

AMSER Case of the Month

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42-year-old female with migratory paresthesia

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Patient Presentation

HPI: 42-year-old female with a history of CAD, CHF, and NSTEMI presented to the ED with chest pain, numbness, and tingling. She described chest tightness radiating to the left arm, associated with shortness of breath. Prior to arrival, she experienced headache and vomiting with systolic BP in the 260s. Initially, numbness and tingling were on the right side, but by hospital day 2, these symptoms became more pronounced on the left side.

Physical Exam:

- Significant for abdominal tenderness to palpation and paresthesia's.

Vitals:

- BP 209/108 | Pulse 81 | Temp 97.8 °F | Resp 20 | Ht (5' 2") | Wt 148 lb

Labs:

- Basic metabolic panel significant for elevated blood glucose

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Clinical Condition: Headache

Variant 3: Sudden onset of severe headache (“Worst headache of my life”, “thunderclap headache”).

Radiologic Procedure	Rating	Comments	RRL*
CT head without IV contrast	9		☻☻☻
CTA head with IV contrast	8		☻☻☻
MRA head without and with IV contrast	7		○
MRA head without IV contrast	7		○
Arteriography cervicocerebral	7		☻☻☻
MRI head without IV contrast	7	This procedure may be helpful after CT depending on CT findings. Include FLAIR and GRE or SWI in this procedure.	○
MRI head without and with IV contrast	6	Include FLAIR and GRE or SWI in this procedure. This procedure may be helpful after CT depending on CT findings.	○
CT head without and with IV contrast	5		☻☻☻
CT head with IV contrast	3		☻☻☻

