AMSER Case of the Month April 2022

29-year-old male presenting with decreased visual acuity and new-onset headaches

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Patient Presentation

- History
  - HTN, obesity, ADHD; 3-4 days left eye pain, feeling of swelling, intermittent blurred vision; feeling of ear pressure/pain/fullness; 1-2 headaches/day for 6 months
- Physical Exam
  - Decreased color perception to red L eye; tenderness to palpation supratrochlear notch; decreased visual acuity L eye; hyperemia L optic disc; blurred R + L optic disc margins
- Lab Findings
  - LP opening pressure 36 cm H2O

What initial imaging should be ordered?

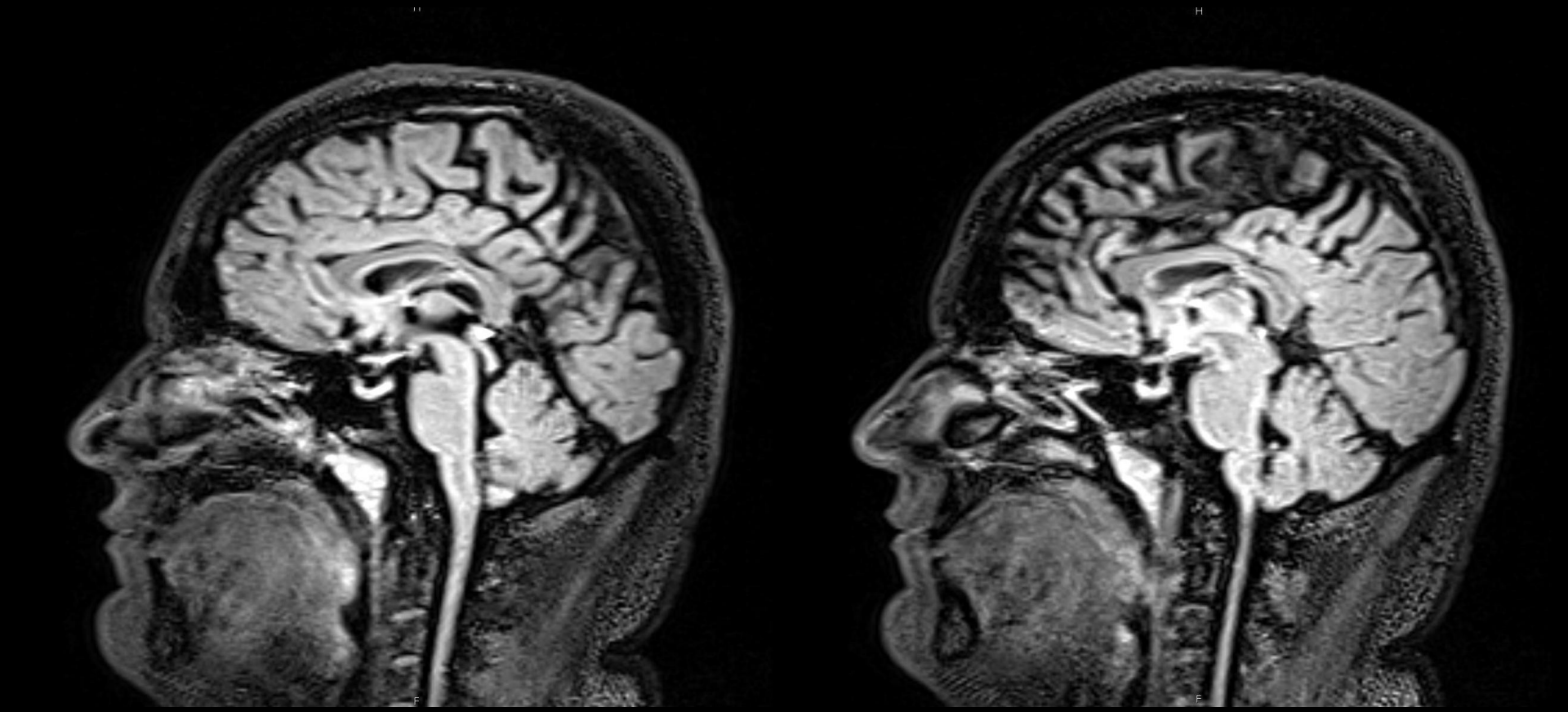
ACR Appropriateness Criteria

This imaging was ordered by the referring physician

