# Fatal thrombosed basilar artery dissection in a 10-year-old female

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# Clinical Presentation

A previously healthy 10-year-old girl presented to the ED with **acute altered mental status, inability to speak, and left hemiparesis**.

Prior to admission, she experienced headache, nausea and vomiting for one day.

After a nap the following day, she became nonverbal and unable to move prompting parents to take her to the ED. On arrival, she was ill and diaphoretic. Examination showed impaired ocular abduction, left lower facial droop, absent left-sided motor function with reduced right-sided strength, and global aphasia.

Her **GCS score was 11** with an eye subscore of 4, verbal subscore of 1 and motor subscore of 6.

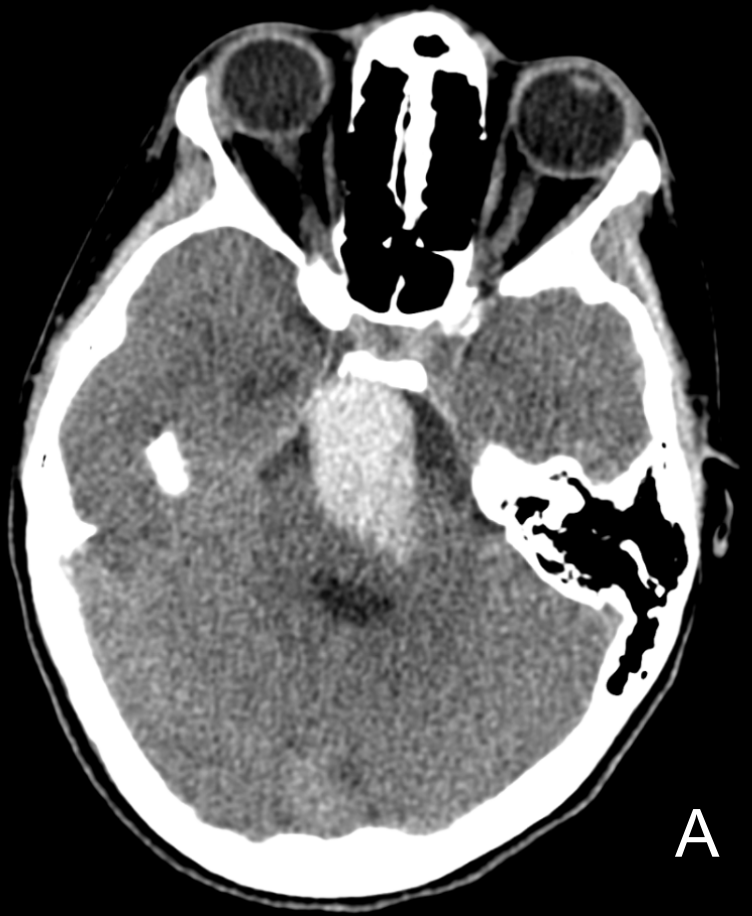
# Imaging Discussion

Noncontrast head CT demonstrated a **large ovoid hyperdense lesion along the expected course of the basilar artery,** concerning for giant basilar dissection with suspected thrombosed pseudoaneurysm. There was marked mass effect on the brainstem and fourth ventricle with extension to the craniocervical junction, resulting in compression and posterior displacement of adjacent structures.

CTA confirmed a **giant basilar aneurysm at the vertebrobasilar junction**. The proximal basilar artery opacified a narrowed and markedly shortened anterior true lumen. A large pseudoaneurysm, likely thrombosed superiorly, nearly effaced the true lumen from the mid basilar artery to the interpeduncular cistern. Distal flow reconstituted near the basilar tip, likely via collateralization through a patent circle of Willis. Relative brainstem hypoenhancement suggested hypoperfusion with concern for evolving infarction. Overall findings supported **extensive basilar artery dissection from the vertebrobasilar junction to the basilar tip with aneurysmal dilatation and pseudoaneurysm formation/thrombosis**.

