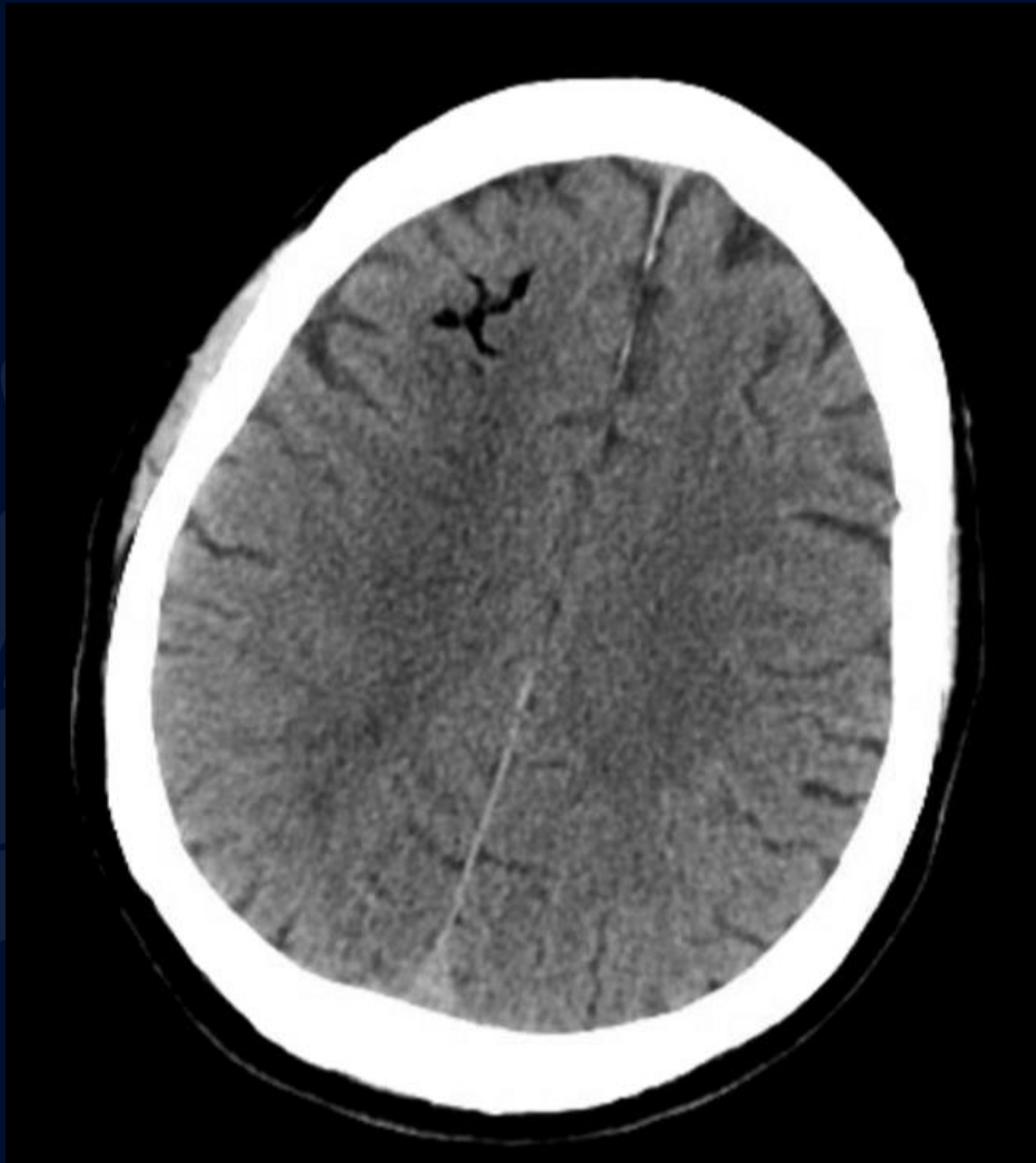


58-year-old male presenting with left sided weakness