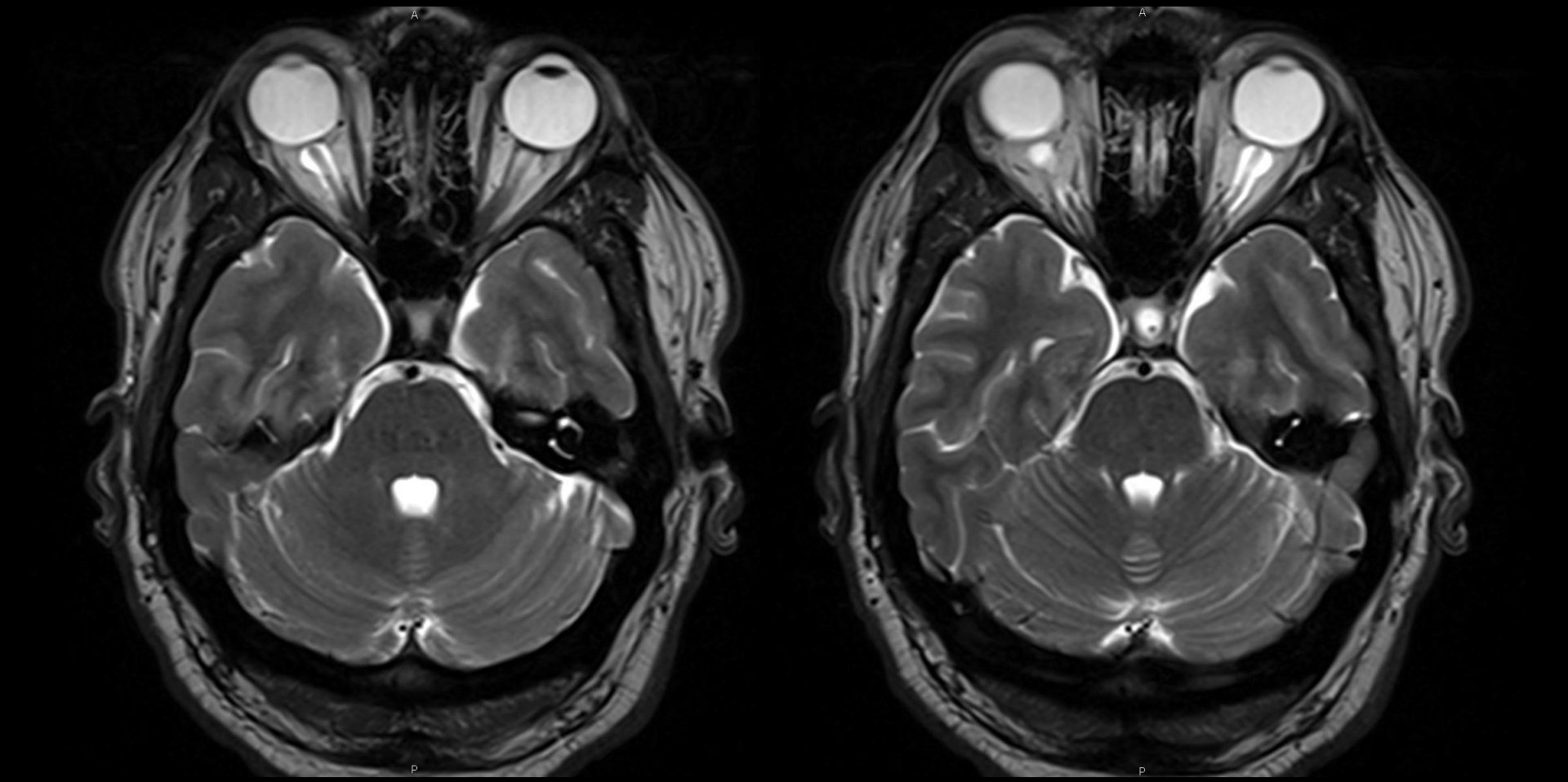
Variant 7: **Chronic headache. New features or increasing frequency. Initial Imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
MRI head without and with IV contrast	Usually Appropriate	O
MRI head without IV contrast	Usually Appropriate	O
CT head without IV contrast	May Be Appropriate	☢☢☢
CT head without and with IV contrast	May Be Appropriate	☢☢☢
CT head with IV contrast	Usually Not Appropriate	☢☢☢
MRA head without IV contrast	Usually Not Appropriate	O
Arteriography cervicocerebral	Usually Not Appropriate	☢☢☢
CTA head with IV contrast	Usually Not Appropriate	☢☢☢
CTV head with IV contrast	Usually Not Appropriate	☢☢☢
MRA head without and with IV contrast	Usually Not Appropriate	O