This imaging modality was ordered by the Neurology physician

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

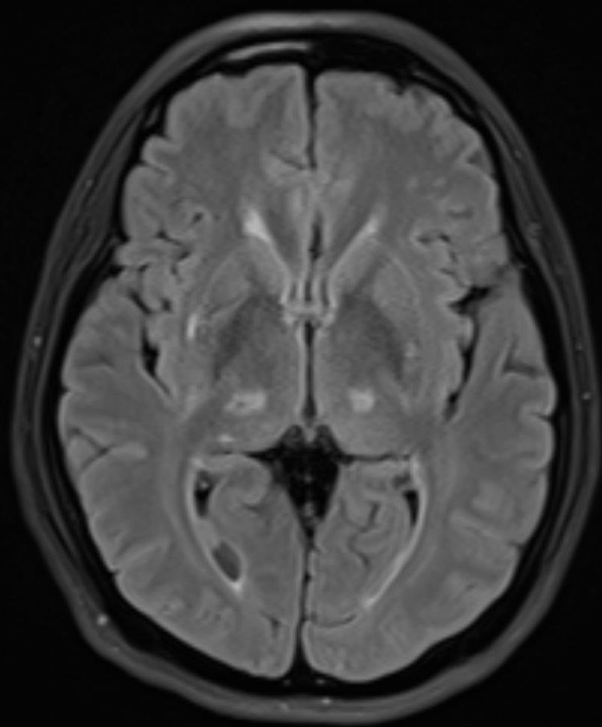
*Relative Radiation Level



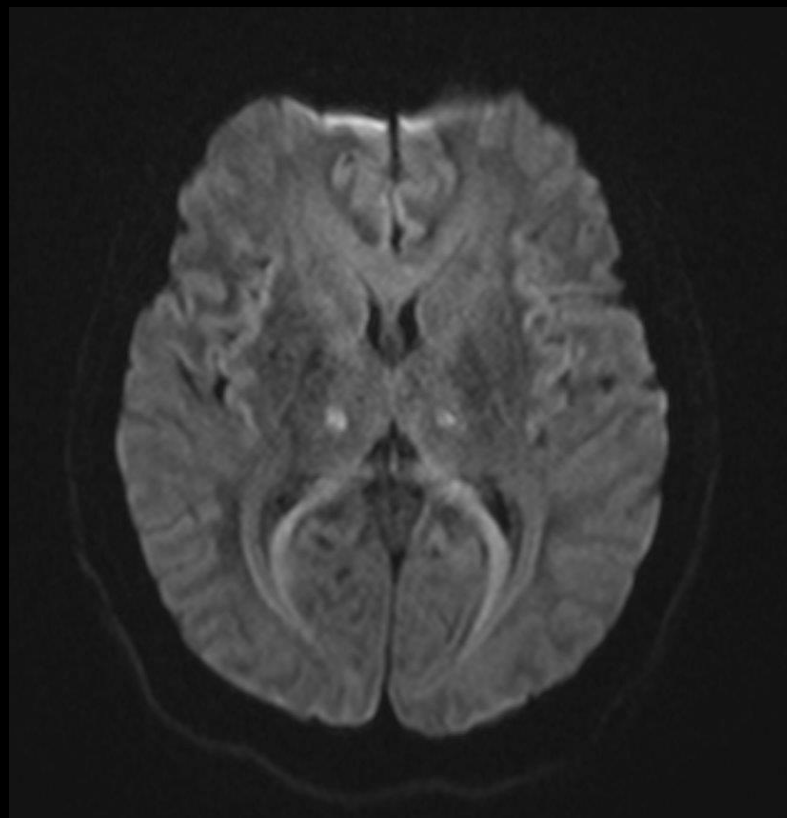
Findings (unlabeled)



