
-Venous Blood Expands to Compensate

Intracranial Hypertension
-Venous Sinuses Compress

Idiopathic Intracranial Hypertension

- IIH / pseudotumour cerebri
- A syndrome with signs and symptoms of increased intracranial pressure but where a causative mass or hydrocephalus is not identified.
- Associated with:

1. Hypothyroidism
2. Cushing syndrome
3. Vitamin A toxicity

Idiopathic Intracranial Hypertension

- Middle aged obese female.
- Signs & symptoms:

1. Headache
2. Papilledema
3. Opening CSF pressure on LP: >25.0 cm H_2O or 20.0-25.0 cm H_2O
4. Increased ICP can cause downward displacement of abducent nerve-horizontal diplopia

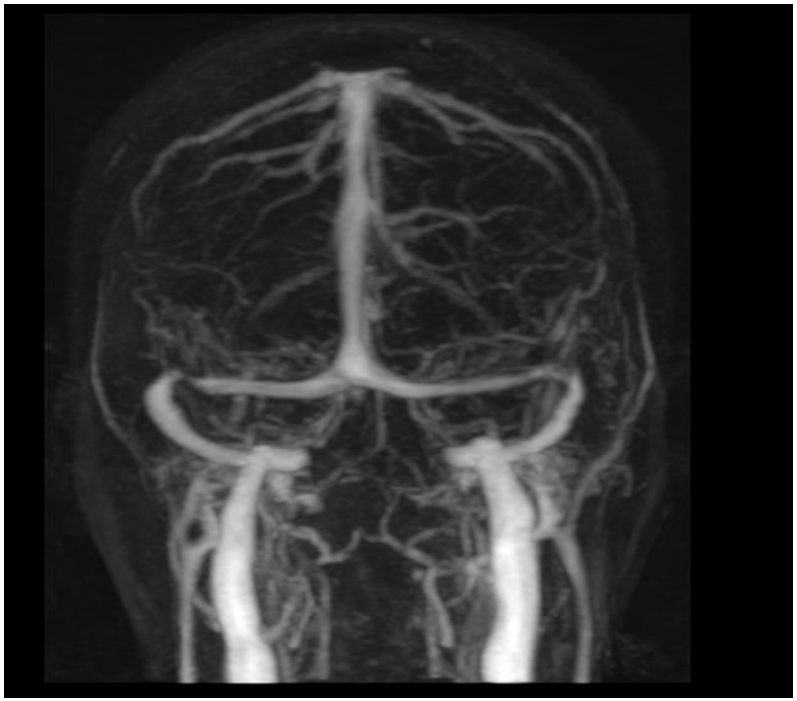
CT / MRI

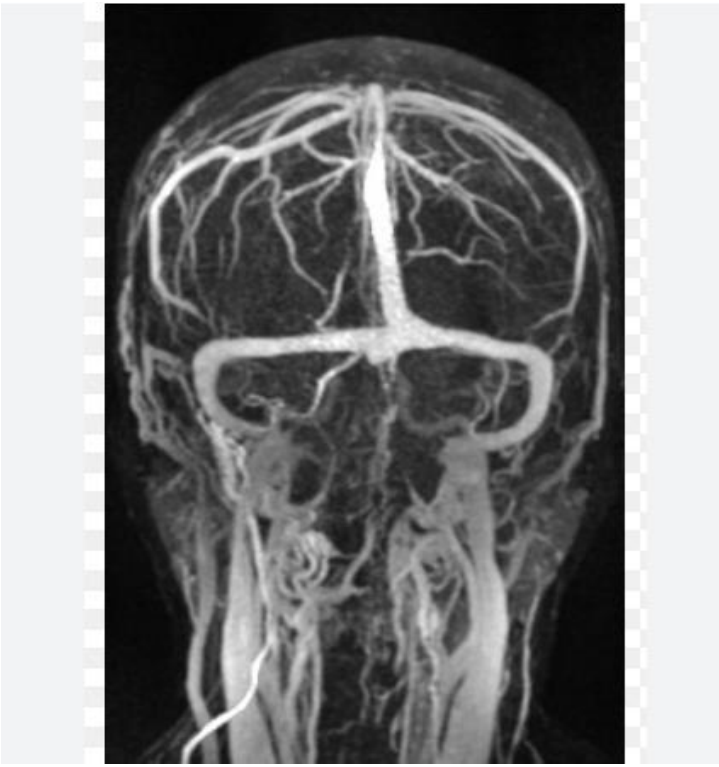
- Imaging to exclude elevated CSF pressure due to other causes such as brain tumour, CVT, hydrocephalus, etc.

