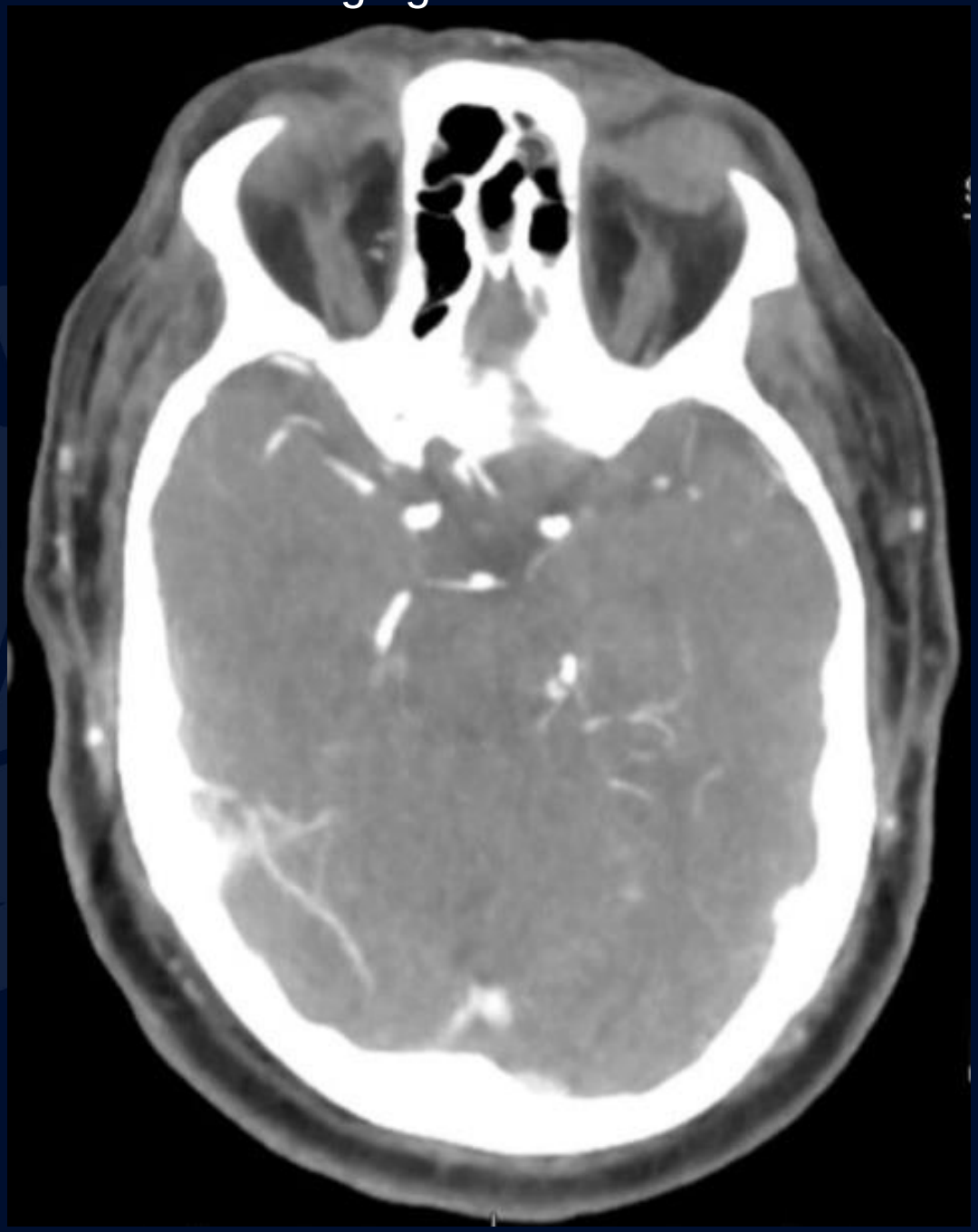
71-year-old male with new onset sixth nerve palsy, diplopia