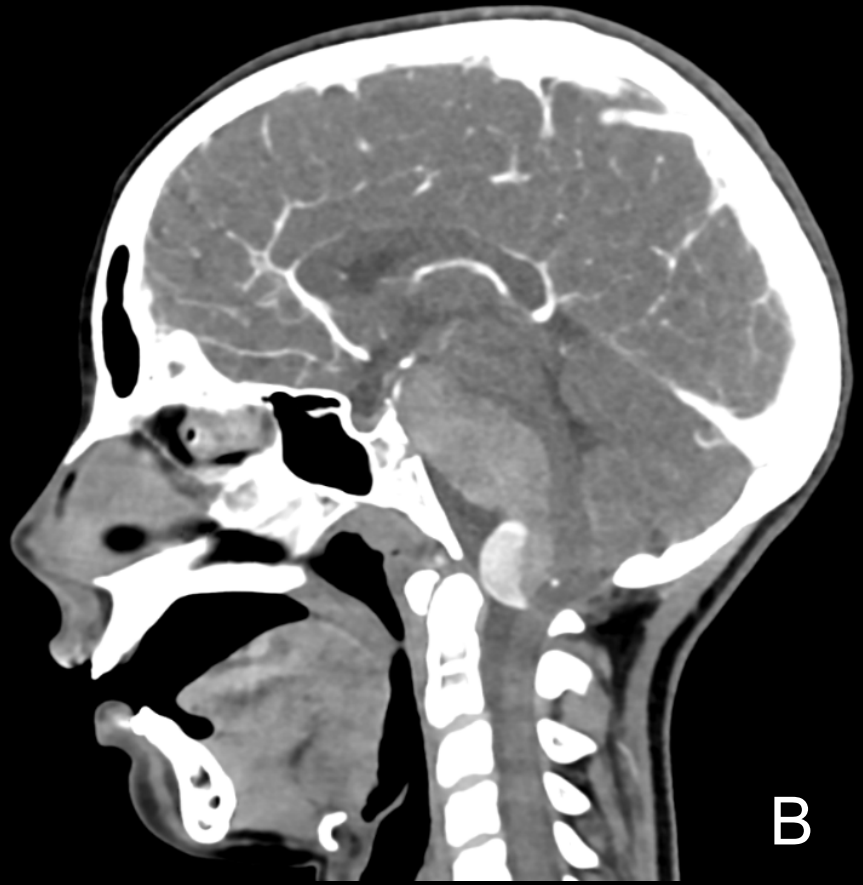
# Imaging Discussion

Axial non-contrast image through the lower cranium demonstrates an ovoid hyperattenuation extending from the skull base into prepontine cisterns suspicious for a large aneurysm.



