

AMSER Case of the Month

October 2024

37-year-old female with progressively worsening headache, nausea, blurry vision, and ataxia

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Patient Presentation

- **HPI:** 37-year-old female presenting with a 12-month history of progressively worsening headaches, nausea, vomiting, blurry vision, and ataxia. Patient reports she now dry heaves 1-2 per day and occasionally misses steps while going downstairs. Patient describes blurred and double vision in all quadrants.
- **Past Medical History:** Bipolar disorder
- **Medications:** Fluoxetine, Aripiprazole

Patient Presentation

- **Vital Signs:** BP 134/90, Pulse 60, Temp 98.7F, Resp 16, SpO2 98%
- **Physical Exam:** No acute distress, AOX4. Normal to light-touch and proprioception in all extremities. **Mild left-sided pass-pointing and left-sided nystagmus.** PERRL. EOMI. Visual fields intact to confrontation. Normal facial sensation in V1-V3. No dysarthria. No focal weakness. 5/5 strength in all extremities. **Wide-based gait.**

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 7:

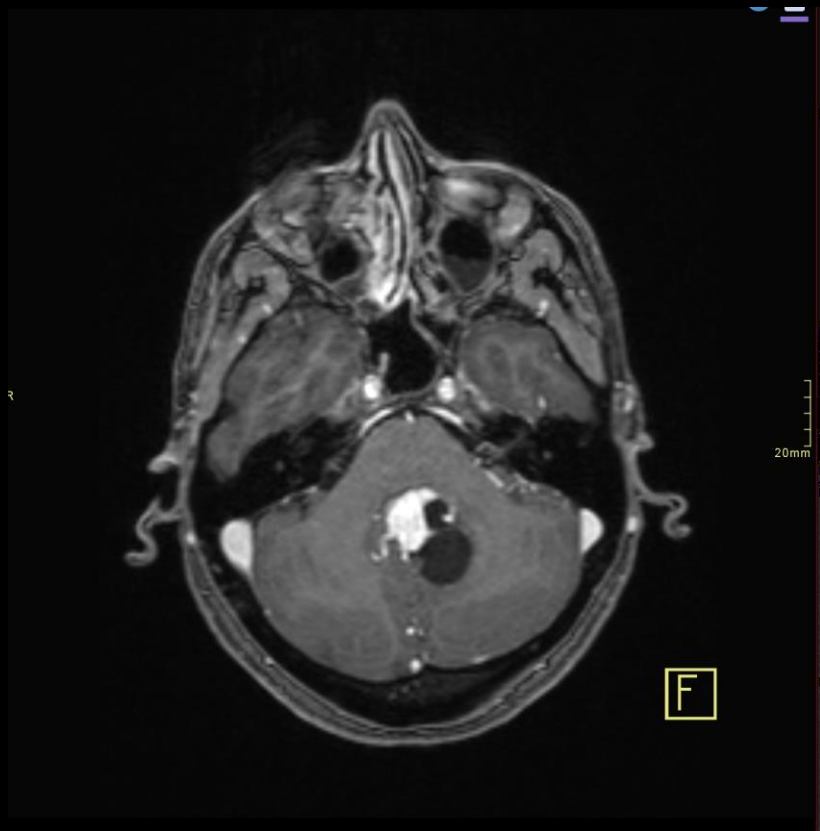
Headache with one or more of the following “red flags”: increasing frequency or severity, fever or neurologic deficit, history of cancer or immunocompromise, older age (>50 years) of onset, or posttraumatic onset. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
MRI head without and with IV contrast	Usually Appropriate	○
MRI head without IV contrast	Usually Appropriate	○
CT head without IV contrast	Usually Appropriate	☼☼☼
Arteriography cervicocerebral	Usually Not Appropriate	☼☼☼
MRA head with IV contrast	Usually Not Appropriate	○
MRA head without and with IV contrast	Usually Not Appropriate	○
MRA head without IV contrast	Usually Not Appropriate	○
MRI head with IV contrast	Usually Not Appropriate	○
MRV head with IV contrast	Usually Not Appropriate	○
MRV head without and with IV contrast	Usually Not Appropriate	○
MRV head without IV contrast	Usually Not Appropriate	○
CT head with IV contrast	Usually Not Appropriate	☼☼☼
CT head without and with IV contrast	Usually Not Appropriate	☼☼☼
CTA head with IV contrast	Usually Not Appropriate	☼☼☼
CTV head with IV contrast	Usually Not Appropriate	☼☼☼