Joseph Ryan, MD, PhD
Michael Baldwin, MD

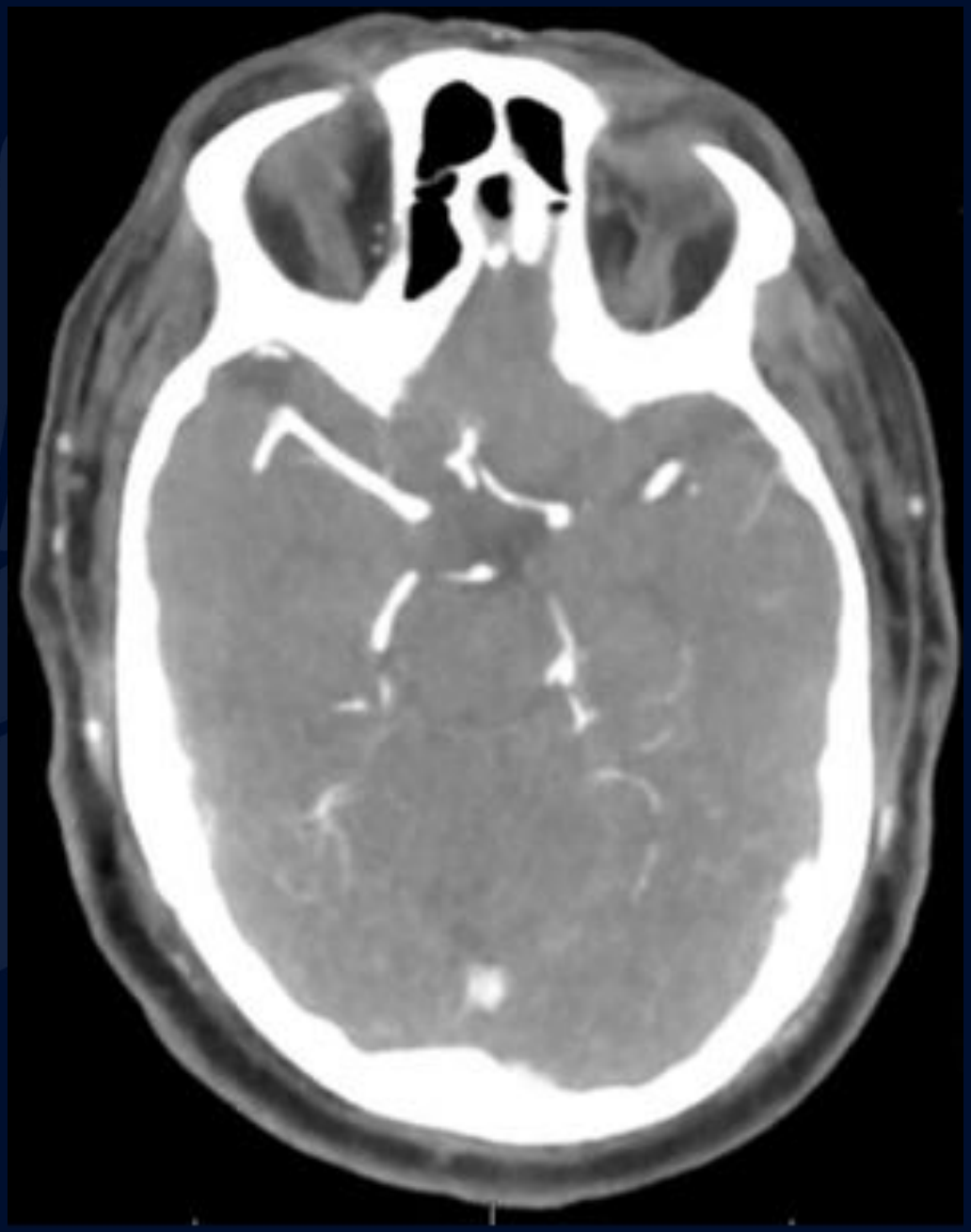
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



