

AMSER Case of the Month

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A 37-year-old woman presents to the emergency room after loss of consciousness with head-strike

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Patient Presentation

- 37-year-old woman presents to the ED by ambulance for loss of consciousness and a fall with head-strike. Following return of consciousness, the patient reports generalized weakness, nausea, vomiting, headaches, intermittent blurry vision, and dysarthria.
- Vitals: BP 101/67, P 73, T 36.7, RR 16
- Physical Exam: Appears in mild discomfort, frequently grasping head. Unremarkable physical exam, including extensive neuro exam.
- Labs: unremarkable

What imaging should we order?

Select the applicable ACR appropriateness Criteria

Variant 2: Acute head trauma, mild (GCS 13–15), imaging indicated by clinical decision rule. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT head without IV contrast	Usually Appropriate	☼☼☼
Radiography skull	Usually Not Appropriate	☼
Arteriography cervicocerebral	Usually Not Appropriate	☼☼☼
MR spectroscopy head without IV contrast	Usually Not Appropriate	○
MRA head and neck with IV contrast	Usually Not Appropriate	○
MRA head and neck without and with IV contrast	Usually Not Appropriate	○
MRA head and neck without IV contrast	Usually Not Appropriate	○
MRI functional (fMRI) head without IV contrast	Usually Not Appropriate	○
MRI head with IV contrast	Usually Not Appropriate	○
MRI head without and with IV contrast	Usually Not Appropriate	○
MRI head without IV contrast	Usually Not Appropriate	○
MRI head without IV contrast with DTI	Usually Not Appropriate	○
CT head with IV contrast	Usually Not Appropriate	☼☼☼
CT head without and with IV contrast	Usually Not Appropriate	☼☼☼
CTA head and neck with IV contrast	Usually Not Appropriate	☼☼☼
HMPAO SPECT or SPECT/CT brain	Usually Not Appropriate	☼☼☼
FDG-PET/CT brain	Usually Not Appropriate	☼☼☼

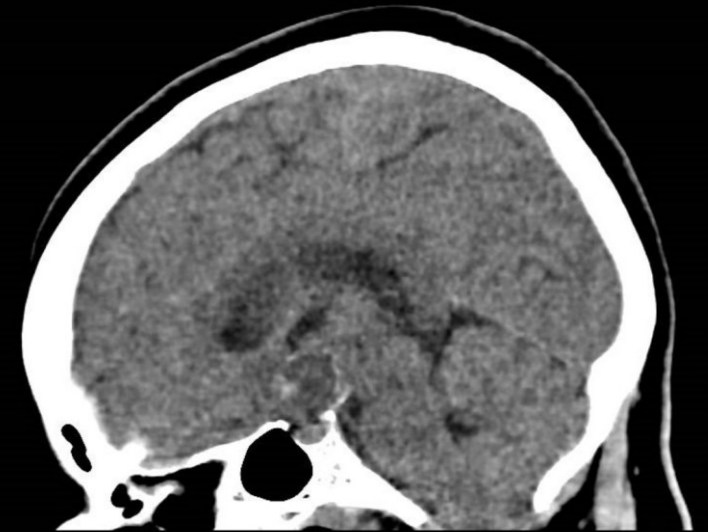
Findings (unlabeled)



Coronal



Axial



Sagittal

Findings (labeled)