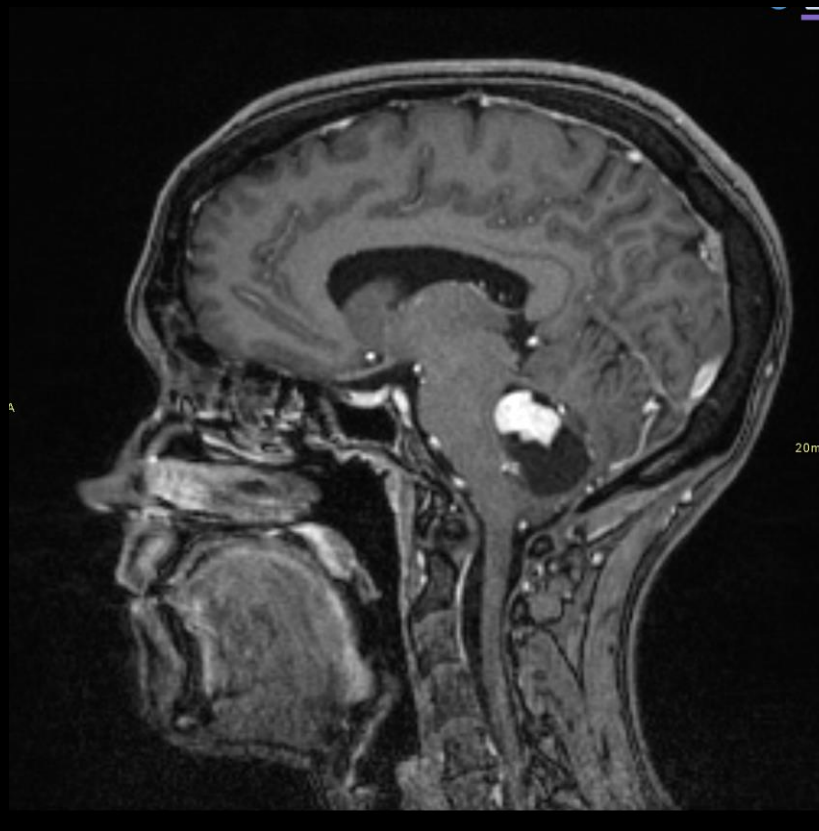


This imaging modality was ordered by the clinic physician

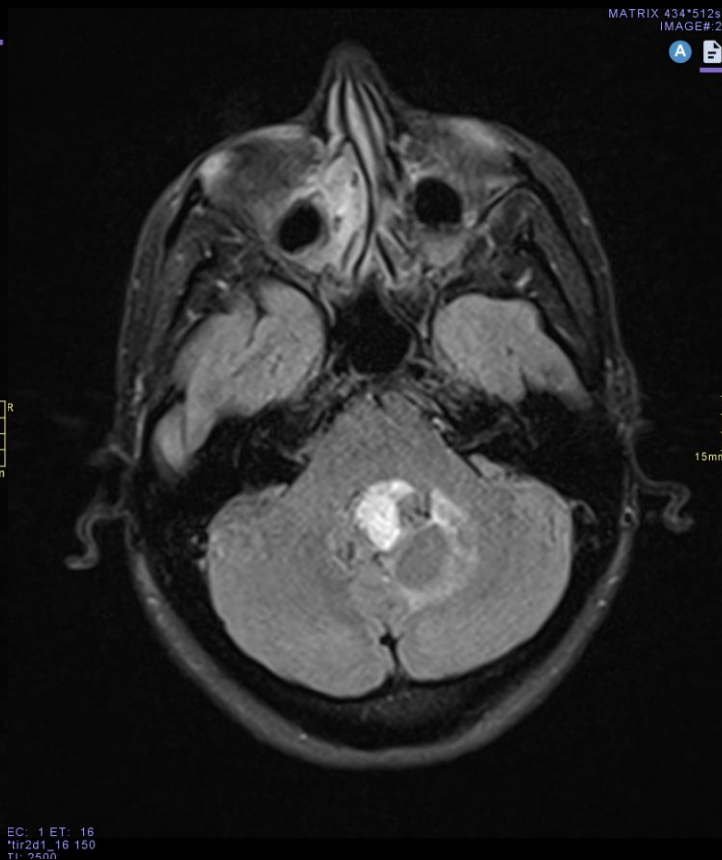
Findings (unlabeled)



