AMSER Case of the Month December 2025

39-year-old female with 3 months of headaches and blurry vision

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Patient Presentation

- 39-year-old female with history of migraines, hypertension, hyperlipidemia, asthma, obesity, and migraines presents to the ED with a 3-month history of headache with right-sided blurry vision.

- Vitals: BP 114/70, HR 96, temp 37, RR 14, Ht 72 in, Wt 240 lb, BMI 32.5
- Physical Exam: no focal neurologic deficits
- Labs: CBC, BPM unremarkable, TSH 0.619 mclU/mL, cortisol 0.5 mcg/dL A1C 5.9%,

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	O
MRI head without IV contrast	Usually Appropriate	O
CT head without IV contrast	Usually Appropriate	☢☢☢
Arteriography cervicocerebral	Usually Not Appropriate	☢☢☢
MRA head with IV contrast	Usually Not Appropriate	O
MRA head without and with IV contrast	Usually Not Appropriate	O
MRA head without IV contrast	Usually Not Appropriate	O
MRI head with IV contrast	Usually Not Appropriate	O
MRV head with IV contrast	Usually Not Appropriate	O
MRV head without and with IV contrast	Usually Not Appropriate	O
MRV head without IV contrast	Usually Not Appropriate	O
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 ER physician

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Findings (unlabeled)