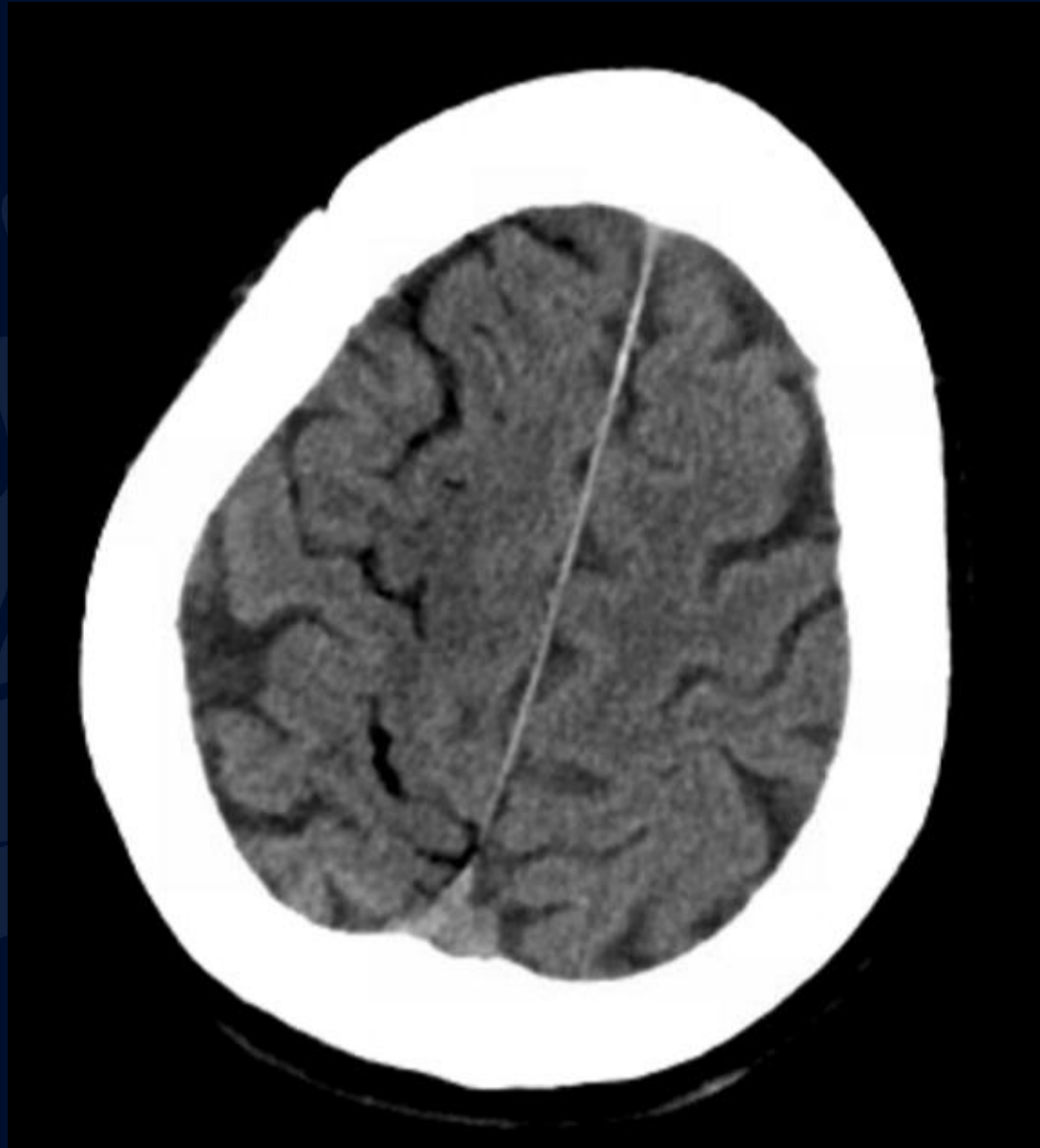
Summer Xu, MS3

University of Connecticut School of
Medicine

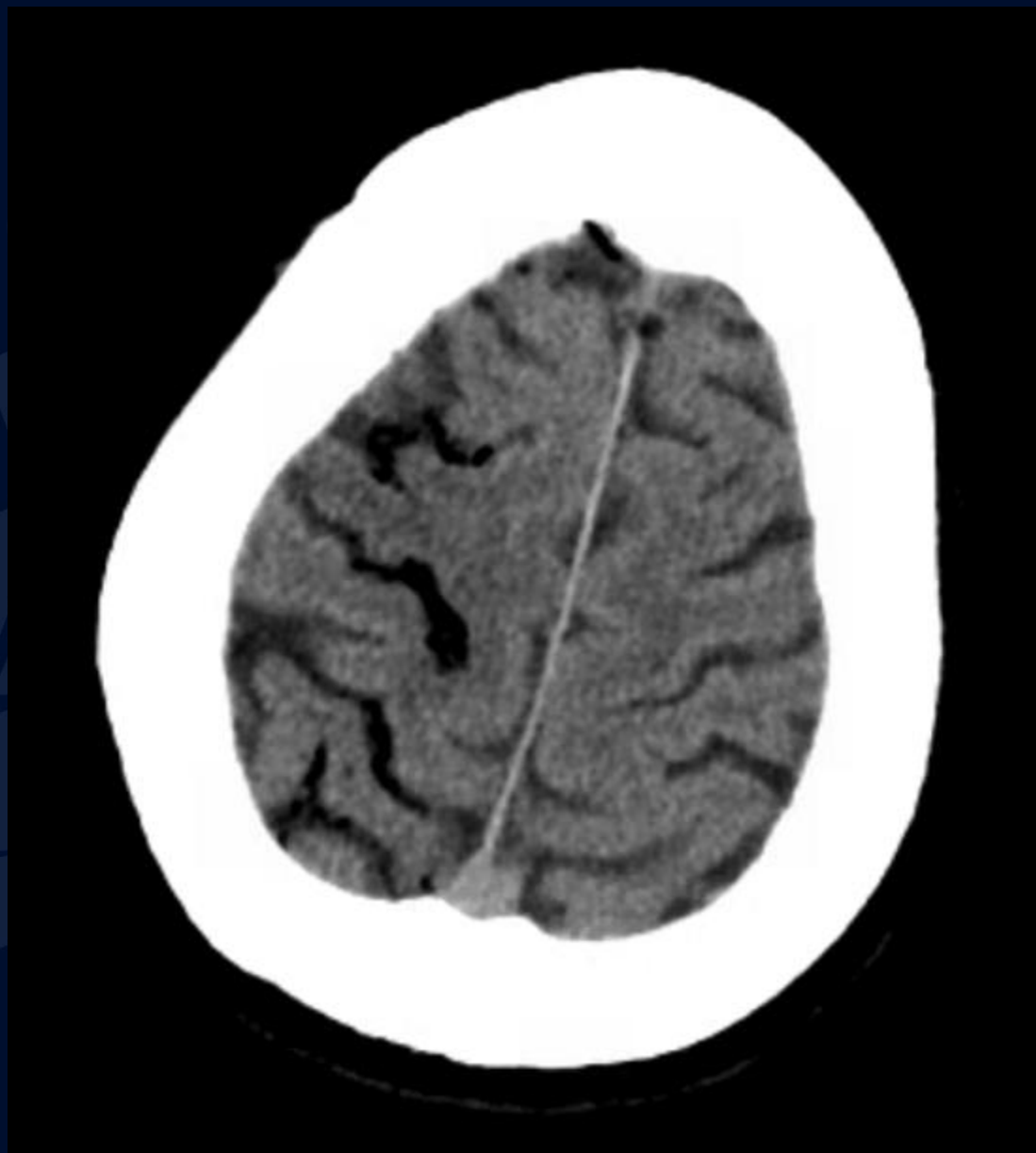