1. Bilateral venous sinus stenosis
2. Prominent subarachnoid space around optic nerve
3. Vertical tortuosity of optic nerve
4. Papilledema
5. Partially empty sella tursica

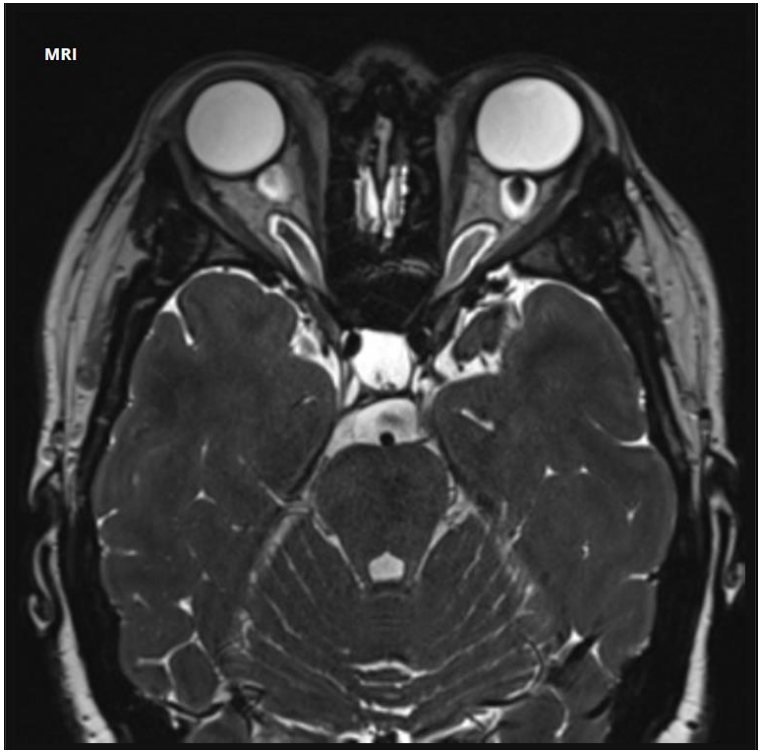
1. **Bilateral venous sinus stenosis**:

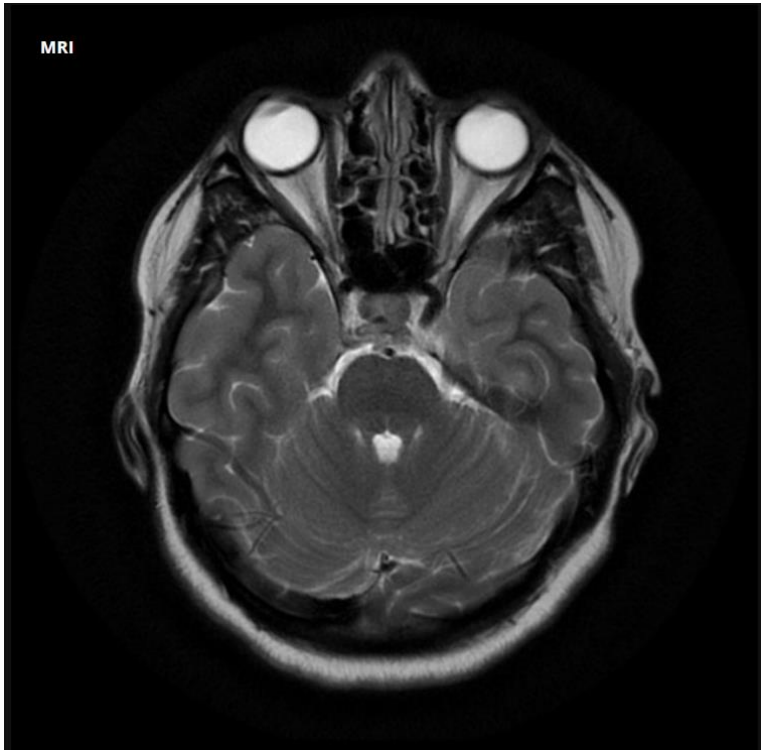
•lateral segments of the transverse sinuses
•no evidence of current or remote thrombosis