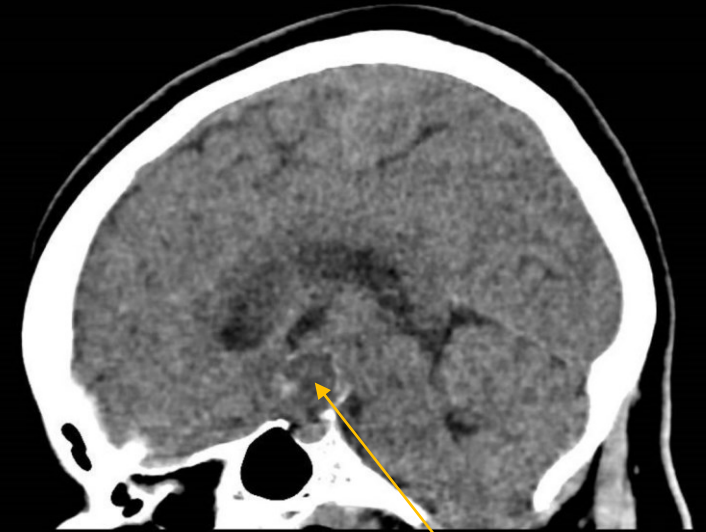
CT Head without IV contrast



Coronal



Axial

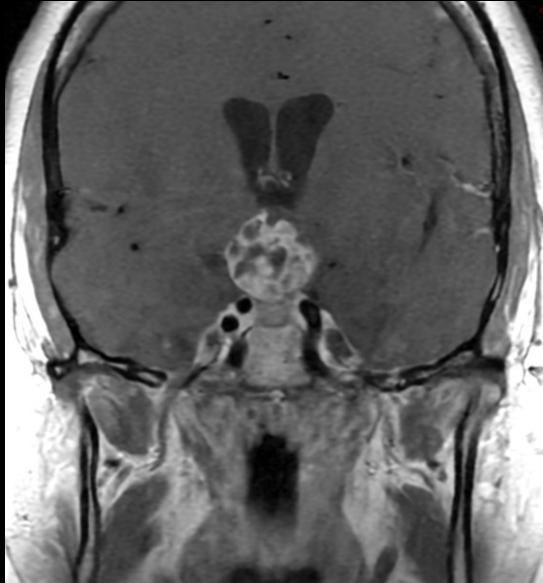


Sagittal

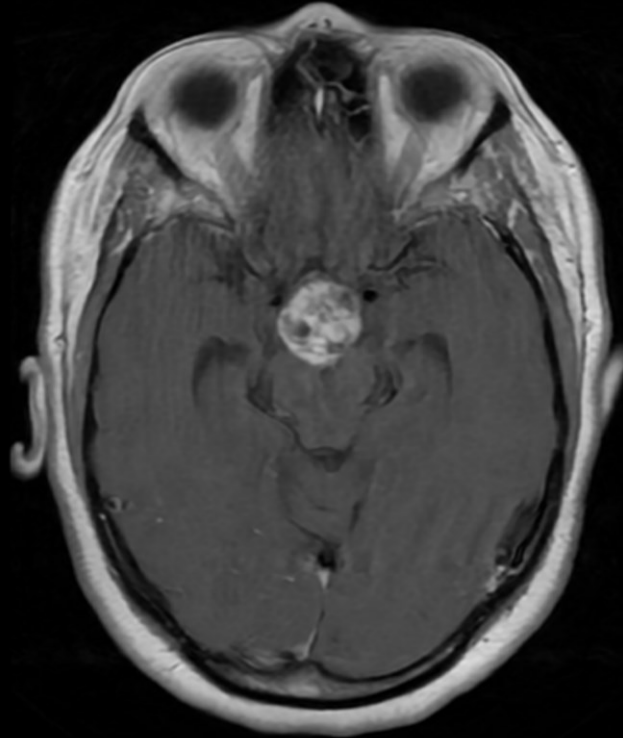
- 2.4 x 1.7 x 2.2 cm hypodense suprasellar mass with peripheral calcifications.
- There is mild effacement of the suprasellar cistern.

Follow-up imaging

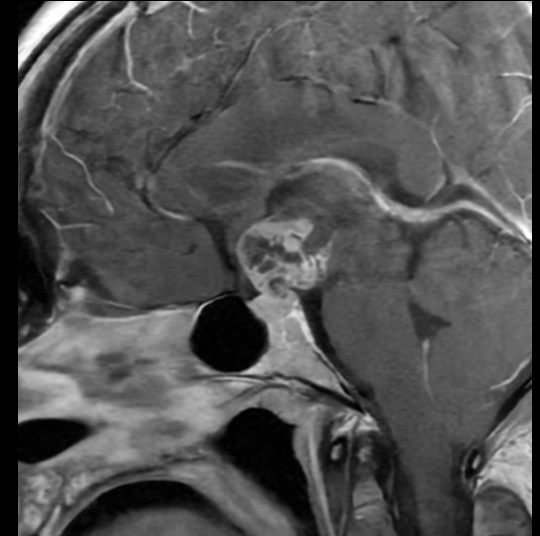
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Coronal



