35-year-old female with Horner's Syndrome, severe neck and left eye pain

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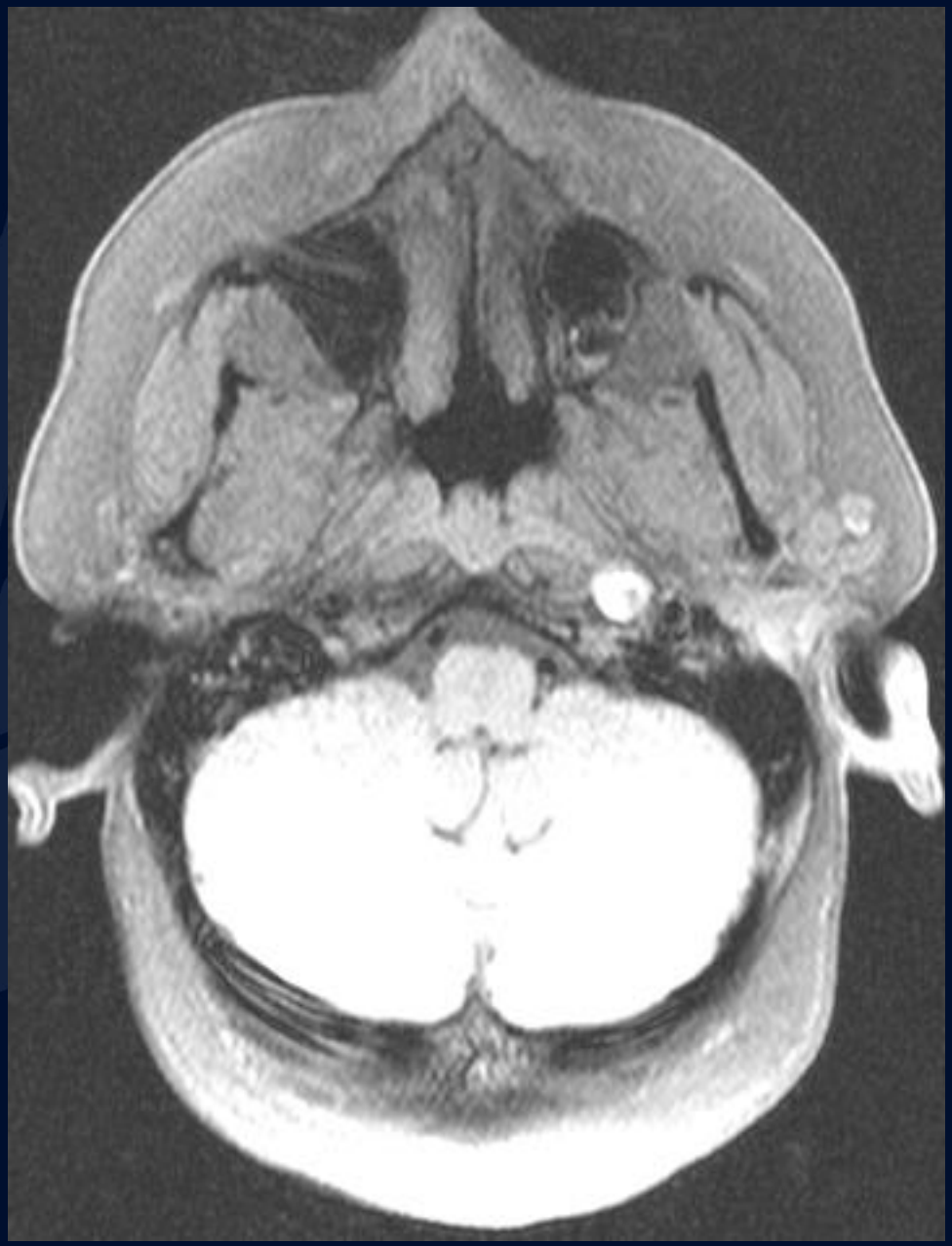
MR T1 FS



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MR Angio Projection (Left Neck)

