AMSER Case of the Month: November 2022

60-year-old male with sudden onset head and neck pain

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Patient Presentation

- **HPI**: 60-year-old male presented to the ED with sudden onset of 10/10 headache and neck pain
- **Past Medical History:** Right ICA dissection
- **Past Surgical History:** None
- **Family History:** Non-contributory
- **Social History:** No smoking or illicit substance use. Drinks socially.

Pertinent Physical Exam and Labs

- **Physical Exam:**
  - AAO x3, muscle strength 5/5 throughout, sensation intact, CN II-XII intact, no facial droop or slurred speech. No pronator drift, dysmetria, or dysdiadochokinesia. Steady gait. No visual field deficits.

- **Labs:**
  - BMP, CBC with diff, PT-INR within normal limits

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: **Sudden, severe headache or "worst headache of life." Initial imaging.**

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

These imaging modalities were ordered by the ER physician

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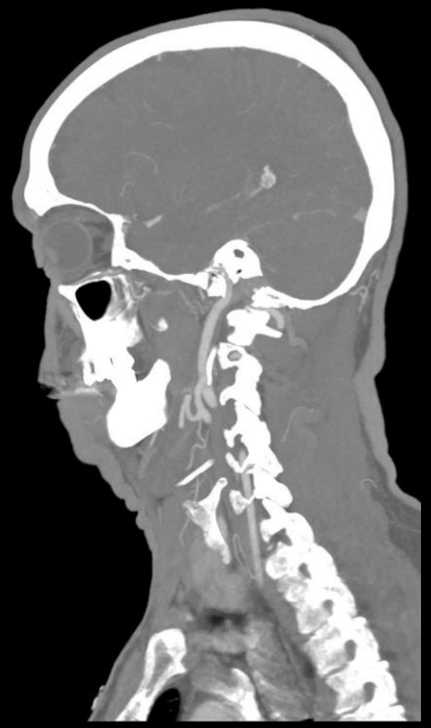
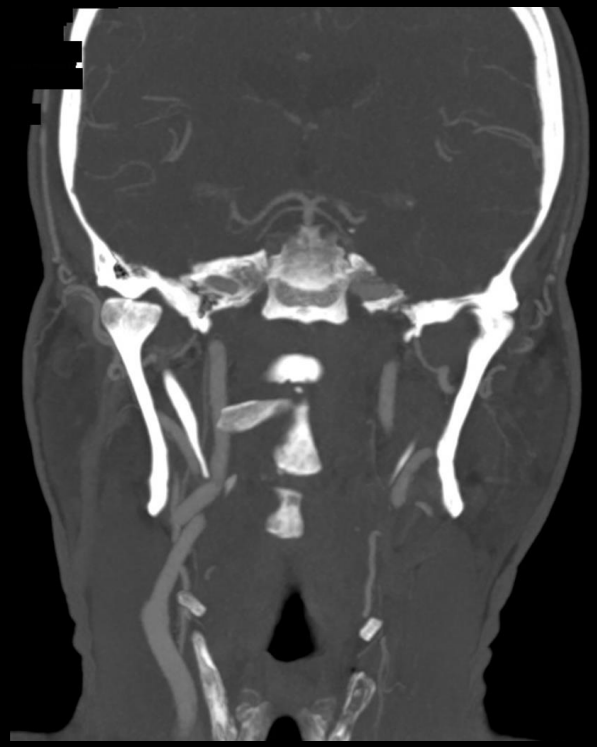
Findings (unlabeled)





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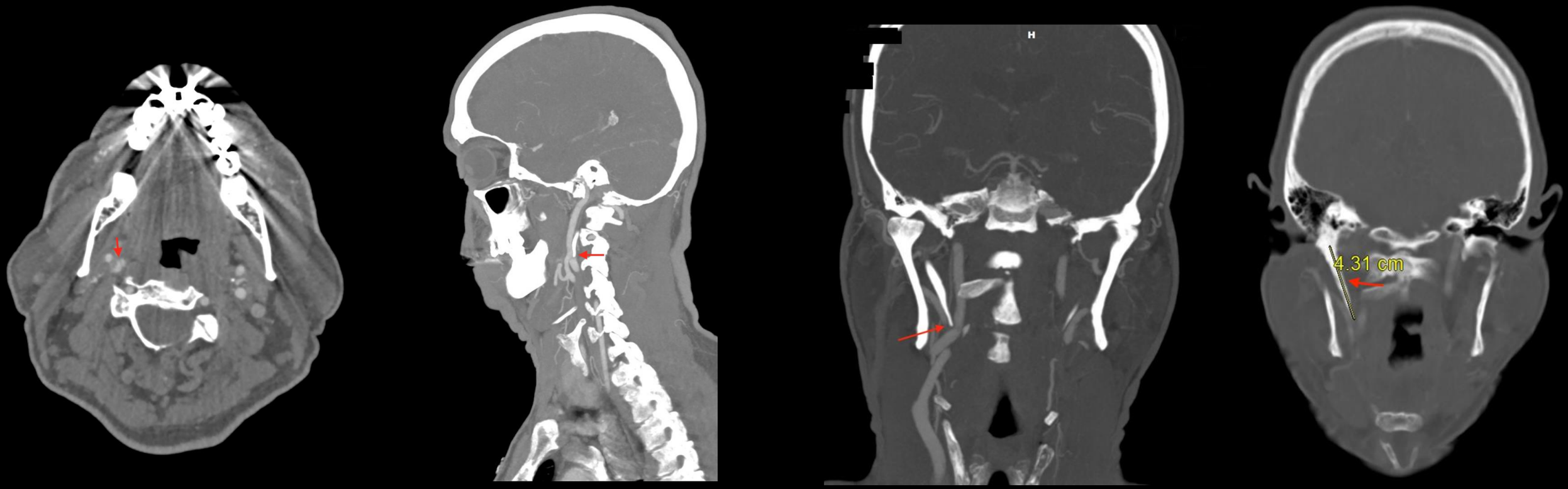