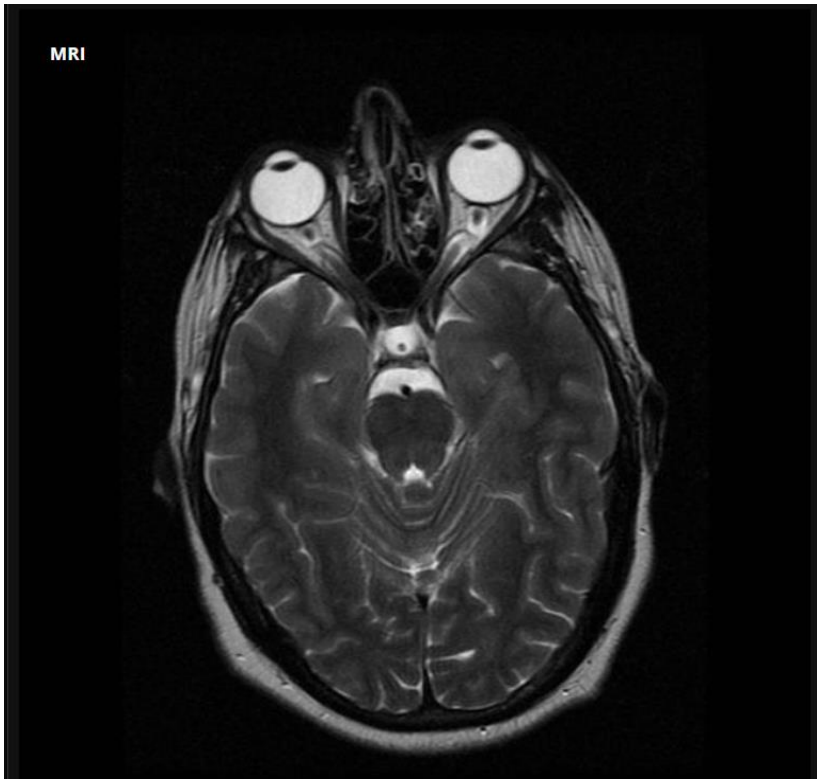


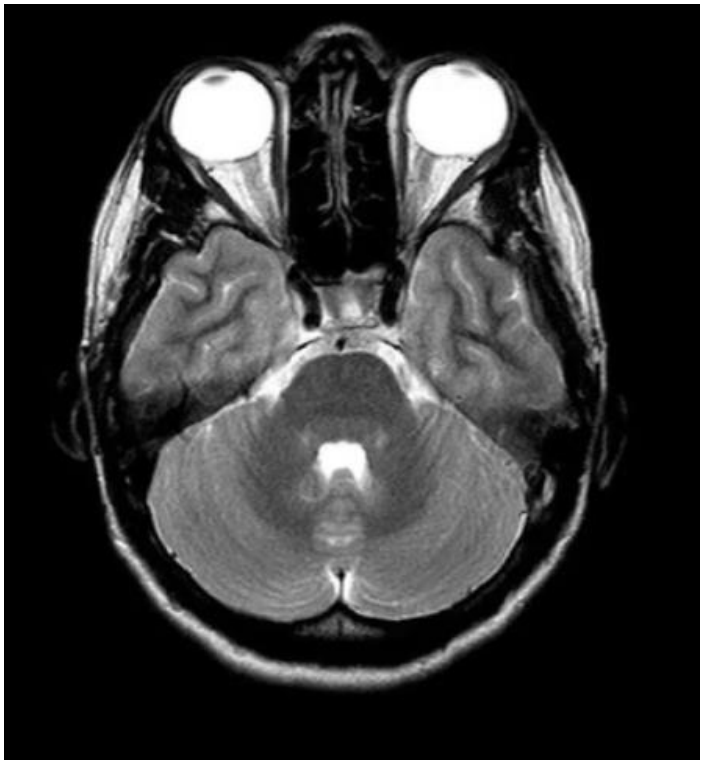
2. **Prominent subarachnoid space around optic nerve**:





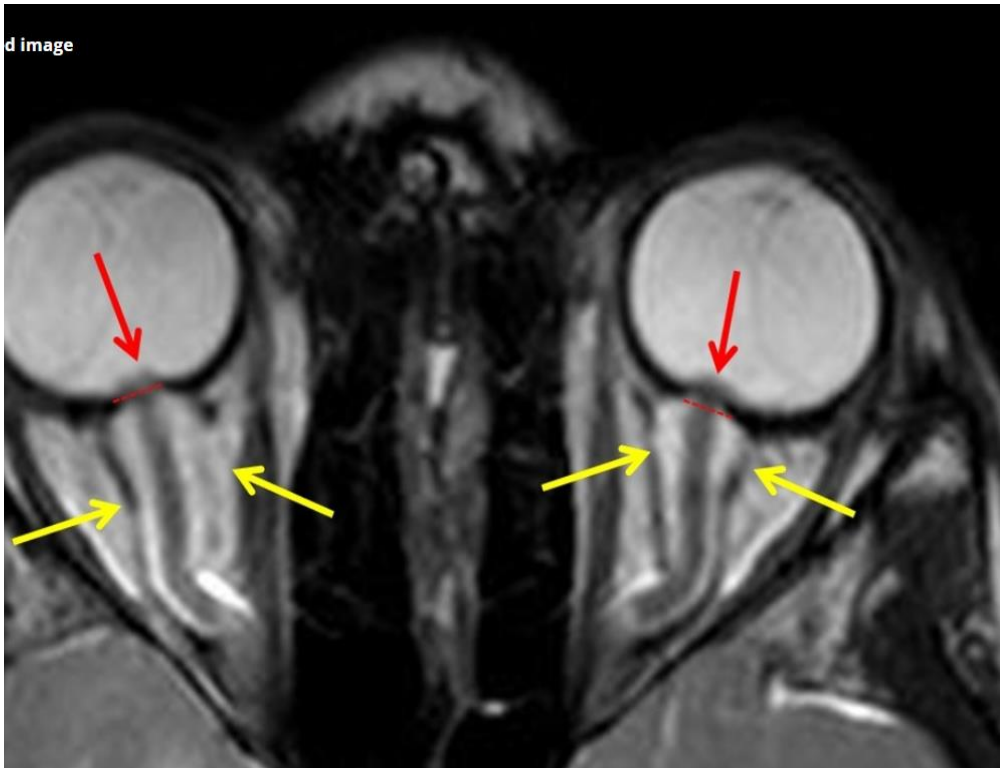
3. **Vertical tortuosity of optic nerve:**

