

Isolated Case of Alexia Following Cardiac Ablation: A Rare Stroke Presentation

Matthew M. Mason M.D., Nantian Harsell M.D., Bryan Kharbanda M.D.

Introduction

- Stroke is clinically defined as a syndrome of focal neurological deficit (FND) of sudden onset and lasting more than 24 hours, attributed to vascular injuries (infarction or hemorrhage) of the central nervous system
- Understanding intracranial vascular territories and neuroanatomy enables clinicians to localize lesions with relevance for interpreting imaging and understanding presentation of FND, prognosis, and mechanism of stroke.
- Pure alexia, a less common presentation of stroke, is characterized by loss of reading abilities in a literate person who is able to name things but unable to read properly.

Case Presentation

- A 68-year-old male with a medical history significant for atrial fibrillation, congestive heart failure, and hypertension who recently underwent cardiac ablation was instructed to present to the emergency department after he was unable to read the individual words on his prescription or understanding their meaning.
- Upon presentation to the ED, the patient was found to have persistent alexia and progressive difficulty with word-finding. On detailed neurological examination, both pupils were equal, round, and reactive to light. Extraocular eye movements were full, with no nystagmus. Notably, there were no overt visual field defects, motor deficits, or sensory abnormalities. NIH stroke scale assessment revealed aphasia, specifically marked by fragmentary expression and the need for inference.
- An initial CT scan (Figure 1) from the ED confirmed a left PCA infarct without hemorrhagic transformation. Unfortunately, the patient was beyond the recommended time window for intravenous thrombolysis. Following admission, an MRI scan (Figure 2A & 2B) confirmed acute infarction with restricted diffusion in the posterior left temporal and left occipital lobes. The patient was discharged a few days with some improvement in his pure alexia, compared to the stroke onset.