Day 1: CT head without contrast



Day 1: CT head without contrast



Day 1: CT head without contrast



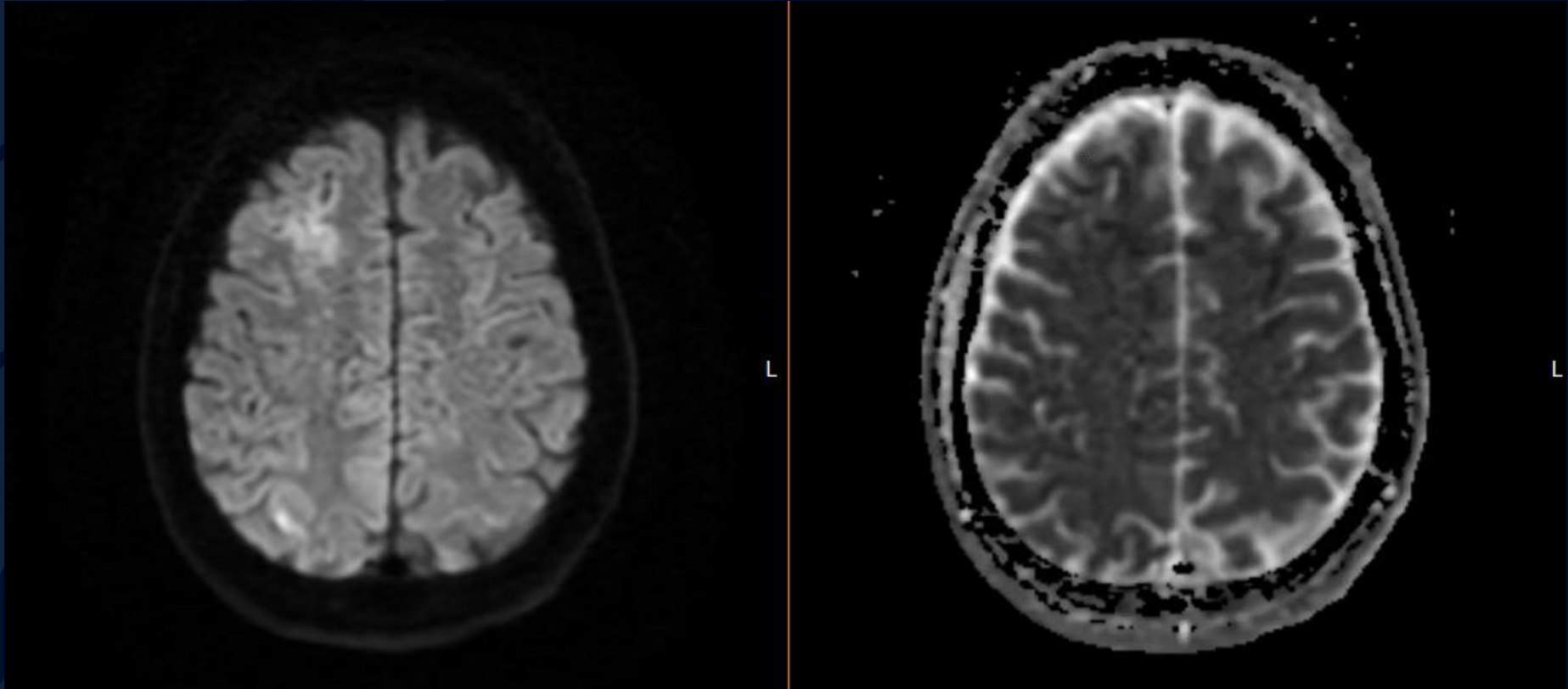
Day 1: Repeat CT head without contrast