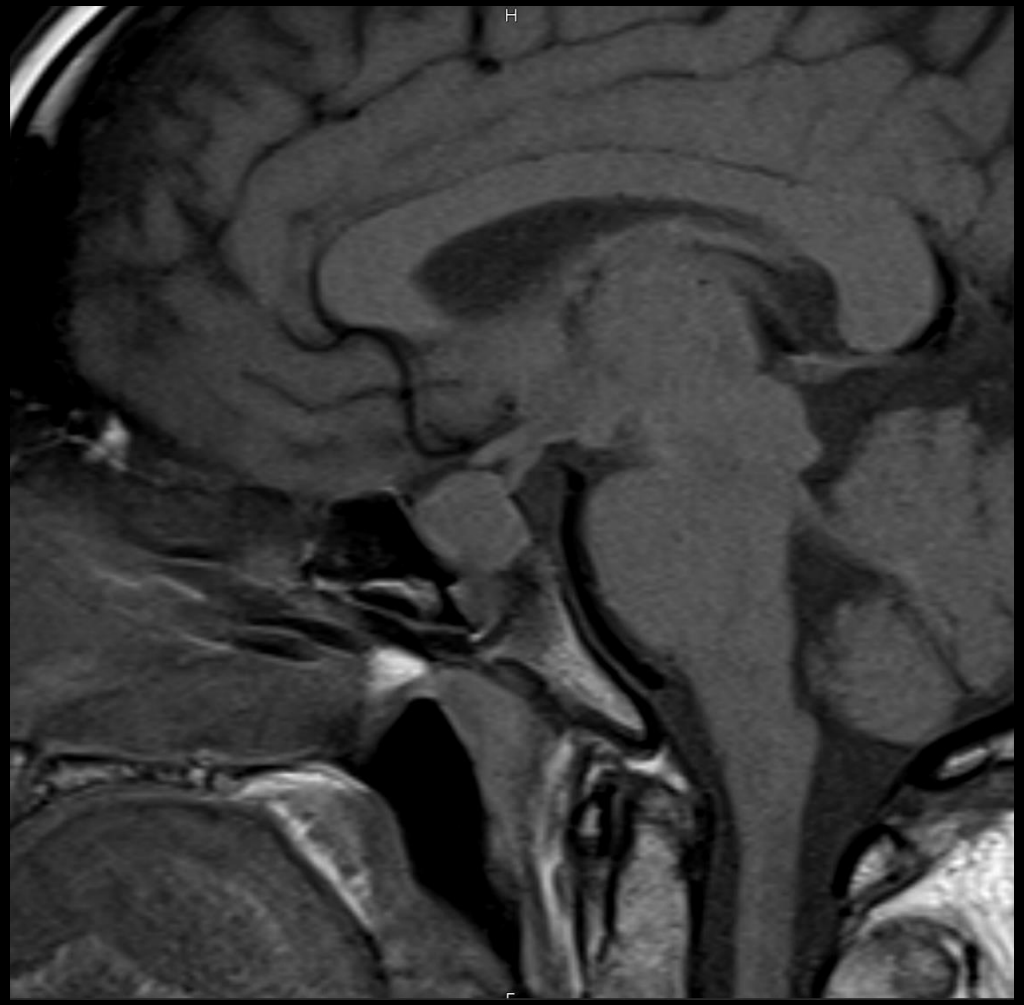
Non-contrast CT

Findings (labeled)

Enlarged pituitary

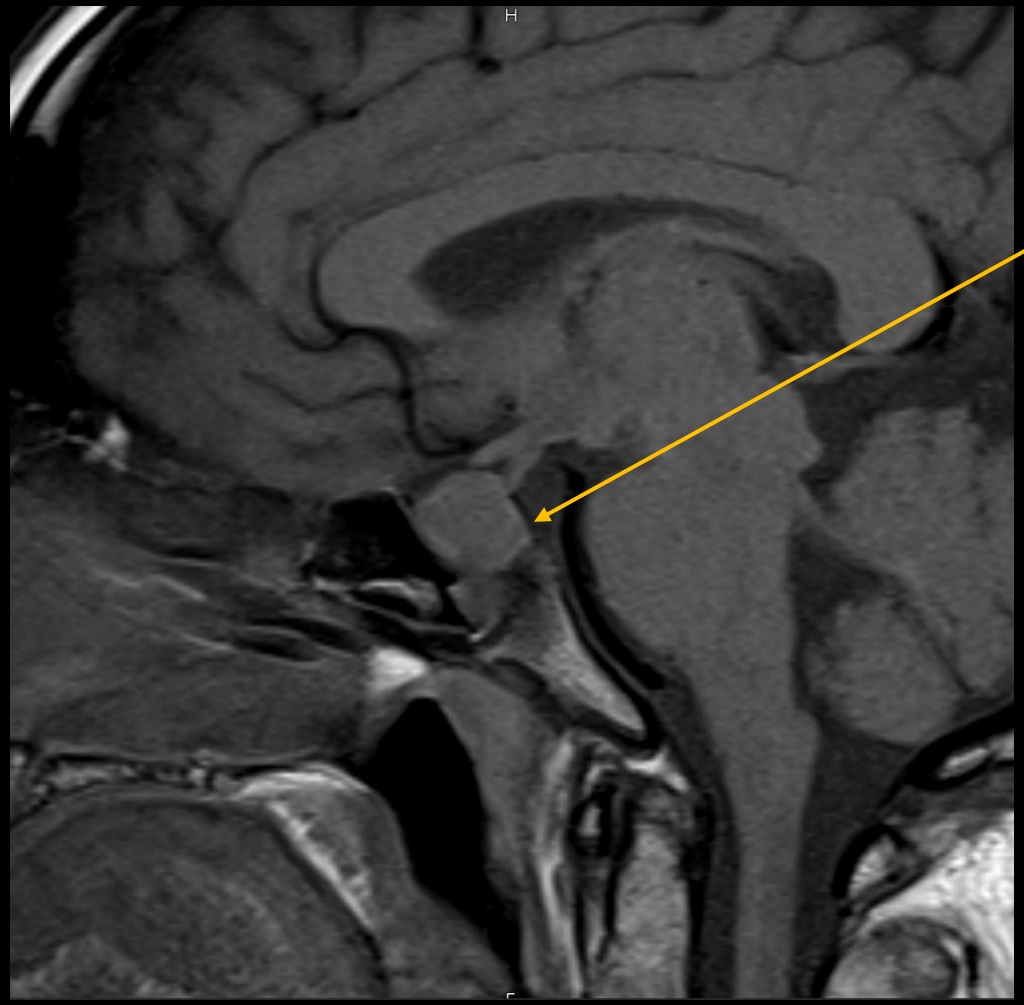
Non-contrast CT

Findings (unlabeled)