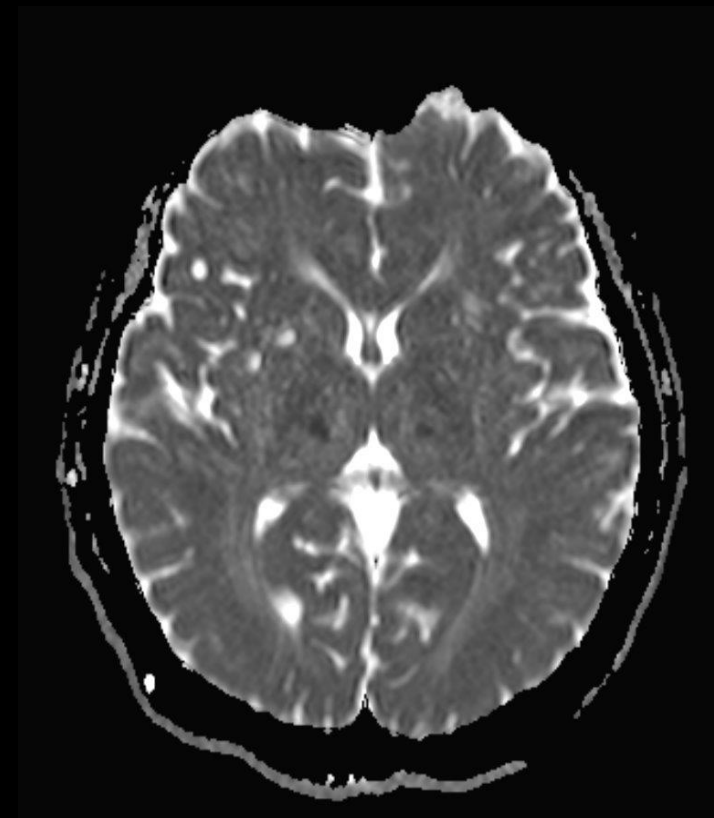
MRI without contrast



FLAIR

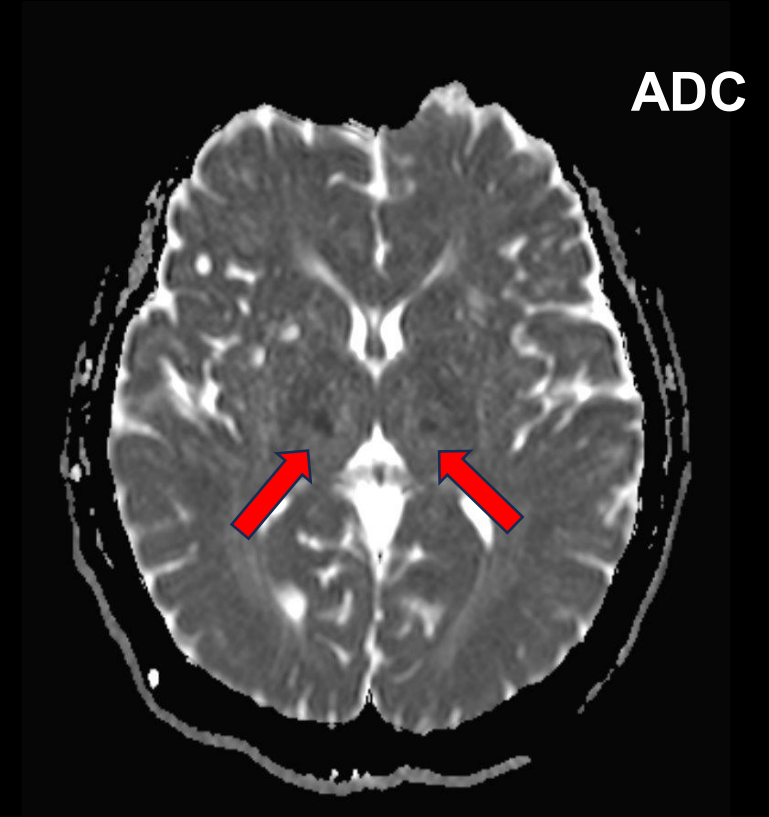
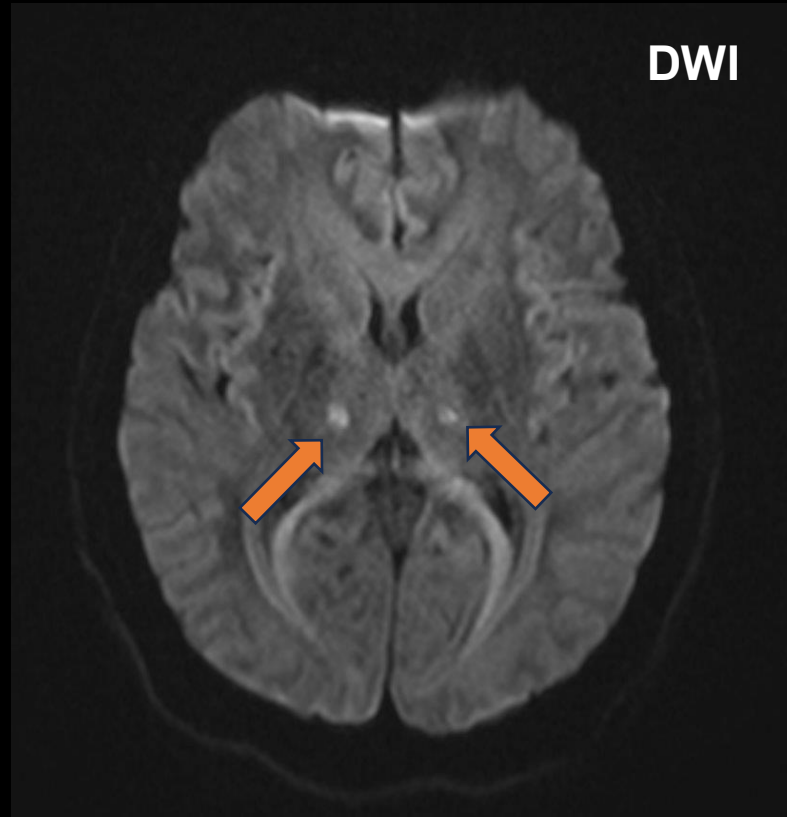
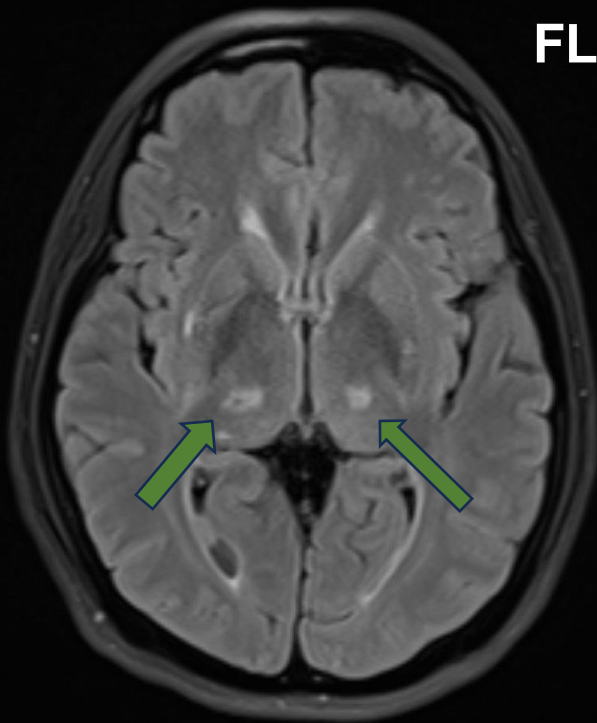