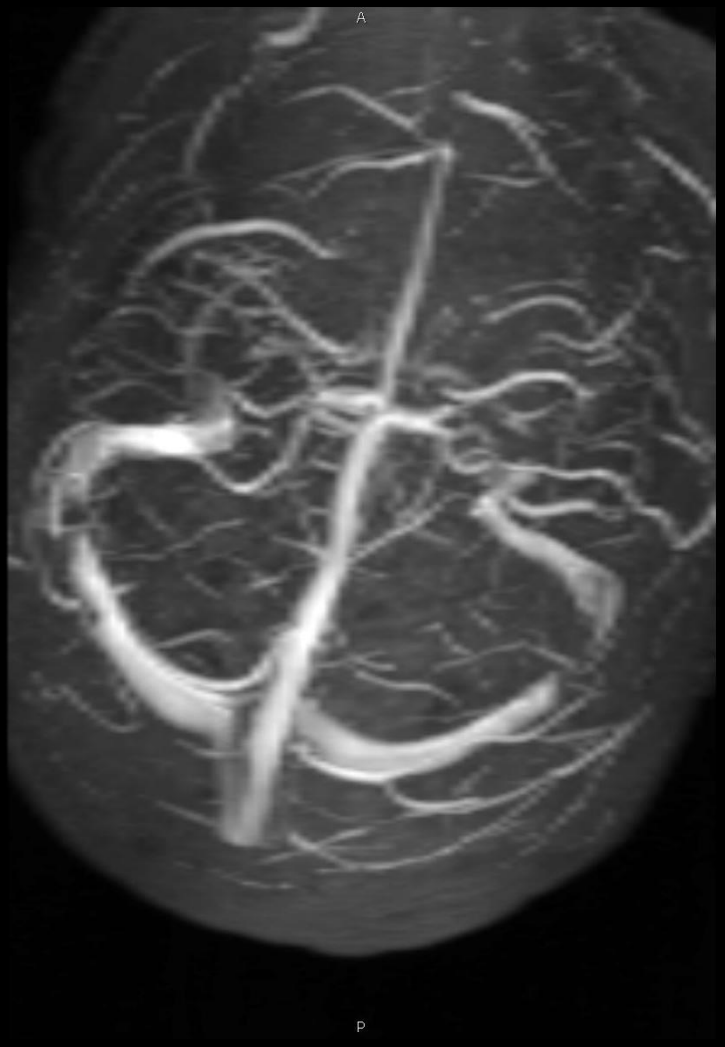
Findings Unlabeled MRI Brain

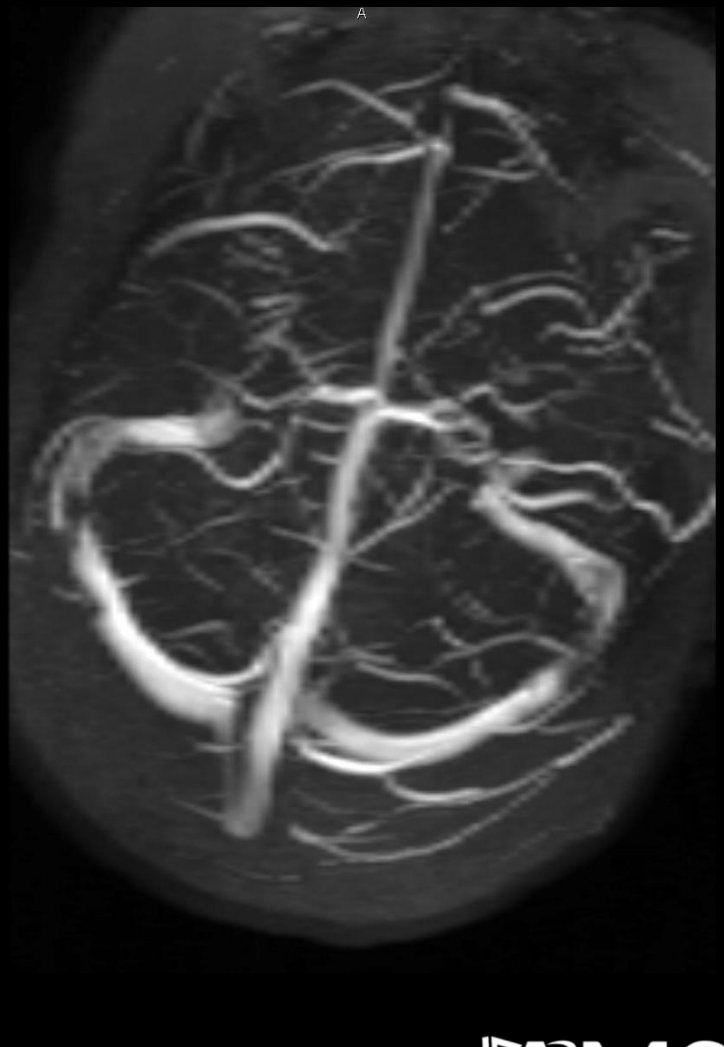


Findings Unlabeled MRI Brain

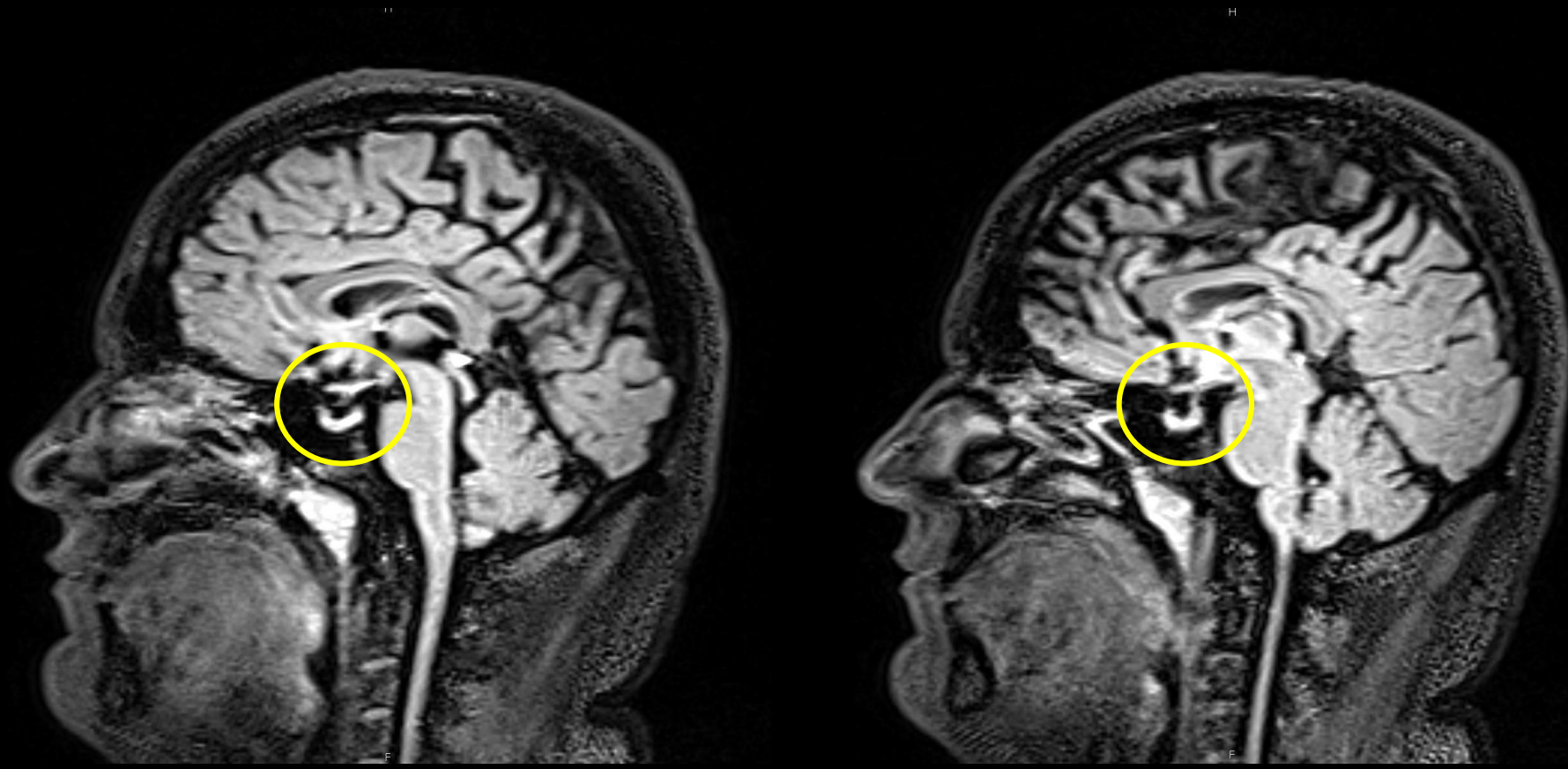


Findings Unlabeled MRV Brain



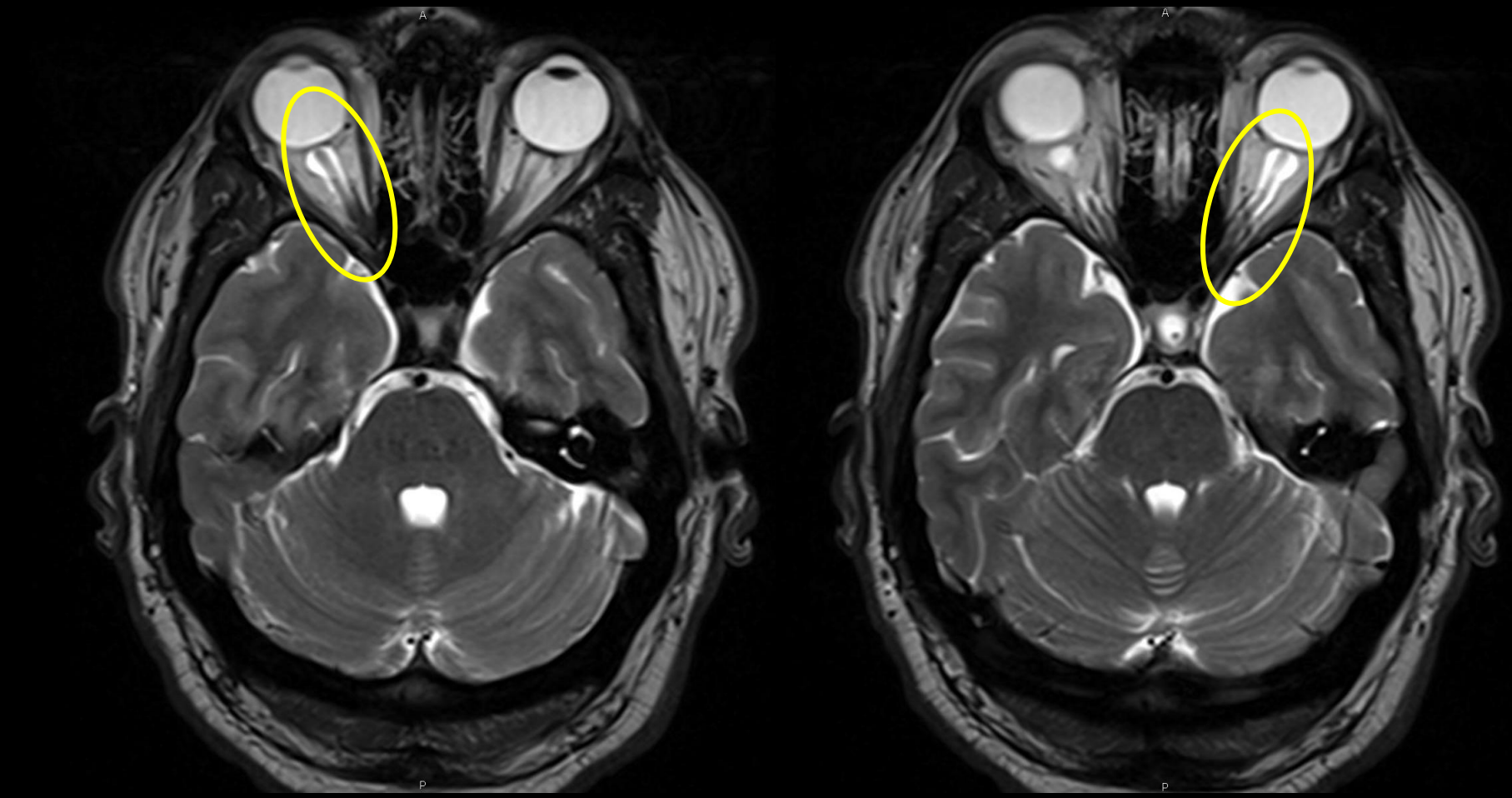


Findings labeled MRI Brain Sag T2 Flair



Relative decrease in size of pituitary in relation to sella; concave superior border

Findings labeled MRI Brain Ax T2



Prominent CSF spaces in bilateral optic nerve sheaths, flattening of the optic nerve head

Findings labeled MRV Brain

Stenosis of distal transverse sinuses bilaterally

Final Diagnosis

Idiopathic Intracranial Hypertension
(pseudotumor cerebri)

Additional Imaging Findings

- Papilledema: flattening posterior sclera; intraocular protrusion optic nerve head