T1-weighted non-contrast MRI

Findings (labeled)



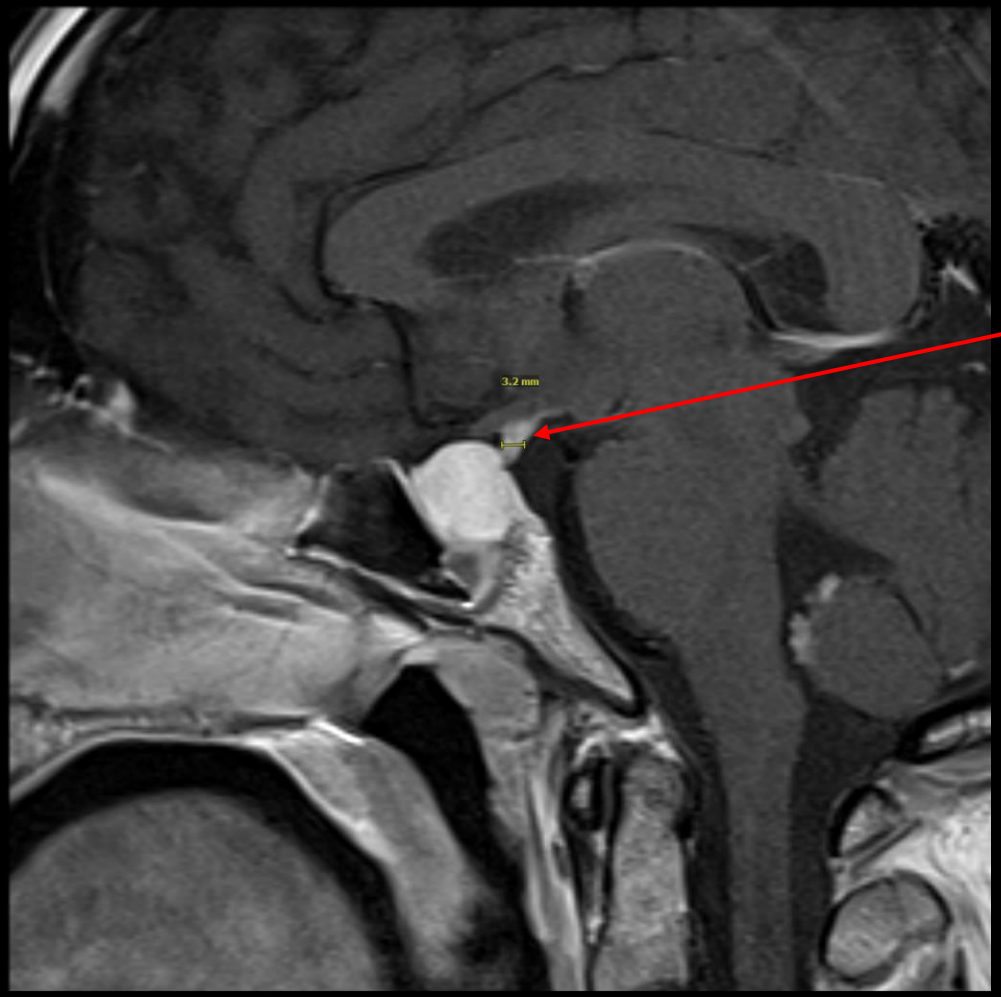
Enlarged pituitary with superior convexity and loss of the normal T1 posterior pituitary bright spot, not abutting the optic chiasm

T1-weighted non-contrast MRI

Findings (unlabeled)