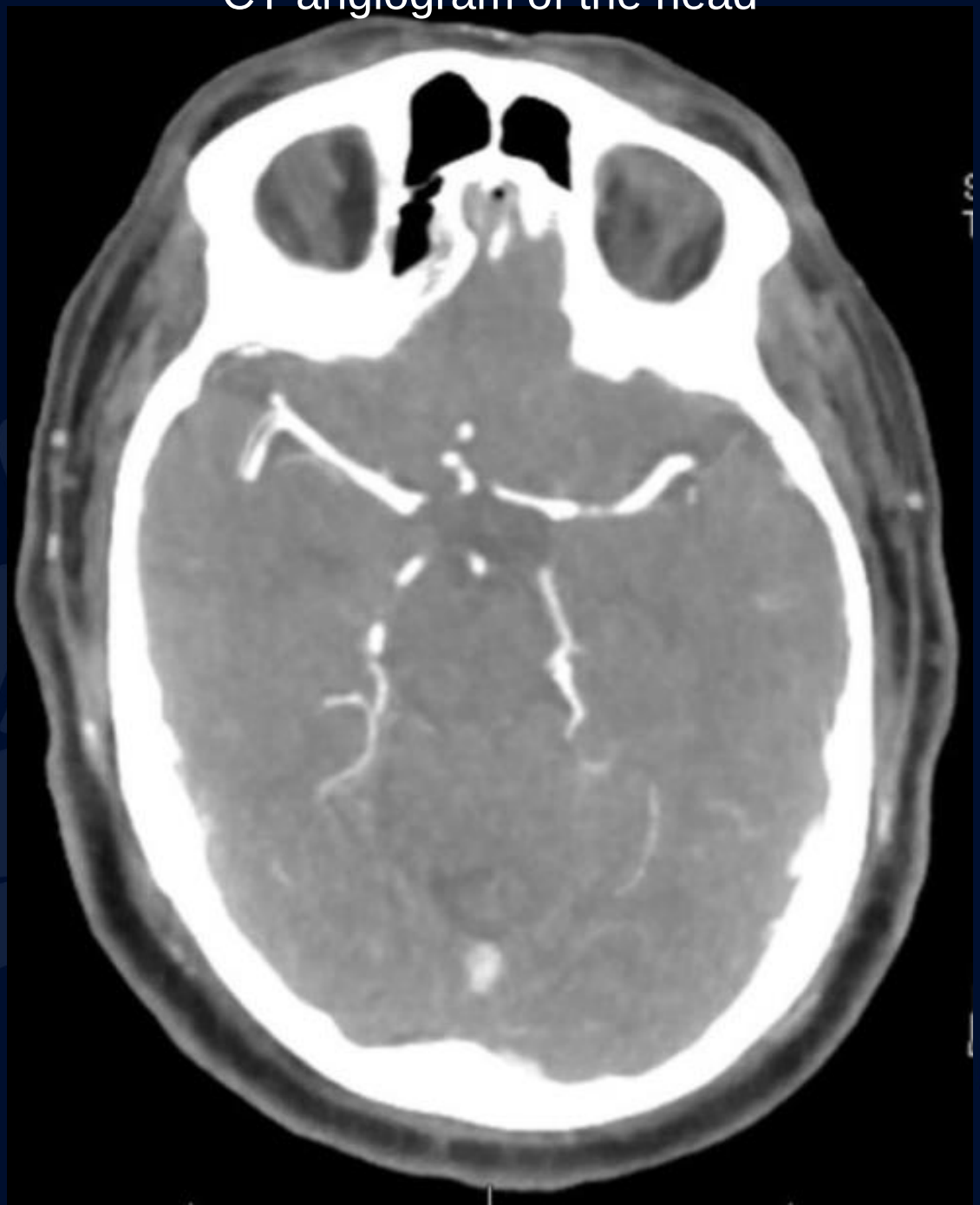
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