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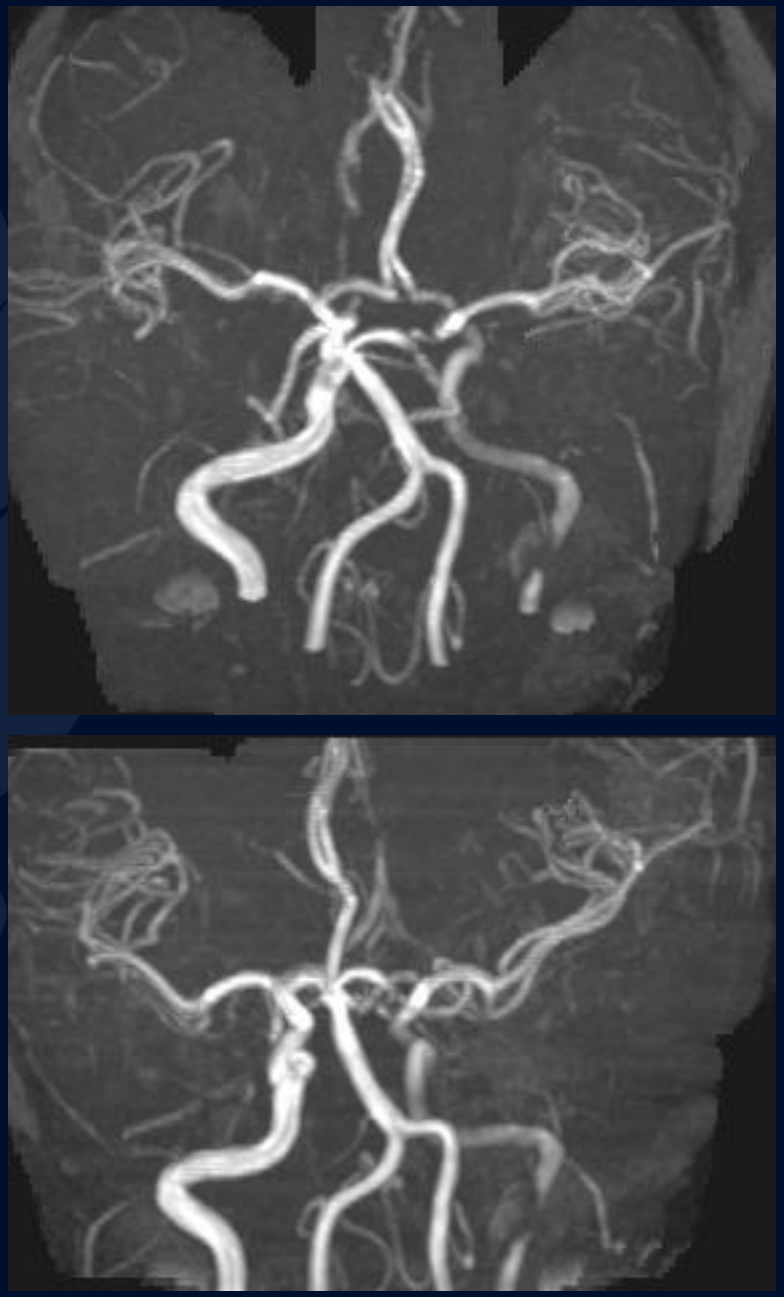
MR Angio-Projection



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Acute Internal Carotid Artery Dissection