T1-weighted post-contrast MRI

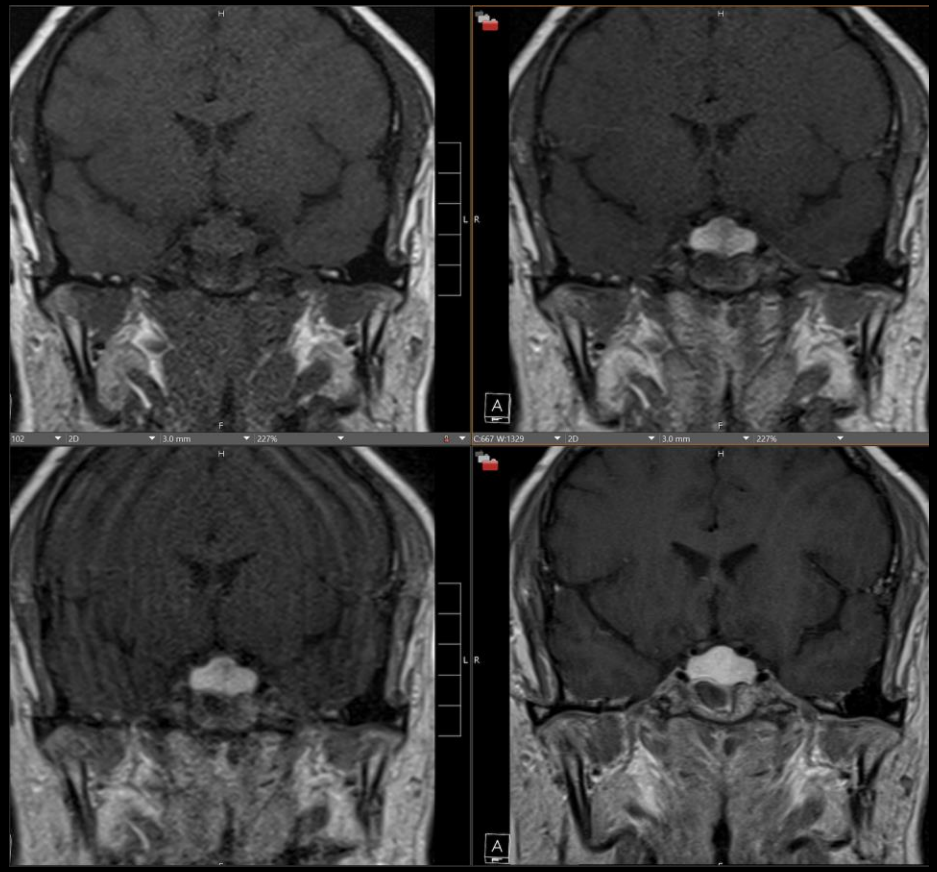
Findings (labeled)



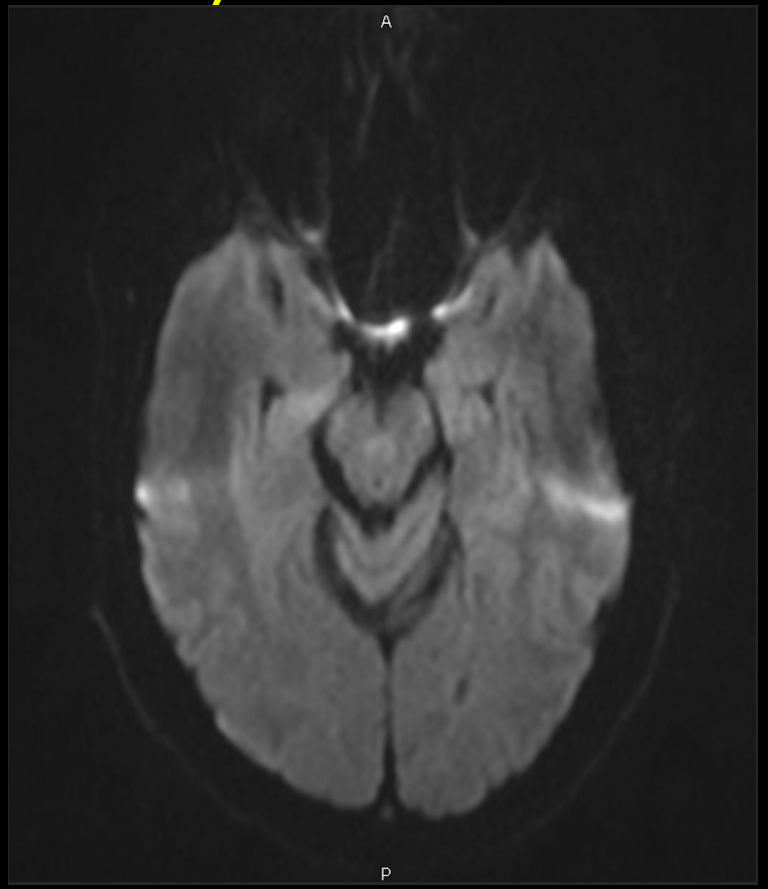
Thickened infundibulum

T1-weighted post-contrast MRI

Findings (unlabeled)