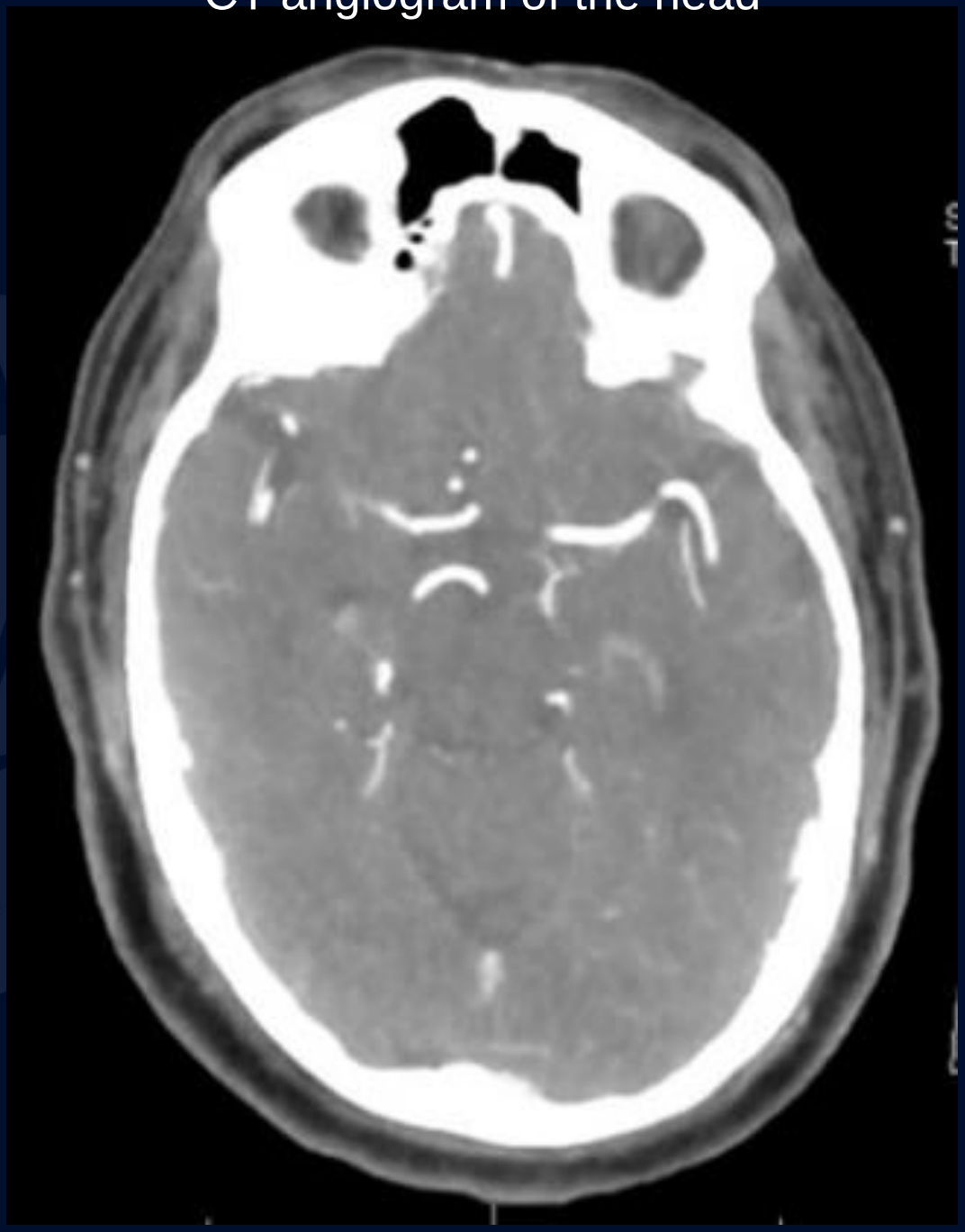
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