Imaging

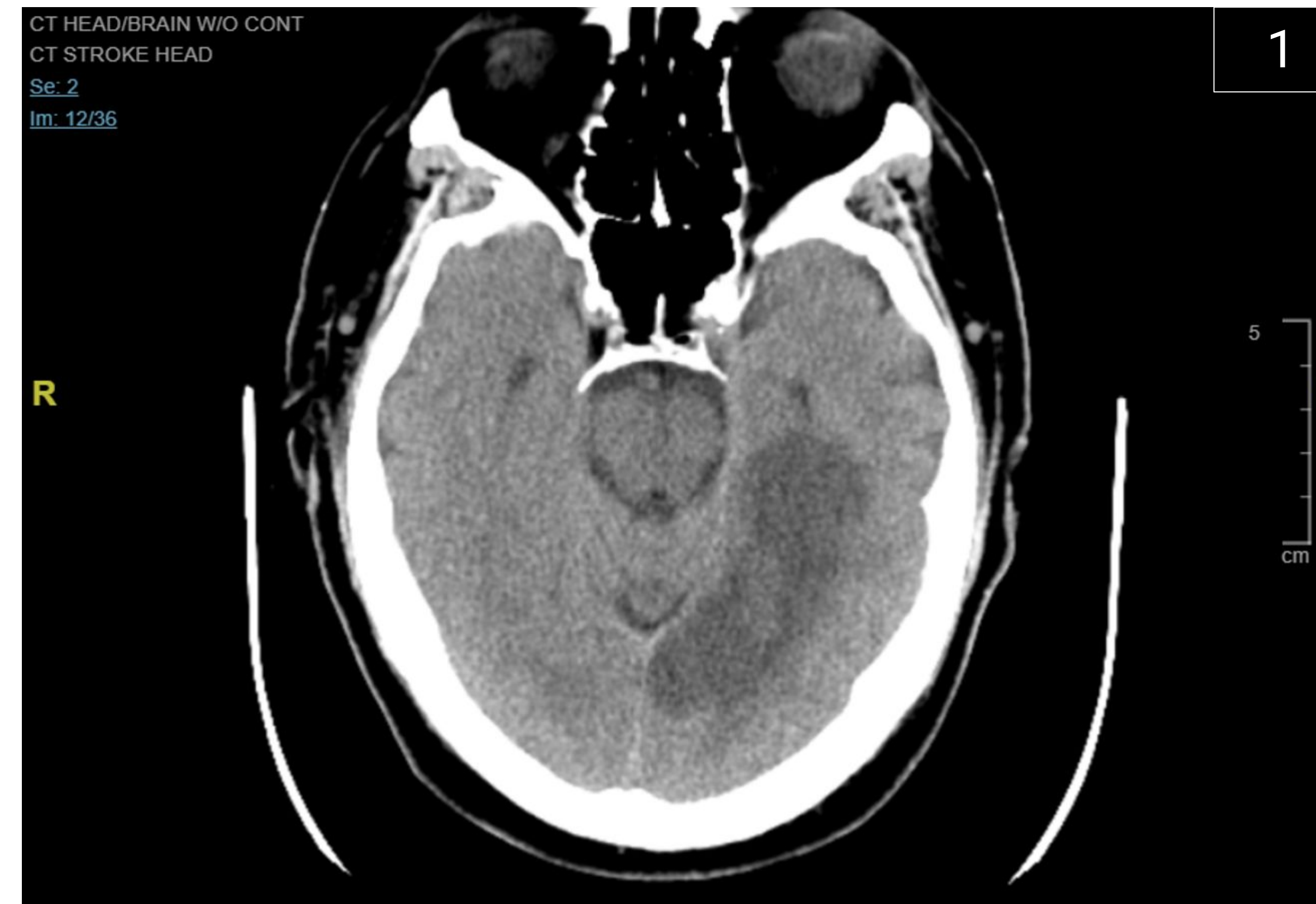


Figure 1: Patient's initial CT without contrast showing a hypodensity in the occipital and mesial temporal lobes, confirming a left PCA infarct without hemorrhagic transformation.

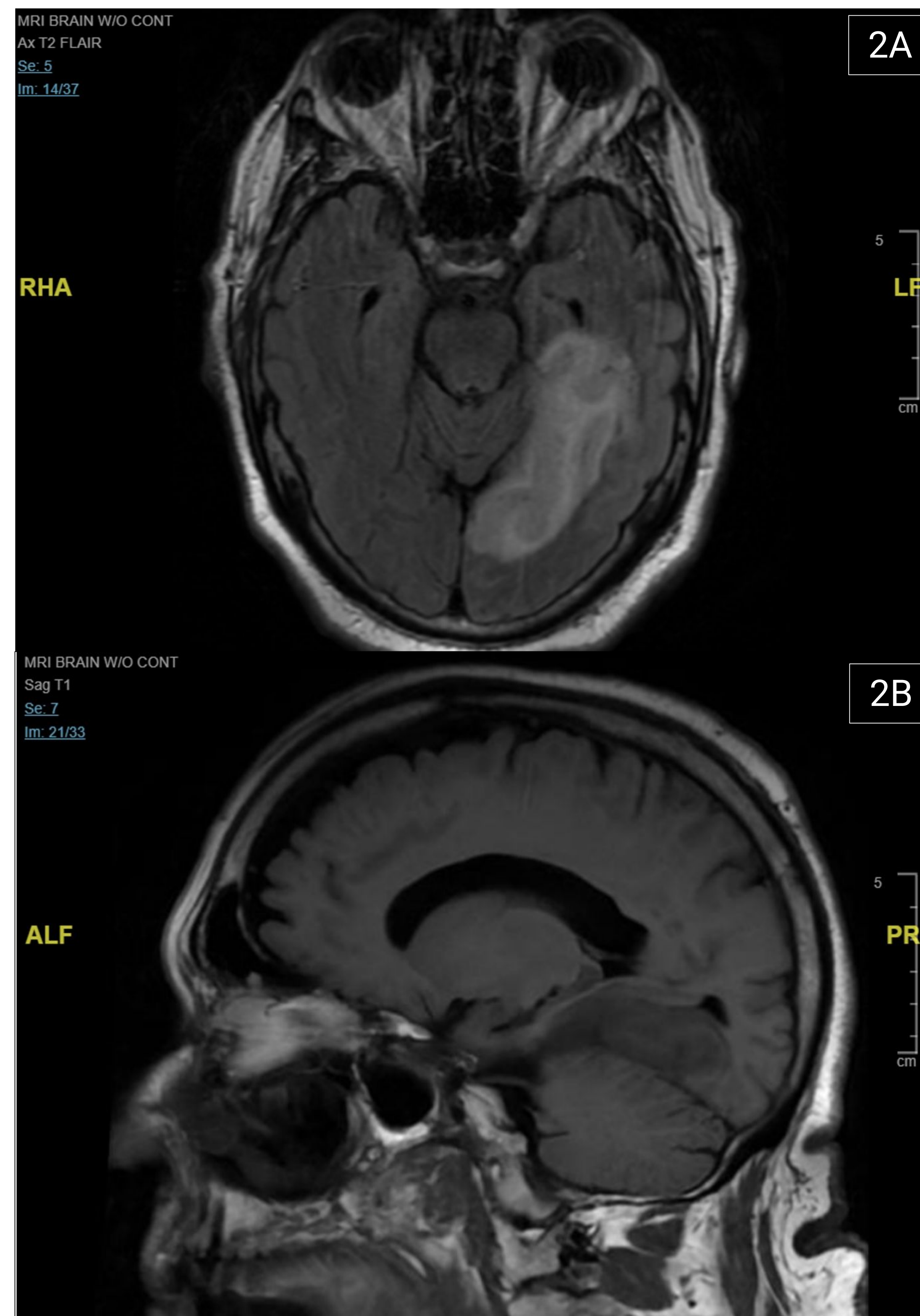
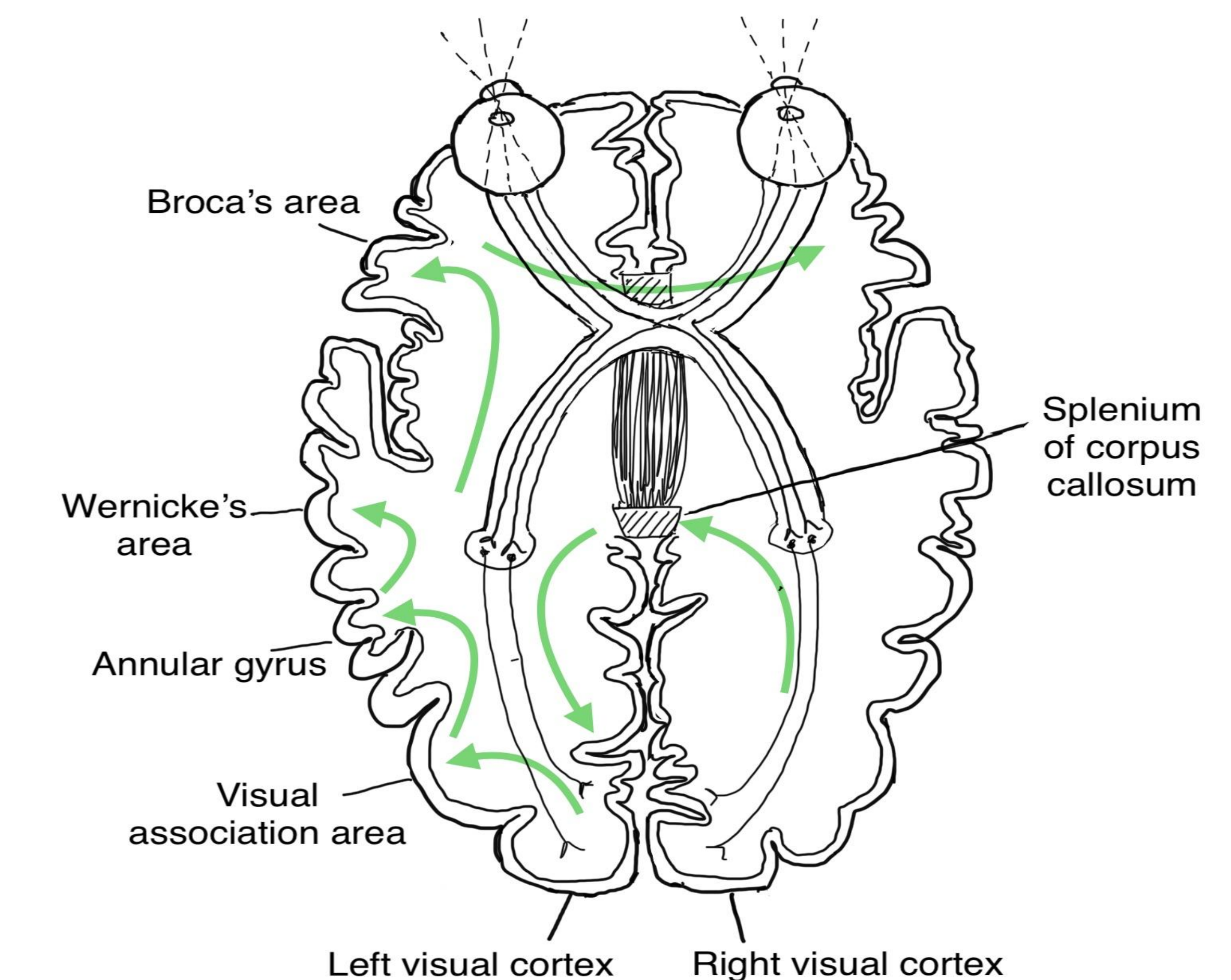