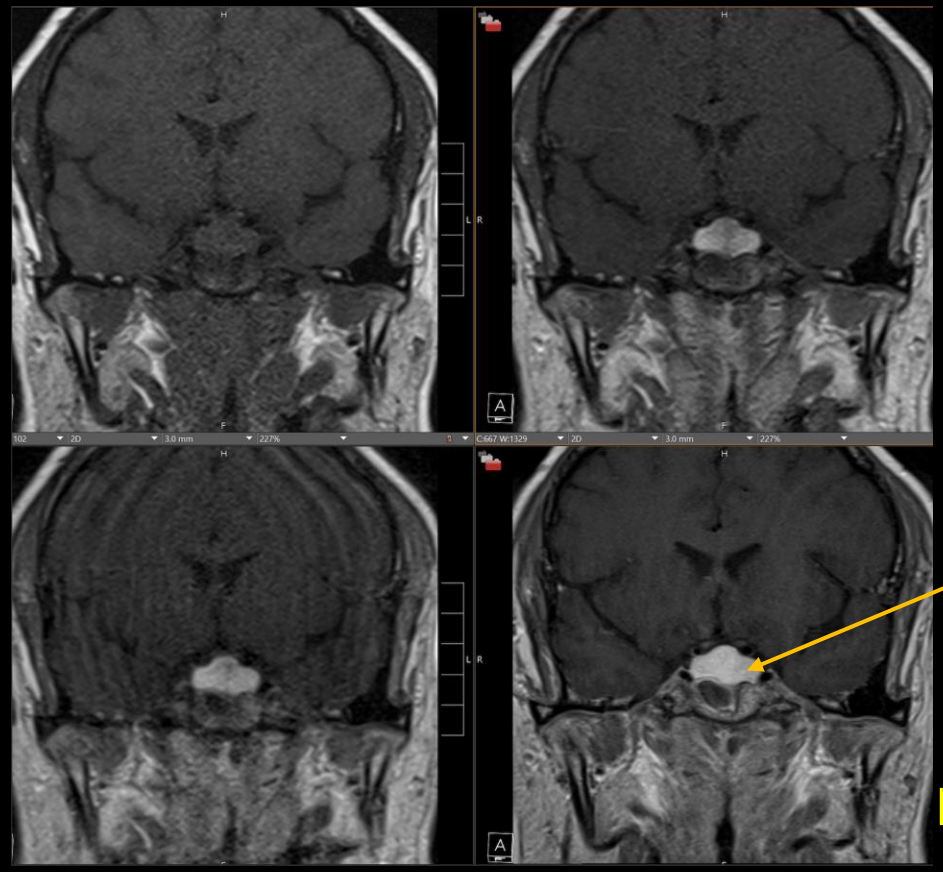


T1 pre- and post-contrast MRI



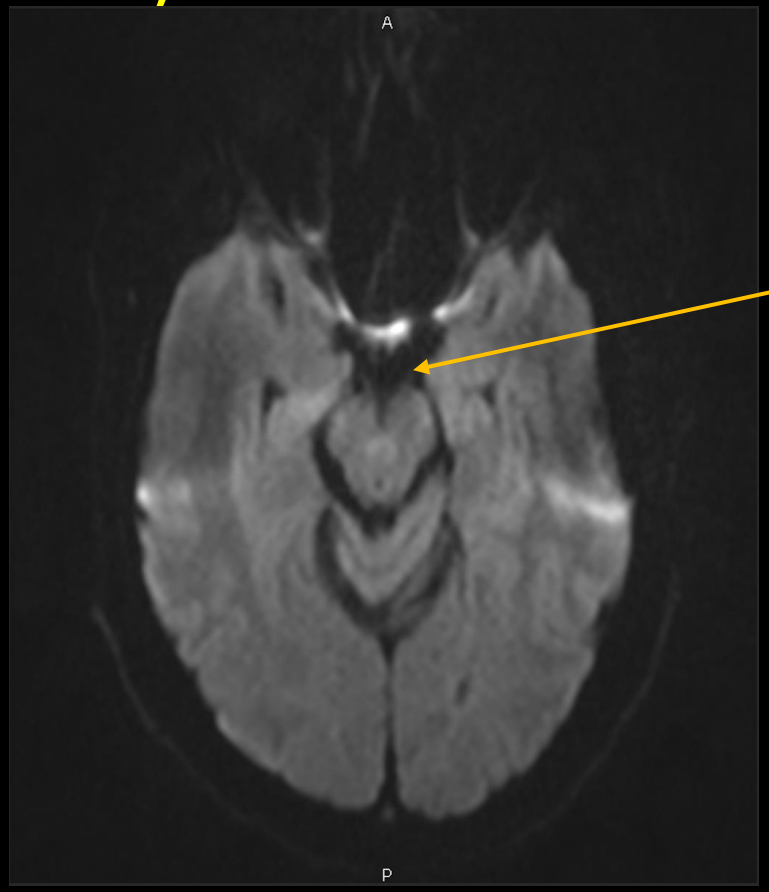
Diffusion-weighted MRI

Findings (labeled)



Homogenous enhancement of the enlarged pituitary gland on dynamic post-contrast images

T1 pre- and post-contrast MRI



No sellar diffusion restriction

Diffusion-weighted MRI

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Surgical pathology: Lymphocytic Hypophysitis

Case Discussion

- Differential Diagnosis for sellar mass[1]
  - Pituitary adenoma – most common
  - Benign or malignant neoplasm (e.g. meningioma, metastasis, craniopharyngioma, germ cell tumor)
  - Cystic lesion (e.g. Rathke's cleft cyst, arachnoid cyst, dermoid & epidermoid cysts)
  - Inflammatory / infectious lesions (e.g. lymphocytic hypophysitis, granulomatous hypophysitis, pituitary abscess)

Case Discussion

- Epidemiology[2]
  - Annual incidence of hypophysitis is estimated to be 1 in 7-9 million
  - Of cases of hypophysitis, lymphocytic hypophysitis is the most common variant
  - Lymphocytic hypophysitis is more common in females; it is associated with pregnancy and autoimmune disorders; and the incidence peaks in the fourth decade of life
- Pathophysiology[3]