- Enlarged Meckel Cave
- Acquired tonsillar ectopia
- Aberrant arachnoid granulations
- Increased thickness of subcutaneous fat in scalp and neck

Idiopathic Intracranial Hypertension

TABLE 2. IIHTT MODIFIED DANDY CRITERIA
1. Signs and symptoms of increased intracranial pressure
2. No localizing findings on neurologic examination
3. No deformity, displacement, or obstruction of the ventricular system and otherwise normal neurodiagnostic studies, except for increased cerebrospinal fluid (CSF) pressure >200 mm H_2O (abnormal neuroimaging except for empty sella turcica, optic nerve sheath with filled-out CSF spaces, and smooth-walled, non–flow-related venous sinus stenosis or collapse should lead to another diagnosis)
4. Awake and alert patient
5. No other known cause of increased intracranial pressure; opening CSF pressure of 200 to 250 mm H_2O and at least one of the following: • Pulse synchronous tinnitus • Sixth nerve palsy • Frisén grade 2 papilledema • Echography negative for drusen and no other disc anomalies mimicking disc edema • Magnetic resonance venography with lateral sinus collapse or stenosis, preferably using the auto-triggered elliptic centric ordered technique • Partially empty sella on coronal or sagittal views and optic nerve sheaths with filled-out CSF spaces next to the globe on T2 weighted axial scans

Idiopathic Intracranial Hypertension

- Management
  - Eliminate tetracyclines, retinoids
  - Weight loss in setting of comorbid obesity
  - Carbonic anhydrase inhibitors: acetazolamide, topiramate; loop diuretic
  - Optic nerve sheath fenestration, CSF shunting; bridged by serial LP
- Prompt diagnosis and treatment can help to prevent intractable headaches, permanent vision loss

References

1. Suzuki, Hiroko, et al. "MR imaging of idiopathic intracranial hypertension." *American Journal of Neuroradiology* 22.1 (2001): 196-199.
2. Degnan, A. J., and L. M. Levy. "Pseudotumor cerebri: brief review of clinical syndrome and imaging findings." *American journal of neuroradiology* 32.11 (2011): 1986-1993.
3. Wall, Michael, et al. "The Modified Dandy Criteria for Idiopathic Intracranial Hypertension, No Need to Fix What is not Broken." (2021).
4. https://radiopaedia.org/articles/idiopathic-intracranial-hypertension-1?lang=us
5. https://www.uptodate.com/contents/idiopathic-intracranial-hypertension-pseudotumor-cerebri-prognosis-and-treatment