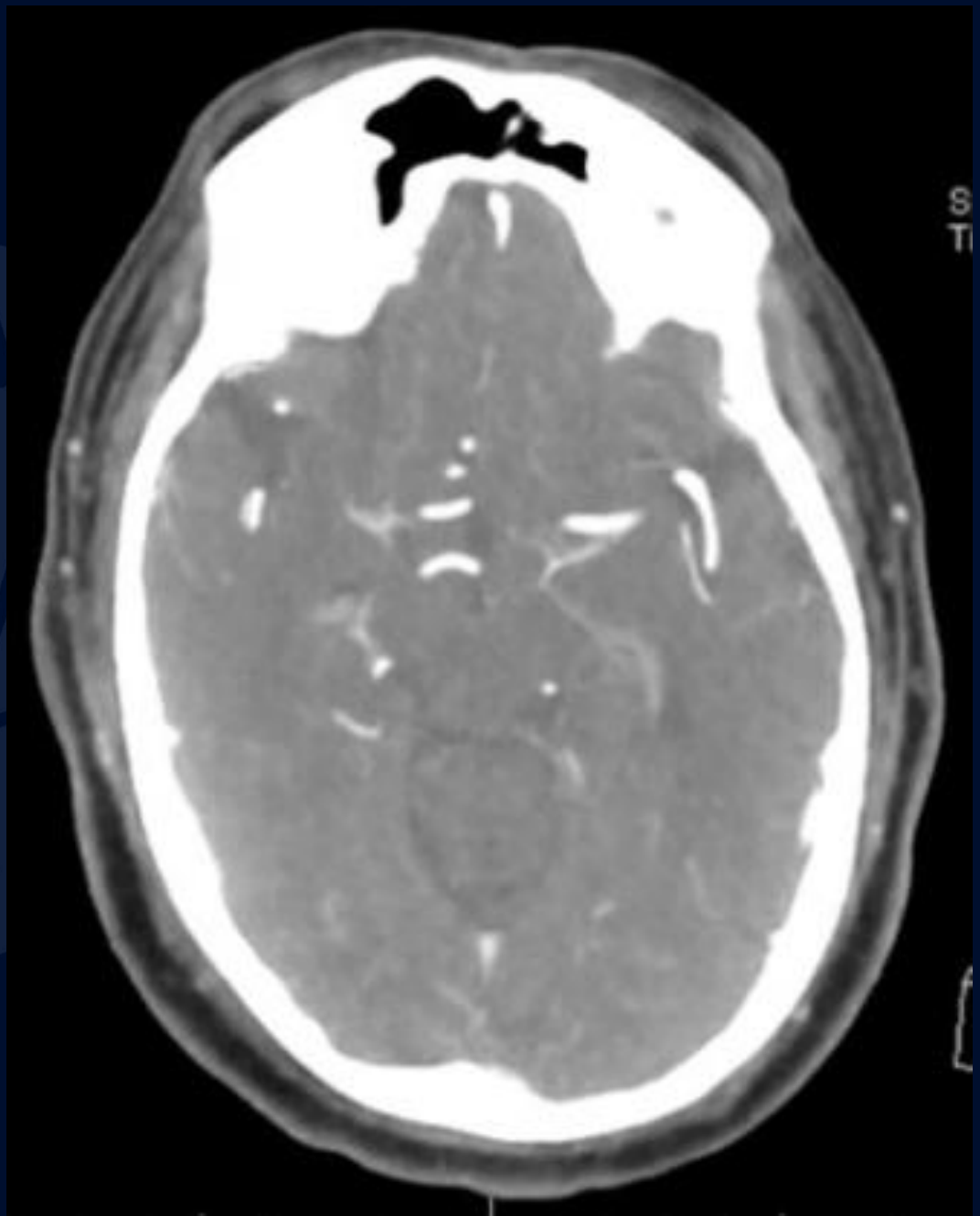
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