  - Exposure of pituitary antigens to immunologic recognition resulting in infiltration of immune cells and destruction of pituitary tissue
  - The pregnancy association is thought to be due to pituitary hyperplasia and increased blood flow to the pituitary

Case Discussion

- Typical radiologic findings[4]
  - Enlarged pituitary with triangular or dumbbell shape with possible absence of posterior pituitary bright spot on T1 MRI
  - Frequently isointense with the brain on T1 and heterogenous on T2
  - Pituitary stalk thickening
  - Dural enhancement
  - Contrast enhancement pattern is often variable and does not differentiate well from adenoma

References:

1. Connor S, Penney C. MRI in the differential diagnosis of a sellar mass. *Clinical Radiology.* 2003;58:2—31. doi:10.1053/crad/2002.1119
2. Faje A. Hypophysitis: evaluation and management. *Clin Diabetes Endocrinol*. 2016;2:15. doi:10.1186/s40842-016-0034-8
3. Rawanduzy C, Winkler-Schwartz A, Couldwell W. Hypophysitis: defining histopathologic variants and a review of emerging clinical causative enitites. *Int J Mol Sci*. 2023;24(6). doi: 10.3390/ijms24065917
4. Caranci F, Leone G, Ponsiglione A, et al. Imaging findings in hypophysitis: a review. *Neuroradiology*. 2019;125:319-328. doi:10.1007/s11547-019-01120-x