Post-Contrast T1 Axial



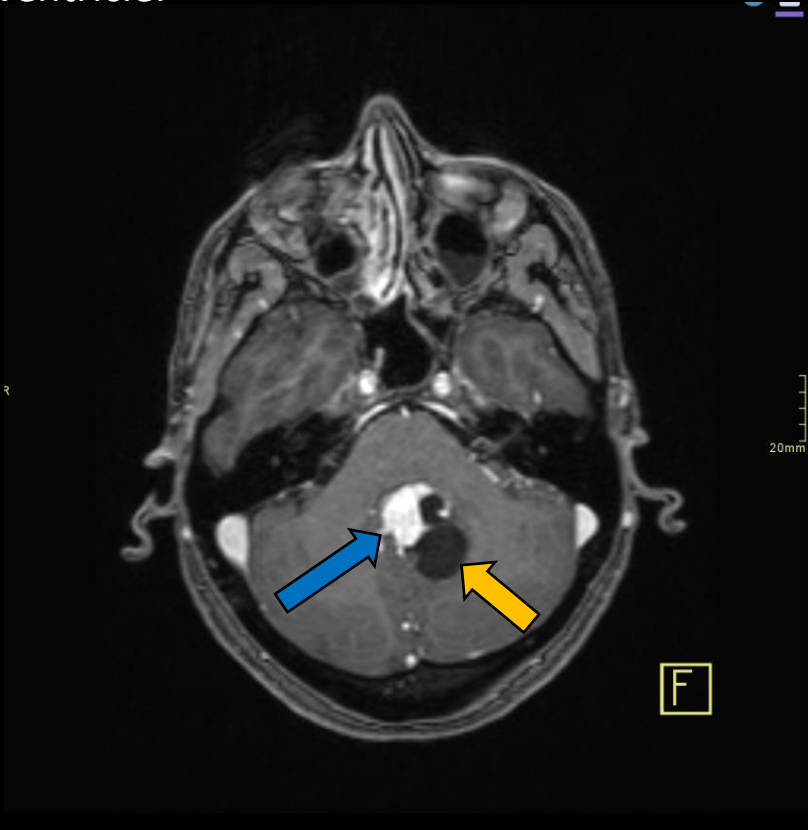
Post-Contrast T1 Sagittal



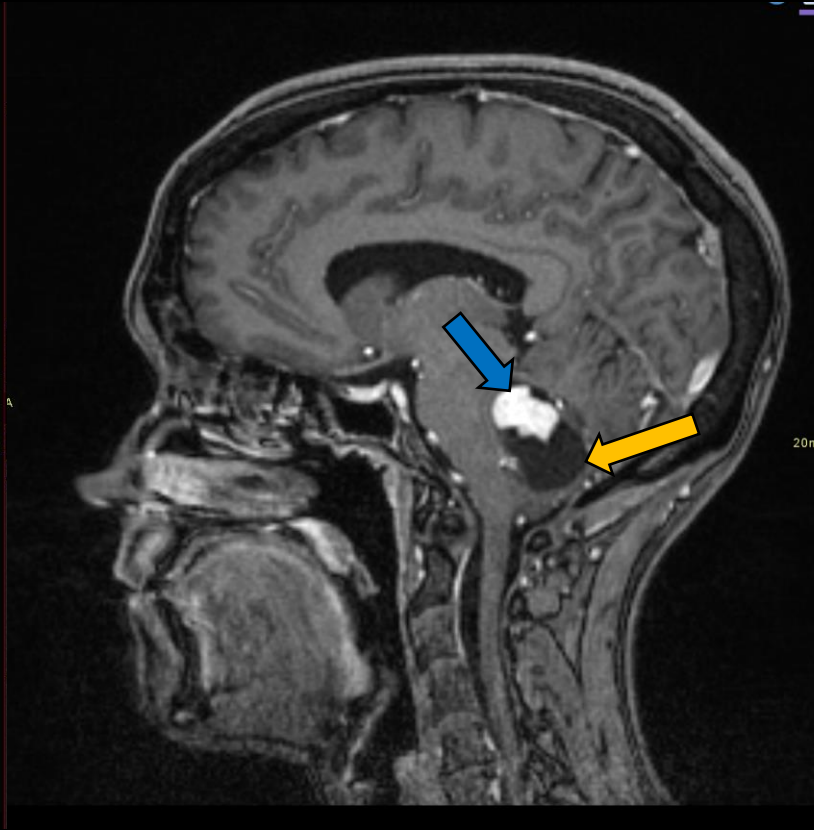
T2 FLAIR Axial

Partially solid (enhancing), partially cystic mass within the left cerebellar hemisphere with surrounding vasogenic edema and mass effect on the 4th ventricle.