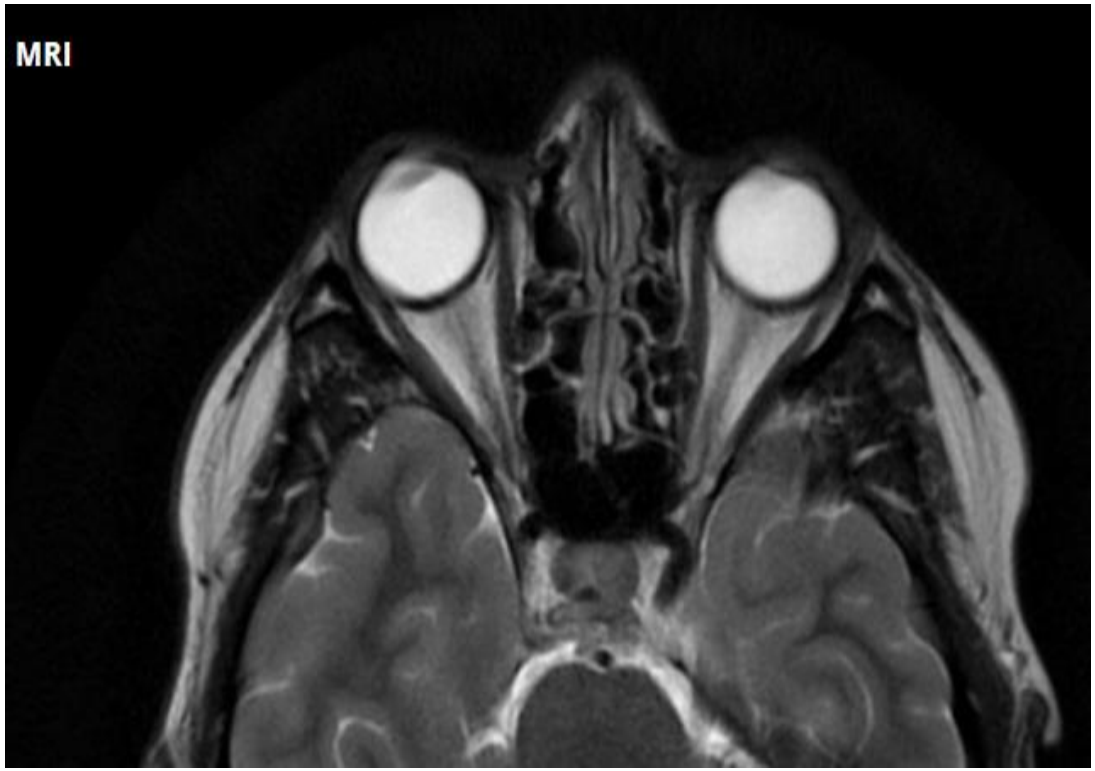




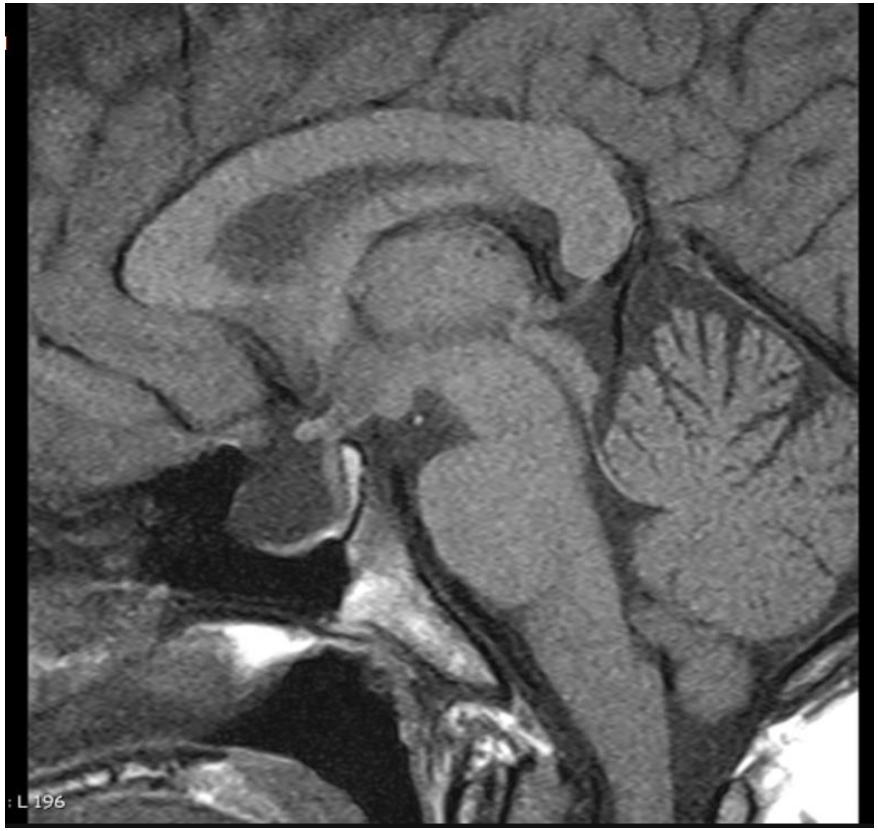
4. **Papilledema**