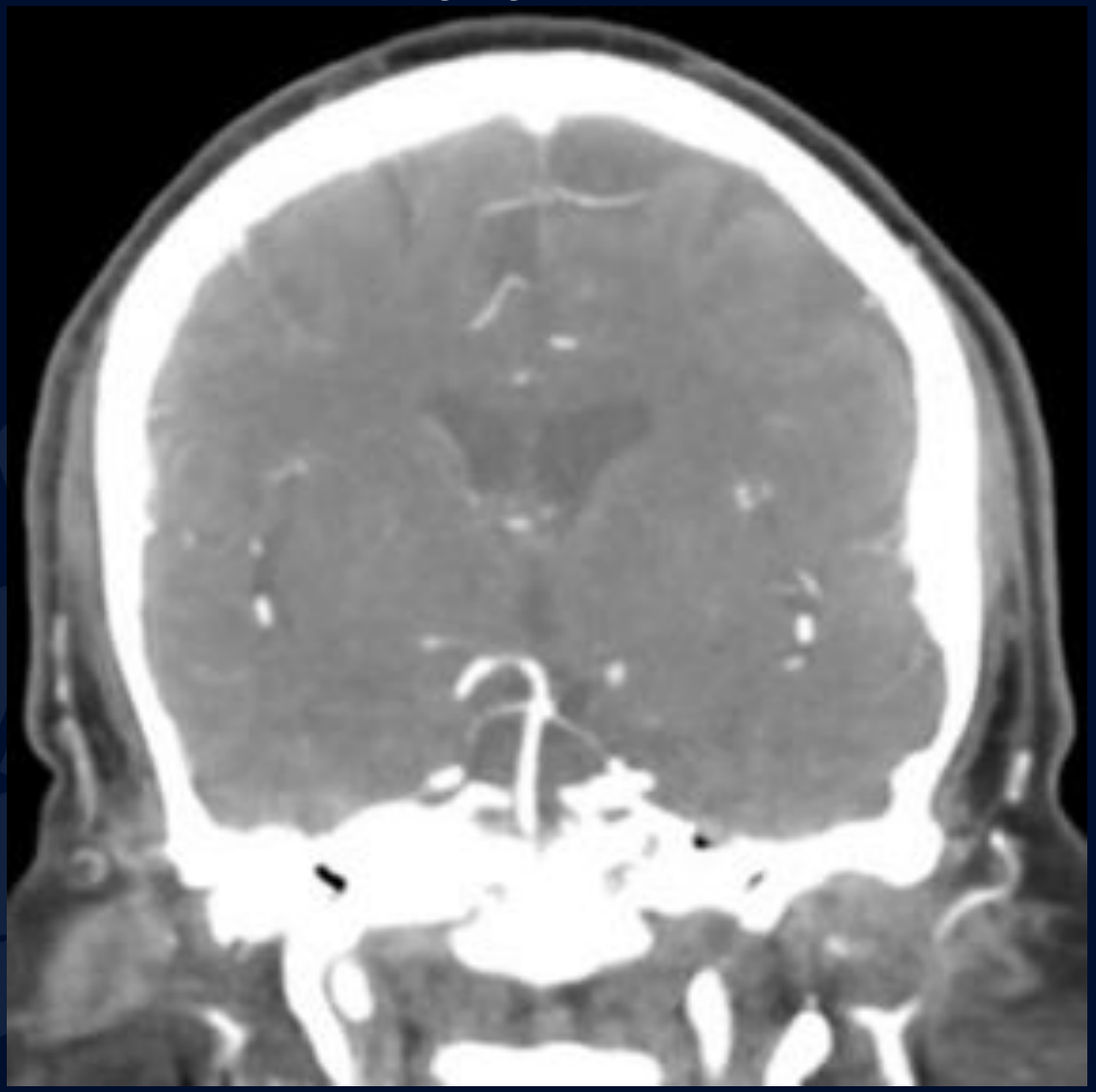
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