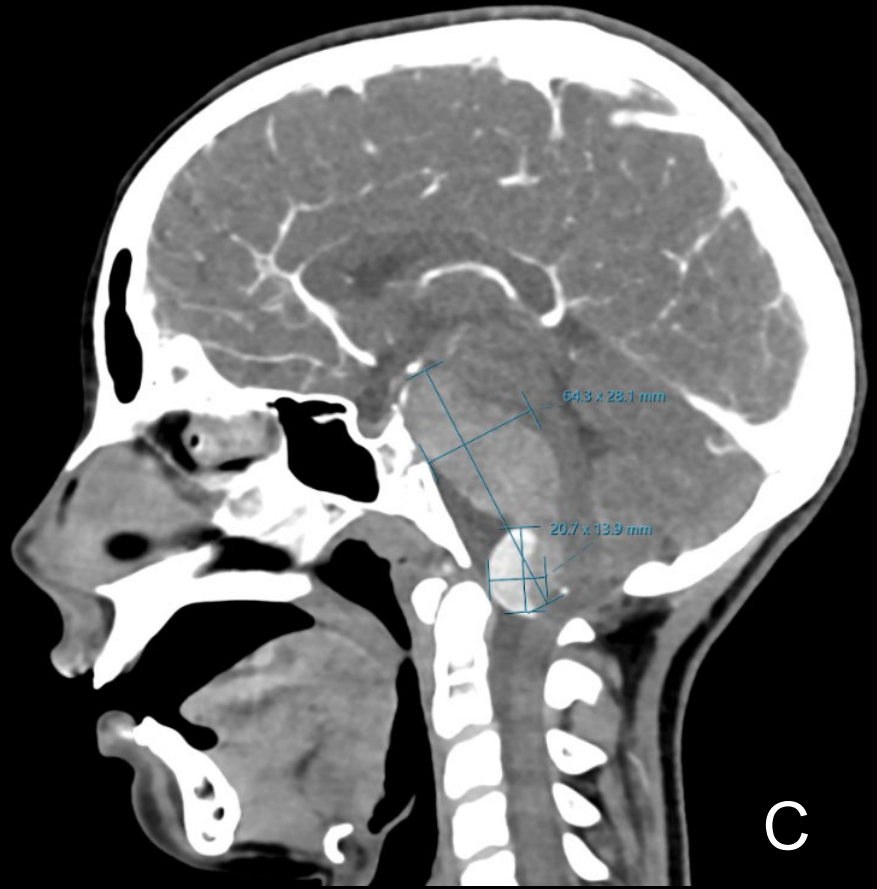
# Imaging Discussion

Midline sagittal CTA image demonstrates an 2.1 x 1.4 x 1.7 cm opacified basilar artery aneurysm at the vertebrobasilar junction with significant mass effect on the brainstem.



# Imaging Discussion

The same midline sagittal CT image demonstrates decreased attenuation of the more superior portion of the basilar artery aneurysm, measuring 6.4 x 2.8 x 2.4 cm, presumed to represent a thrombosed pseudoaneurysm extending to the interpeduncular cistern. There is significant mass effect on the pons and midbrain.  Note the hypodense appearance of the brainstem suggestive of ischemic hypoperfusion.



# Management

Endovascular repair, including mechanical thrombectomy and flow diversion, were considered by neurosurgery but deemed prohibitively high risk given the size of the aneurysm and size and associated thrombus. The team deferred acute intervention and initiated medical anticoagulation with a therapeutic heparin drip.

# Outcome

Given the poor prognosis, the family elected **comfort-focused care.** Approximately 20 hours after initial presentation to the ED, the patient developed asystole with absent pulses and respirations and fixed, nonreactive pupils. Arterial Doppler ultrasonography demonstrated absent pulsatile flow for 5 minutes, and she was pronounced dead.

# Take Home Points

- Basilar artery dissections are rare, especially in the pediatric population, but can cause catastrophic outcomes due to basilar branch perforator arterial compromise leading to brainstem ischemia[1].
- Although endovascular intervention is often favored, large thrombosed dissections may be technically infeasible or carry massive risk[2]. Often, anticoagulation is often the only alternative.
- In this case, bilateral fetal-type posterior cerebral arteries initially provided retrograde collateral flow, but progressive thrombosis resulted in worsening brainstem hypoperfusion and eventually fatal ischemia.

# References


1. Yoshimoto, Y., Hoya, K., Tanaka, Y., & Uchida, T. (2005). Basilar artery dissection. Journal of neurosurgery, 102(3), 476–481. https://doi.org/10.3171/jns.2005.102.3.0476
2. Peters, D. R., Parish, J. M., Starnoni, D., Giammattei, L., Stetler, W. R., Wait, S. D., & Bernard, J. D. (2023). Endovascular treatment of pediatric basilar artery aneurysms: case series and literature review. Child's nervous system : ChNS : official journal of the International Society for Pediatric Neurosurgery, 39(1), 25–34. https://doi.org/10.1007/s00381-022-05728-9