CTA Neck: Axial, Sagittal, and Coronal (L to R)

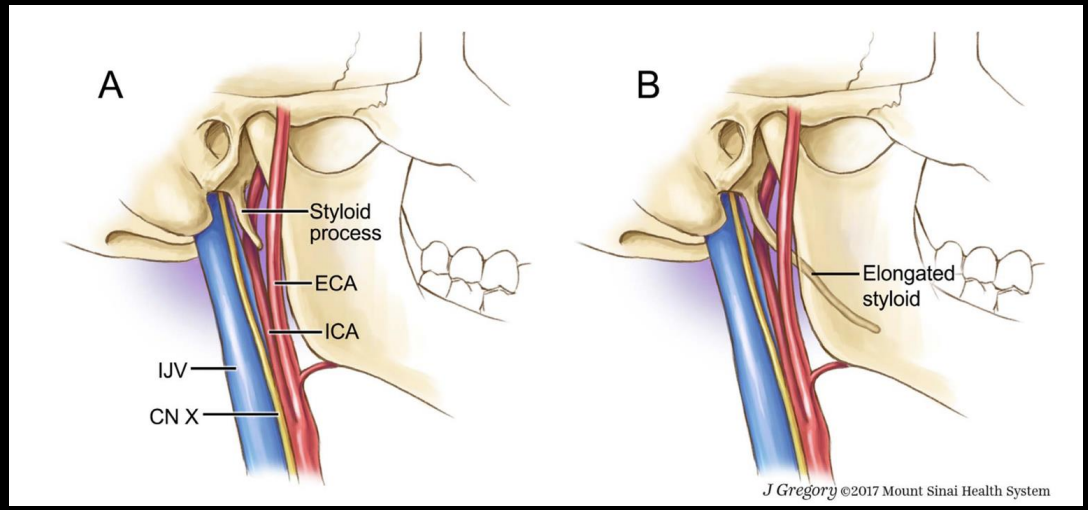
- Filling defect in the cervical portion of the right ICA due to extrinsic compression from an elongated right styloid process, consistent with a dissection.
- 4.3 cm right styloid process.

Final Dx:

Eagle Syndrome

Eagle Syndrome (Stylohyoid Syndrome)

- Rare condition caused by an elongated or abnormal styloid process giving rise to orofacial or cervical pain triggered by neck movement
- Anatomy:
  - An elongated/ossified stylohyoid complex may lead to compression of the structures surrounding it including: the facial nerve, auriculo-temporal nerve, lingual nerve, chorda tympani, glossopharyngeal nerve, and hypoglossal nerve
  - Compression of the internal or external carotid artery may lead to transient ischemic attacks, vertigo or syncope



Badhey A, Jategaonkar A, Anglin Kovacs AJ, Kadakia S, De Deyn PP, Ducic Y, Schantz S, Shin E.: Eagle syndrome: a comprehensive review. Clinical Neurology and Neurosurgery. May 2017; 159 (2017) 34-38.

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Eagle Syndrome

- Epidemiology:
  - An elongated process is present in approximately 4% of the population
    - majority of these are asymptomatic
  - Female-to-male predominance of 3:1
  - Usually occurs in adults ages 30 to 50 years
  - Often occurs bilaterally; however, symptoms are typically unilateral
- Etiology:
  - Proposed mechanisms include surgical trauma (tonsillectomy), local chronic irritation leading to ossification, or an association with the presence of an arcuate foramen

Eagle Syndrome

- Imaging:
  - CT with 3D reconstruction allows for measurement of the length of the styloid process (>3 cm is considered elongated)
  - CT with angiography to visualize carotid flow if stroke or dissection is suspected
- Treatment:
  - Conservative management of symptoms (NSAIDs, antidepressants, transpharyngeal injection of analgesics and steroids)
  - Surgical shortening of the styloid process via an intraoral or external approach

References:

1. Bokhari MR, Graham C, Mohseni M. Stat Pearls [Internet]. Stat Pearls Publishing; Treasure Island (FL): Jan 2022. Eagle Syndrome.
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3. Razak A, Short JL, Hussain SI. Carotid artery dissection due to elongated styloid process: a self-stabbing phenomenon. *J Neuroimaging*. 2014;24(3):298-301. doi:10.1111/j.1552-6569.2012.00759.x
4. Chuang WC, Short JH, McKinney AM, Anker L, Knoll B, McKinney ZJ. Reversible left hemispheric ischemia secondary to carotid compression in Eagle syndrome: surgical and CT angiographic correlation. *AJNR Am J Neuroradiol*. 2007;28(1):143-145.
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