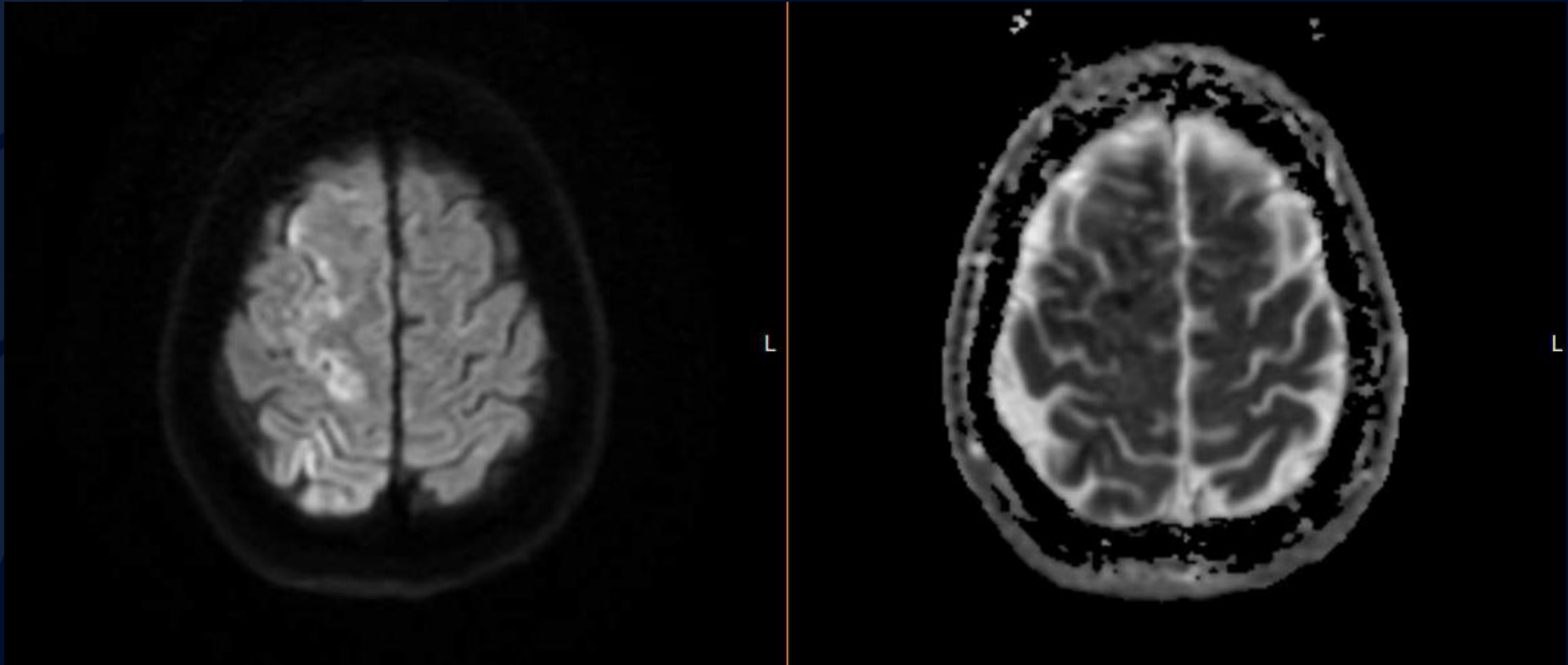
Day 1: CT abdomen with contrast



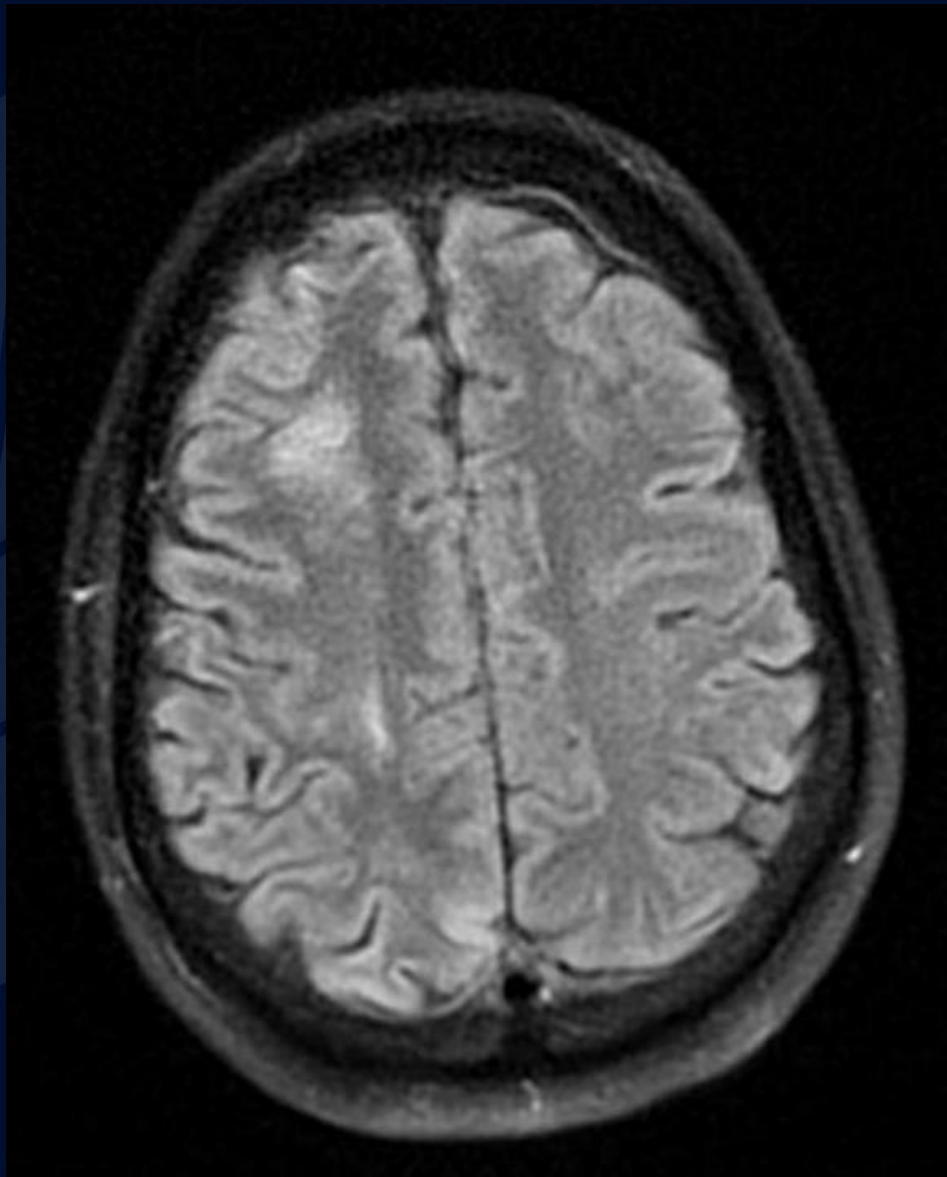