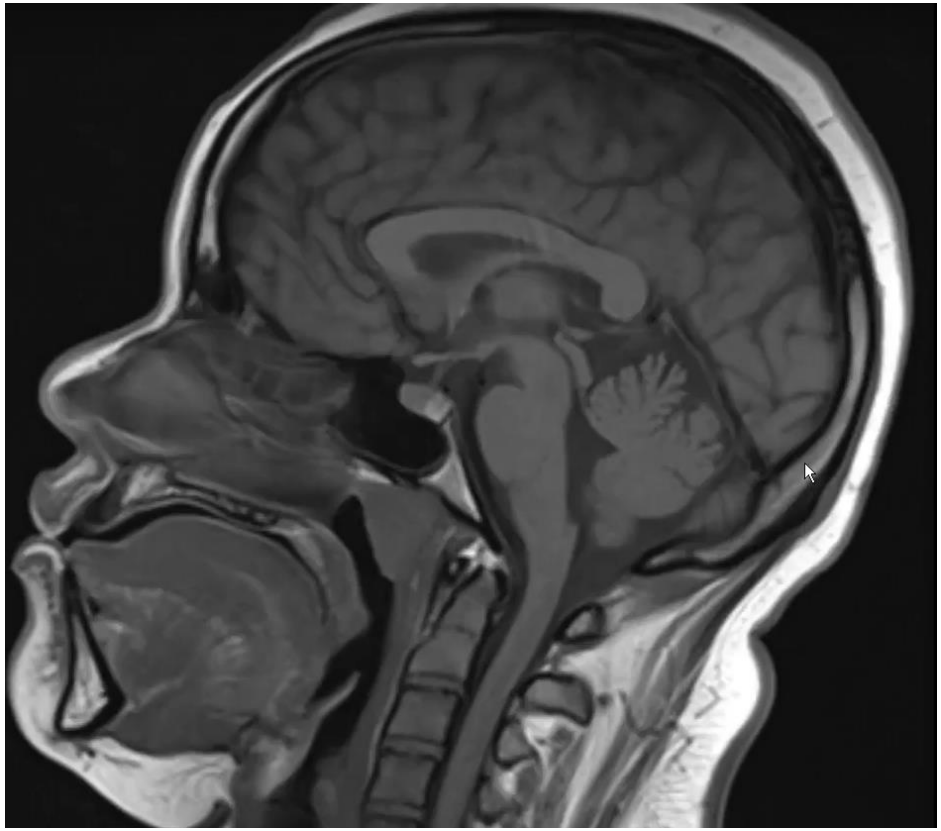
- Flattening of posterior sclera
- Intraocular protrusion of optic nerve head