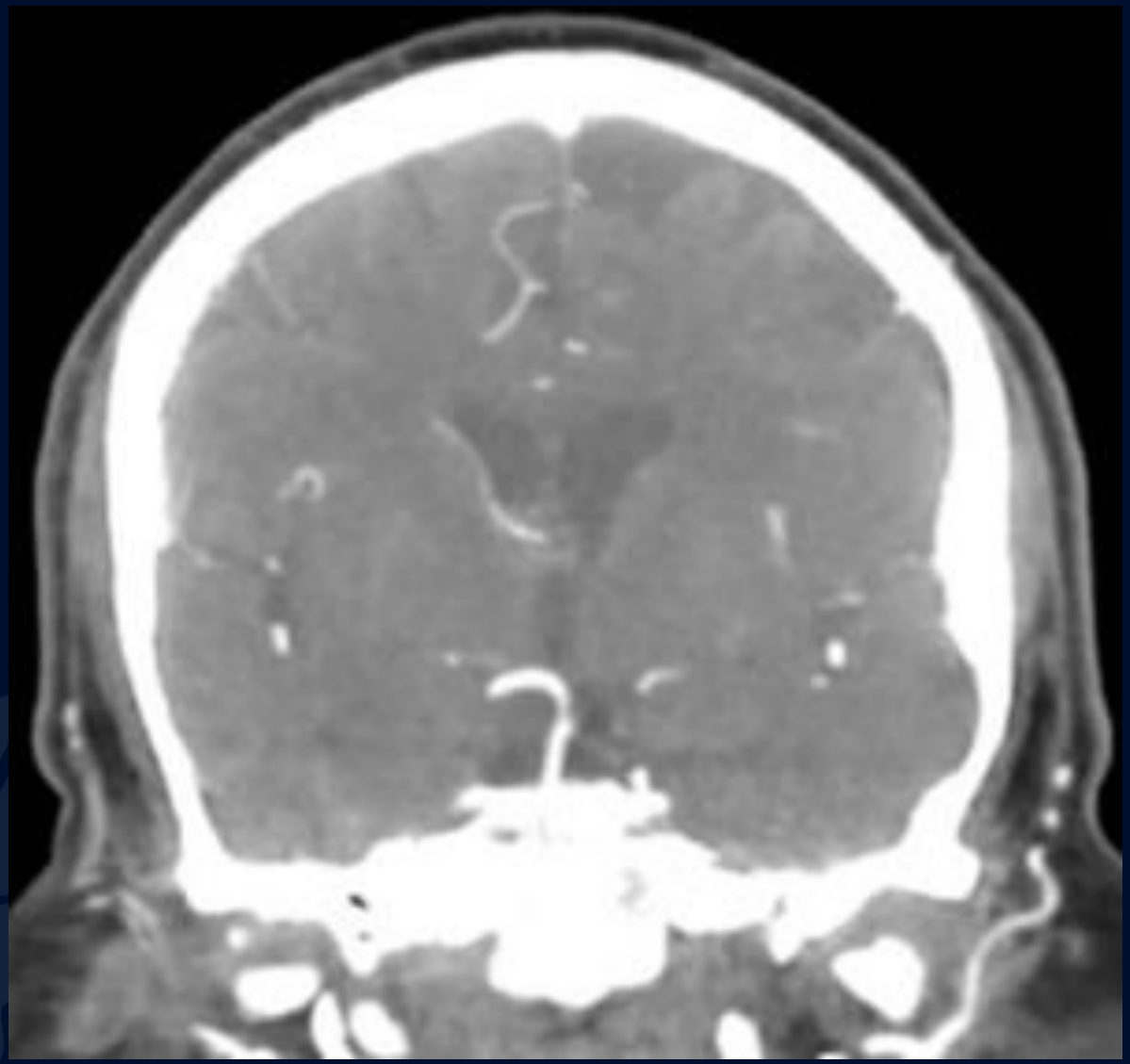
UCONN HEALTH
RADIOLOGY

CT angiogram of the head



UCONN HEALTH
RADIOLOGY

CT angiogram of the head



UCONN HEALTH
RADIOLOGY

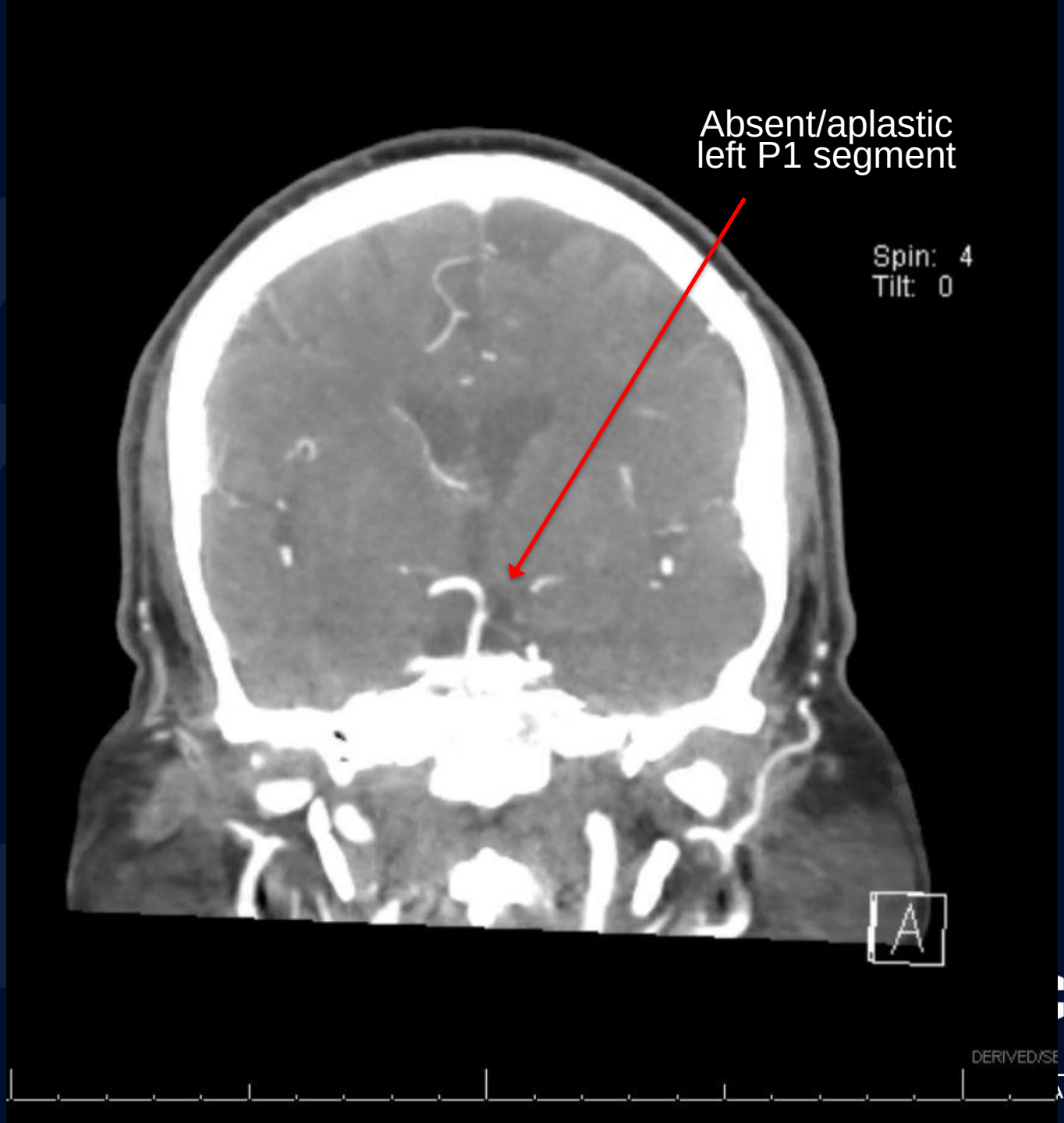
?