DWI



ADC

Findings (labeled)



Symmetric FLAIR hyperintense lesions in the bilateral thalami. The lesions appear **hyperintense on DWI** with associated **ADC low signal** compatible with diffusion restriction.

Final Dx:

Bilateral Thalamic Infarct

Bilateral Thalamic Infarct

Bilateral thalamic infarcts are rare, accounting for about 0.1–2% of all ischemic strokes¹

Vascular Anatomy

- Each thalamus is supplied by perforating vessels coming off the ipsilateral posterior cerebral and posterior communicating arteries²
- Key Variants: Artery of Percheron (AOP) is a rare anatomic variant where a single arterial trunk from one PCA supplies both paramedian thalami and possibly rostral midbrain³

What's the Significance?

- Occlusion of the AOP can result in **symmetric bilateral thalamic infarction**, often with or without midbrain involvement³

Bilateral Thalamic Infarct

Risk Factors

- Similar risk factors for ischemic stroke (hypertension, diabetes, smoking, age, hyperlipidemia), cardioembolic (arrhythmias, mechanical heart valves), hypercoagulability, arterial vascular variants (AOP)³

Clinical features

- Ranges from sudden altered mental status, paralysis of vertical gaze, visual disturbances, and fluctuations in symptoms^{4,5,6}

Bilateral Thalamic Lesion Imaging Differentials²

Vascular Occlusion

- Ischemia, artery of Percheron, cerebral venous thrombosis, top of the basilar syndrome

Neoplasm

- Bilateral thalamic Glioma

Metabolic and Toxins

- Wernicke encephalopathy, osmotic myelinolysis, Fabry disease, Wilson disease

Infections

- Viral encephalitis, Creutzfeldt-Jakob disease (CJD)

Bilateral Thalamic Infarct

Imaging Findings:

CT

- Bilateral hypodense thalamic lesions but may miss acute or small infarcts⁷

MRI with diffusion weighted imaging (DWI)

- Higher sensitivity and specificity especially in the acute phase
- Bilateral thalamic lesions bright on T2/FLAIR⁷
- Increased signal on DWI with low signal on ADC⁷

Treatment:

- Acute management with IV tPA (within therapeutic window), antiplatelet therapy, and supportive care
- Secondary prevention control of vascular risk factors and anticoagulation

Case conclusion: Our patient received dual antiplatelet therapy, she was not treated with tPA due to being outside of therapeutic window

References:

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