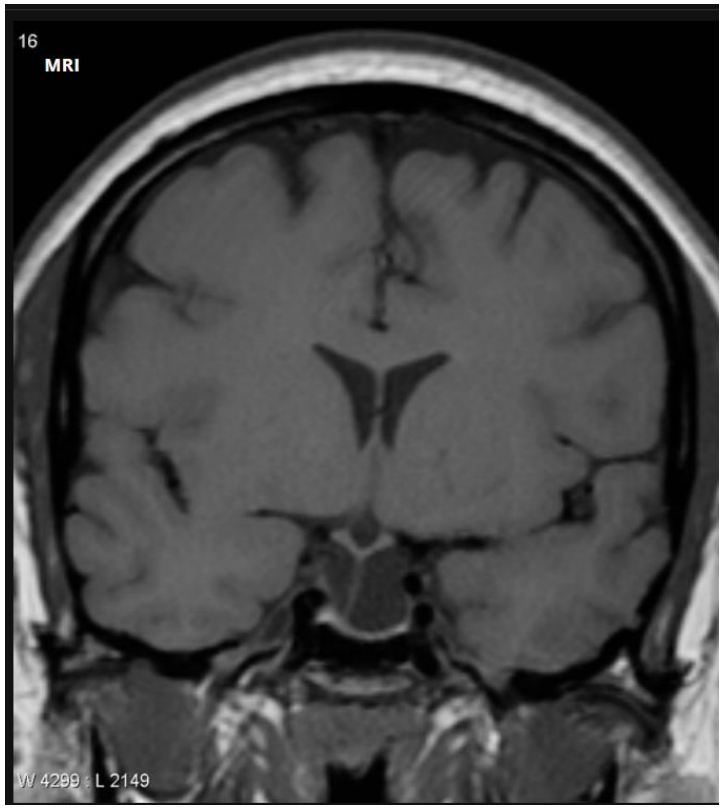


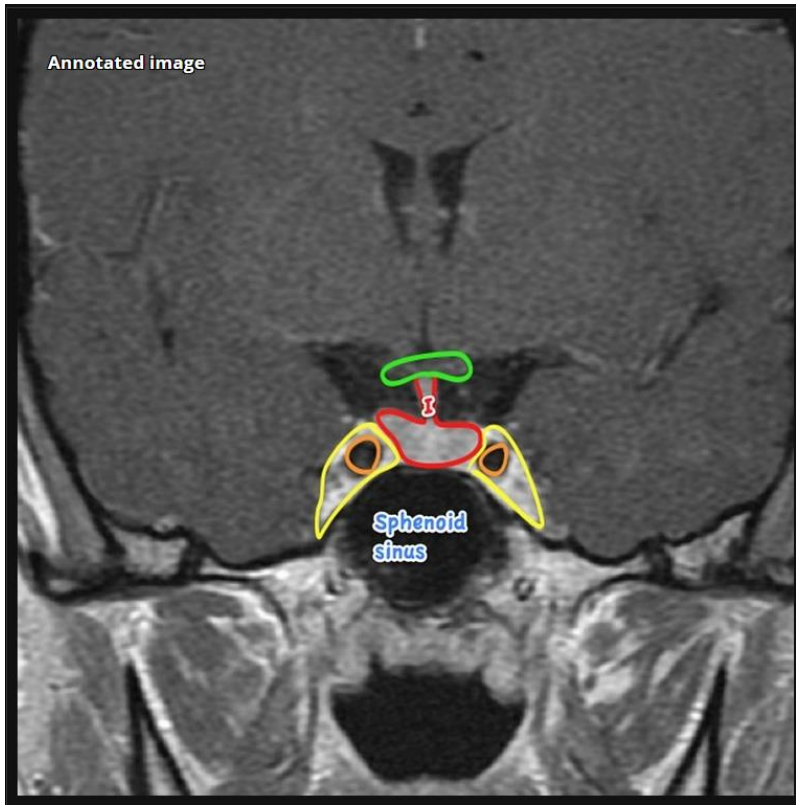
5. **Partially empty sella tursica**-due to shrinkage of PG





- **Partially empty sella tursica**:





Treatment

- First-line treatment options

1. weight loss
2. carbonic anhydrase inhibitors
   - acetazolamide
   - Topiramate

- Invasive treatment options- for refractory cases

1. optic nerve sheath fenestration
2. serial CSF letting by lumbar puncture
3. shunting- ventriculoperitoneal shunting
4. venous sinus stenting
5. bariatric surgery as a surgical weight loss strategy

- Patient was prescribed carbonic anhydrase inhibitors
- Tab. Acetazolomide 250 mg x 2 weeks
- Advised weight loss.
- On regular follow up since then.