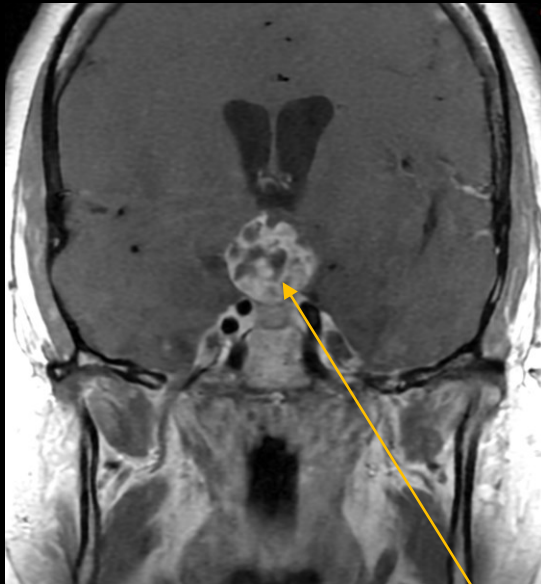
Axial



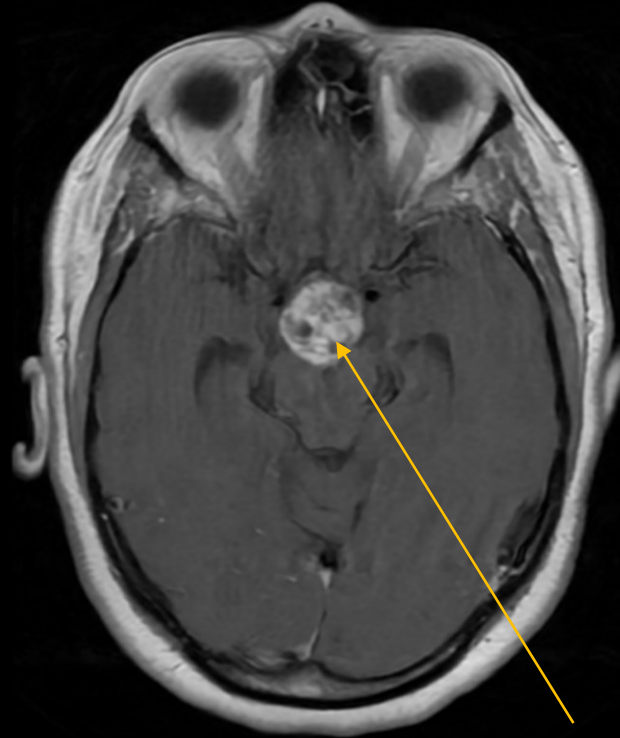
Sagittal

Findings (labeled)

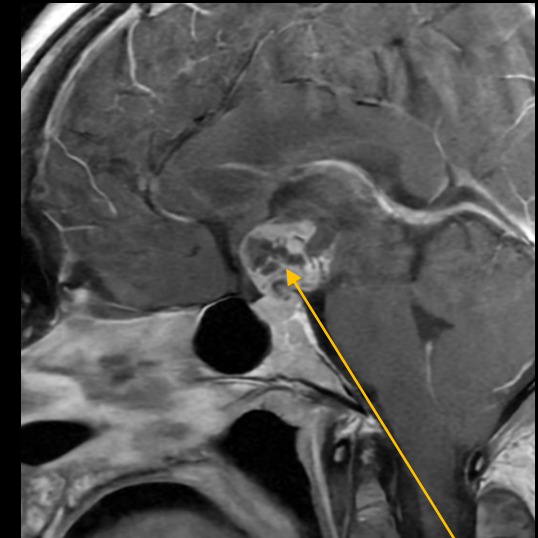
MRI Head (T1 post-contrast)



Coronal



Axial



Sagittal

- 2.4 x 1.7 x 2.2 cm suprasellar mass that is heterogeneously enhancing on T1 post-contrast.
- The pituitary gland is identified and is otherwise normal.

Likely Dx:

Craniopharyngioma
(pending pathology)

Case Discussion

- Suprasellar Mass Differential Diagnosis:
 - S - Sarcoidosis
 - A - Aneurysm
 - T - Teratoma
 - C - Craniopharyngioma
 - H – Hypothalamic Hamartoma
 - M - Meningioma
 - O - Other

Case Discussion

- Craniopharyngiomas are benign tumors in the sellar/suprasellar region, which often present with headaches and endocrine and visual abnormalities related to mass effect from the tumor.¹
- There are approximately 350 new craniopharyngiomas diagnosed in the U.S. each year (1-3% of all brain tumors).²

Case Discussion

- Craniopharyngiomas are divided into two subtypes: adamantinomatous and papillary craniopharyngiomas.
- Adamantinomatous craniopharyngiomas are more common in children and involve the Wnt signaling pathway. Papillary craniopharyngiomas are more common in adults and involve mutations in the BRAF oncogene.³
- Calcification and T1 signal intensity favor a diagnosis of adamantinomatous craniopharyngioma, but imaging presentation in adults is more variable than in children.⁴

Case Discussion

- Treatment
 - Surgical resection is almost always indicated to treat and diagnose craniopharyngiomas.⁵
 - Radiation therapy is indicated for sub-total resection or in cases where surgery is not feasible.
- Prognosis
 - 10-year overall survival ranges from 80-96%.³

References:

- 1. Laws JAJJER. Craniopharyngioma. Pituitary. 2006;9(4):323-326. doi:10.1007/s11102-006-0413-8
- 2. Bunin GR, Surawicz TS, Witman PA, Preston-Martin S, Davis F, Bruner JM. The descriptive epidemiology of craniopharyngioma. Journal of Neurosurgery. 1998;89(4):547-551. doi:10.3171/jns.1998.89.4.0547
- 3. Harsh IV GR, Lawrence RD, Marcus KJ. Craniopharyngioma. UpToDate. Accessed July 26, 2023. <https://www.uptodate.com/contents/craniopharyngioma#H2>
- 4. Lee IH, Zan E, Bell WR, Burger PC, Sung H, Yousem DM. Craniopharyngiomas : Radiological Differentiation of Two Types. J Korean Neurosurg Soc. 2016;59(5):466-470. doi:10.3340/jkns.2016.59.5.466
- 5. Yamada S, Fukuhara N, Yamaguchi-Okada M, et al. Therapeutic outcomes of transsphenoidal surgery in pediatric patients with craniopharyngiomas: a single-center study. J Neurosurg Pediatr. 2018;21(6):549-562. doi:10.3171/2017.10.PEDS17254