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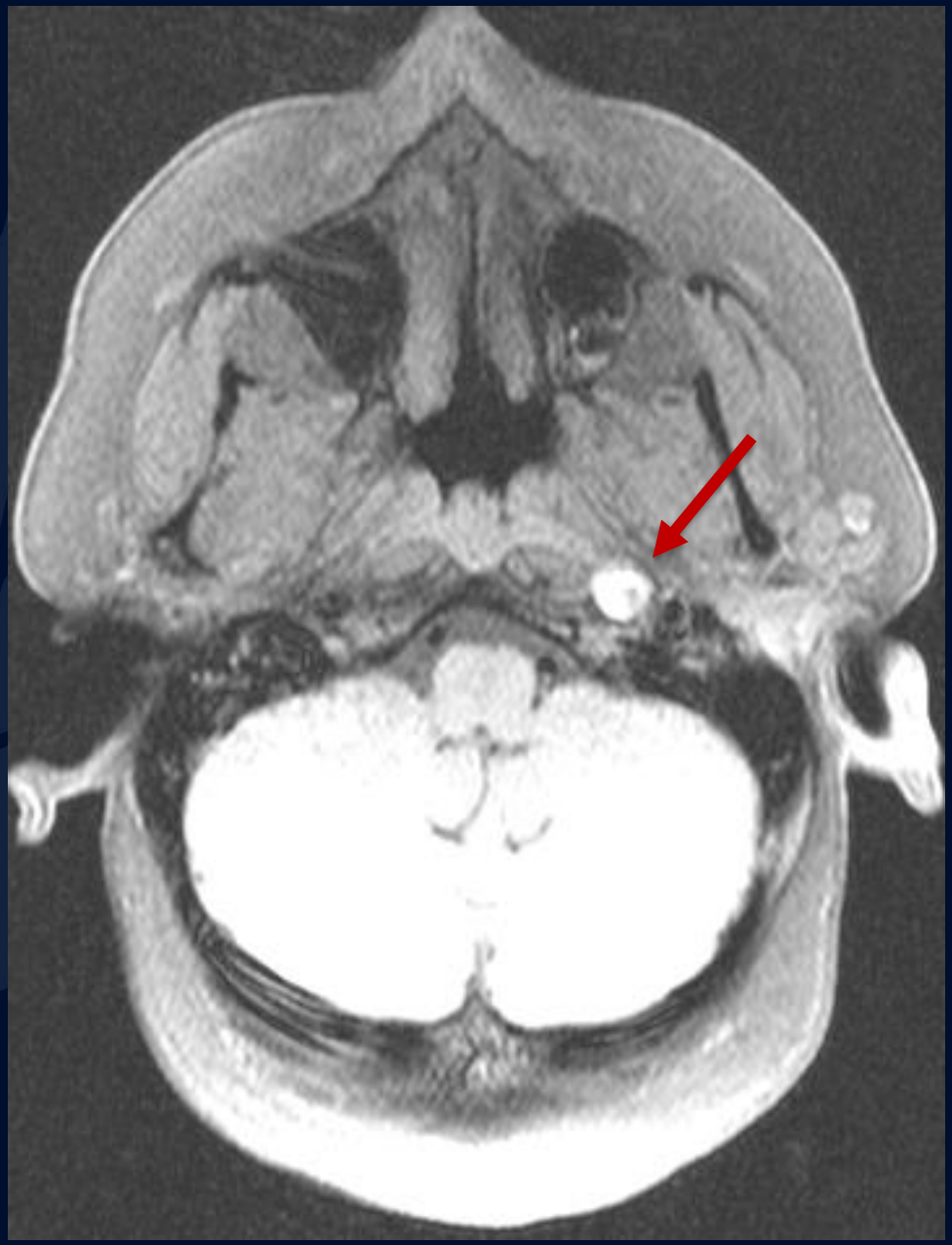
MR T1 FS

Crescent shaped increased signal in left internal carotid artery



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MR Angio Projection (Left Neck)

Cervical left internal carotid artery filling defect

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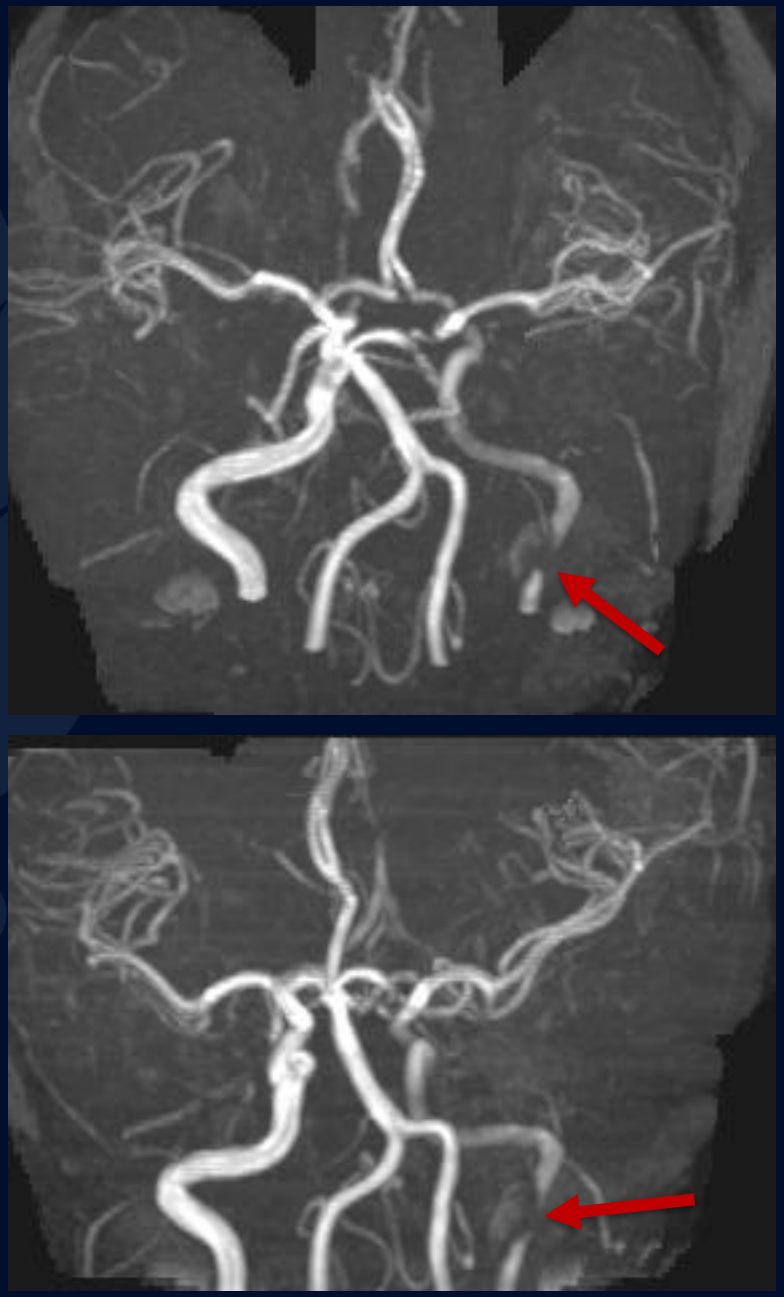
MR Angio Projection