UCONN HEALTH
RADIOLOGY

Persistent fetal origin of the left posterior cerebral artery (PCA)

UCONN HEALTH
RADIOLOGY

CONN
EALTH
RADIOLOGY


Absent/aplastic
left P1 segment
Spin: 4
Tilt: 0
A

Incidental identification of a developmental abnormality (persistent fetal left PCA origin), which is not the cause of the patient's symptoms

UCONN HEALTH
RADIOLOGY

Background

- Results from persistence of a normal embryonic carotid-basilar anastomosis that forms in the developing embryo, but typically regresses after the vertebral arteries develop and establish the “adult” circulation pattern, when the embryo is only approximately 15 mm
- Common variant anatomy of posterior cerebral artery circulation (20-25%)
- P1 segment of PCA is hypoplastic/aplastic
- Most, if not all, blood supplied by the posterior communicating artery (Pcomm)
  - Referred to as a fetal-type Pcomm
- Can be bilateral (results in diminutive basilar)
- If truly aplastic P1, then posterior circulation supplied by carotid, essentially making it part of anterior circulation
  - Can influence patterns of ischemia in stroke
- Cerebral circulation variant anatomy is also important for neurosurgical/neurovascular interventional planning

UCONN HEALTH
RADIOLOGY

References

https://radiopaedia.org/articles/fetal-posterior-cerebral-artery

Zampakis P, Panagiotopoulos V, Petsas T et-al. Common and uncommon intracranial arterial anatomic variations in multi-detector computed tomography angiography (MDCTA). What radiologists should be aware of. Insights into imaging. 6 (1): 33-42.

Yamamoto Y, Georgiadis AL, Chang HM et-al. Posterior cerebral artery territory infarcts in the New England Medical Center Posterior Circulation Registry. Arch. Neurol. 1999;56 (7): 824-32.

Mohamed Micdhadhu M, Kho K, Murad M, Looi I. Fetal Posterior Communicating Artery as a Conduit for Concurrent Anterior and Posterior Circulation Infarct: A Case Report. CVNS. 2021;3(4):7-11.

Lambert SL, Williams FJ, Oganisyan ZZ et-al. Fetal-Type Variants of the Posterior Cerebral Artery and Concurrent Infarction in the Major Arterial Territories of the Cerebral Hemisphere. (2016) Journal of investigative medicine high impact case reports. 4 (3): 2324709616665409.

UCONN HEALTH
RADIOLOGY