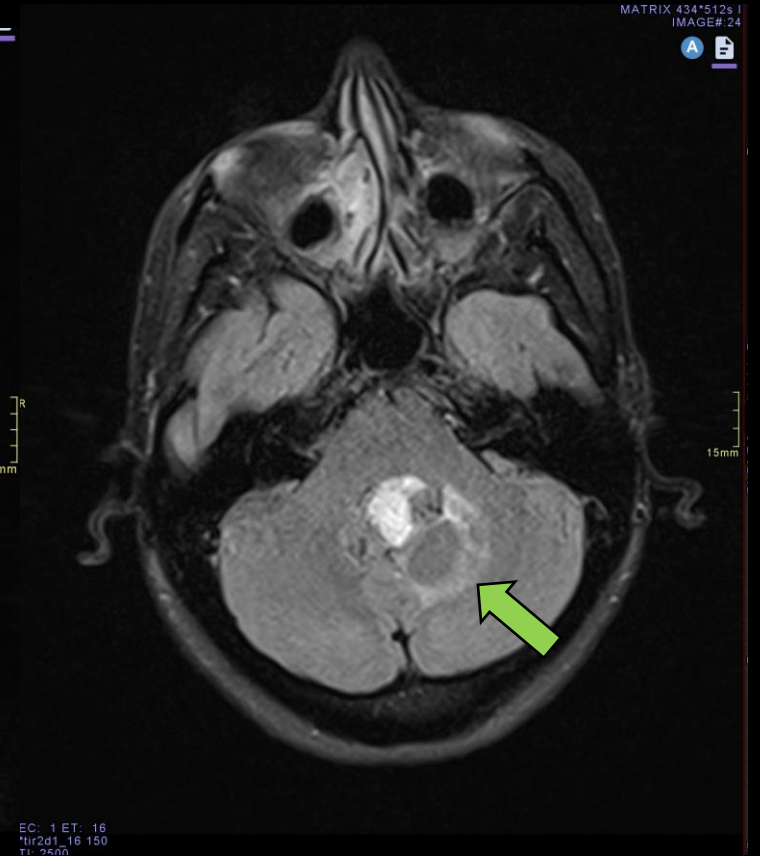
Findings (labeled)



Post-Contrast T1 Axial



Post-Contrast T1 Sagittal



T2 FLAIR Axial

Final Dx:

Hemangioblastoma

Hemangioblastoma

- **Definition:** Benign, highly vascularized neoplasm of the brain, spinal cord, or retina
- **Etiology:**
 - Sporadic
 - ~20-25% occur in association with Von Hippel-Lindau disease (VHL)
 - ~45% of those with VHL develop hemangioblastomas
- **Clinical Features:**
 - Cerebellum most common site → ataxia, dysmetria, nystagmus, and other cerebellar defects
 - Often compresses the 4th ventricle → non-communicating hydrocephalus → features of intracranial hypertension (i.e. headache, papilledema)
 - Paraneoplastic EPO production → secondary polycythemia

Hemangioblastoma

- **Imaging Findings:**

- Sharply demarcated homogenous mass composed of a cystic component (60% of cases) and a vividly enhancing mural nodule with prominent serpentine flow voids
 - CT and MRI are the preferred imaging modalities

- **CT**

- Mural nodule is isodense to the brain on non-contrast CT with a fluid density surrounding the cyst
- Post-contrast demonstrates homogenous enhancement of the mural nodule
- Cyst walls usually do not enhance

- **MRI**

- T1: hypointense to isointense mural nodule with CSF signal of the cystic component
- T2: hyperintense mural nodule with hyperintense fluid-filled cyst
 - Flow voids due to enlarged vessels may be evident, especially at the periphery of the cyst (60% of cases)

Hemangioblastoma

- **Treatment:**

- Surgical resection is often curative
 - Recurrence <20% in sporadic cases
 - Adjuvant radiotherapy may be used in cases of incomplete resection
- Cystic drainage is insufficient for definitive management

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