Filling defect in cervical left internal carotid artery

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MR Angio Projection (Circle of Willis)

Above: Filling defect in cervical left internal artery

Below: Resolution post intervention

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Internal Carotid Artery Dissection

Clinical presentation: Classically presents with ipsilateral headache, neck pain, and Horner Syndrome, with evidence of ischemic stroke and retinal ischemia

Risk factors: HTN, migraines, trauma, and connective tissue disease

Etiology

a) Spontaneous: Most often seen in patient's with Ehlers-Danlos, Marfan syndrome, Osteogenesis Imperfecta, or fibromuscular dysplasia
b) Traumatic
c) Iatrogenic

Pathophysiology: Tear of the tunica media result in blood entering the tunica intima, creating a false lumen with the classic "crescent sign" seen on imaging

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Imaging Findings

- CTA
  - “Crescent Sign” seen with contrast leaking into the false lumen between the tunica media and intima
- MRI
  - T1 FS, T2, DWI: All show high signal crescent sign
  - MRA: Absent flow void or abnormal vessel contour
- Angiography/DSA
  - “String and Pearl Sign”
  - Double barrel lumen and intimal flap are less commonly seen

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References

Gaillard F, Baba Y, Thwala S, et al. Internal carotid artery dissection. Reference article, Radiopaedia.org (Accessed on 01 Oct 2023) https://doi.org/10.53347/rID-6692Thanvi B, Munshi SK, Dawson SL, Robinson TG. Carotid and vertebral artery dissection syndromes. Postgrad Med J. 2005 Jun;81(956):383-8. doi: 10.1136/pgmj.2003.016774. PMID: 15937204; PMCID: PMC1743284.

Jones J, Sheikh Y, Glick Y, et al. Internal carotid artery. Reference article, Radiopaedia.org (Accessed on 01 Oct 2023) https://doi.org/10.53347/rID-4524

Bouthillier A, van Loveren HR, Keller JT. Segments of the internal carotid artery: a new classification. Neurosurgery. 1996 Mar;38(3):425-32; discussion 432-3. doi: 10.1097/00006123-199603000-00001. PMID: 8837792.

Thanvi B, Munshi SK, Dawson SL, Robinson TG. Carotid and vertebral artery dissection syndromes. Postgrad Med J. 2005 Jun;81(956):383-8. doi: 10.1136/pgmj.2003.016774. PMID: 15937204; PMCID: PMC1743284.

Goldberg HI, Grossman RI, Gomori JM, Asbury AK, Bilaniuk LT, Zimmerman RA. Cervical internal carotid artery dissecting hemorrhage: diagnosis using MR. Radiology. 1986 Jan;158(1):157-61. doi: 10.1148/radiology.158.1.3940374. PMID: 3940374.

Adam G, Darcourt J, Roques M, Ferrier M, Gramada R, Meluchova Z, Patsoura S, Viguier A, Cognard C, Larrue V, Bonneville F. Standard Diffusion-Weighted Imaging in the Brain Can Detect Cervical Internal Carotid Artery Dissections. AJNR Am J Neuroradiol. 2020 Feb;41(2):318-322. doi: 10.3174/ajnr.A6383. Epub 2020 Jan 16. PMID: 31948949; PMCID: PMC7015214.

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