Figure 2A & 2B: Patient's axial T2-FLAIR and sagittal T1 sequence MRI showing acute PCA infarction in the posterior left temporal and left occipital lobes with petechial hemorrhagic transformation.

Discussion

Patients with lesions in the left occipital lobes often experience deficits in their respective visual cortex, leading to the need for all visual input to be processed by the right visual cortex. This processed information is then transferred to the left angular gyrus, which plays a key role in semantic processing. However, this transfer process is obstructed when the splenium of the corpus callosum is also damaged by the lesion. In such cases, visual information is unable to reach the left angular gyrus due to the damage to either the splenium or the fibers adjacent to the angular gyrus. In rare instances, patients may present with pure alexia without significant visual deficits when the angular gyrus in the temporal lobe or the communication tract between the left visual cortex and angular gyrus is damaged by infarction.



Conclusion

This rare case underscores the necessity for heightened awareness of non-traditional stroke symptoms, particularly in patients with elevated risks of thromboembolic events, to ensure prompt diagnosis and intervention.

References

- Mani J, Diehl B, Piao Z, et al. Evidence for a basal temporal visual language center: cortical stimulation producing pure alexia. *Neurology*. 2008;71(20):1621-1627.
- Rupareliya C, Naqvi S, Hejazi S. Alexia Without Agraphia: A Rare Entity. *Cureus*. 2017;9(6):e1304.