Day 1: MRI DWI (left) and ADC (right)



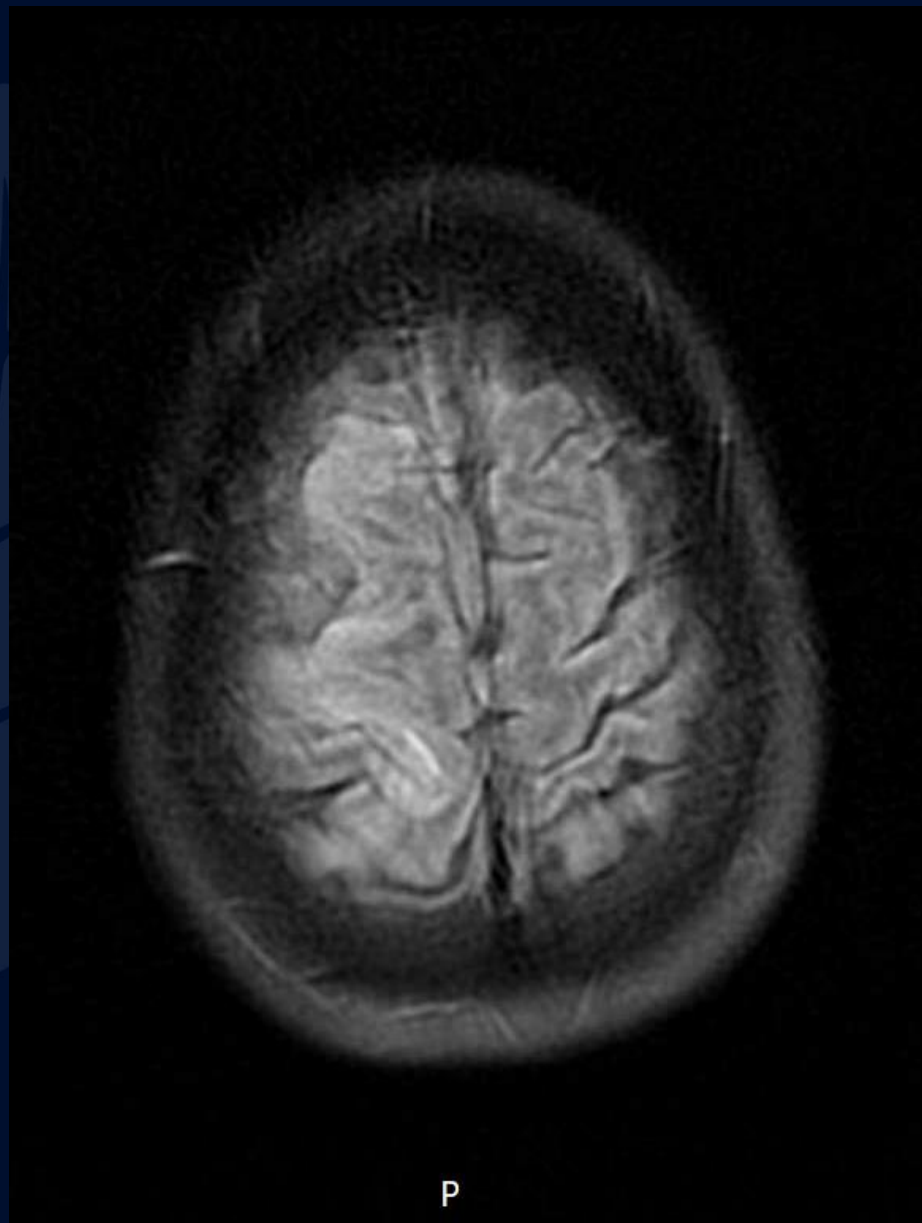
Day 1: MRI DWI (left) and ADC (right)



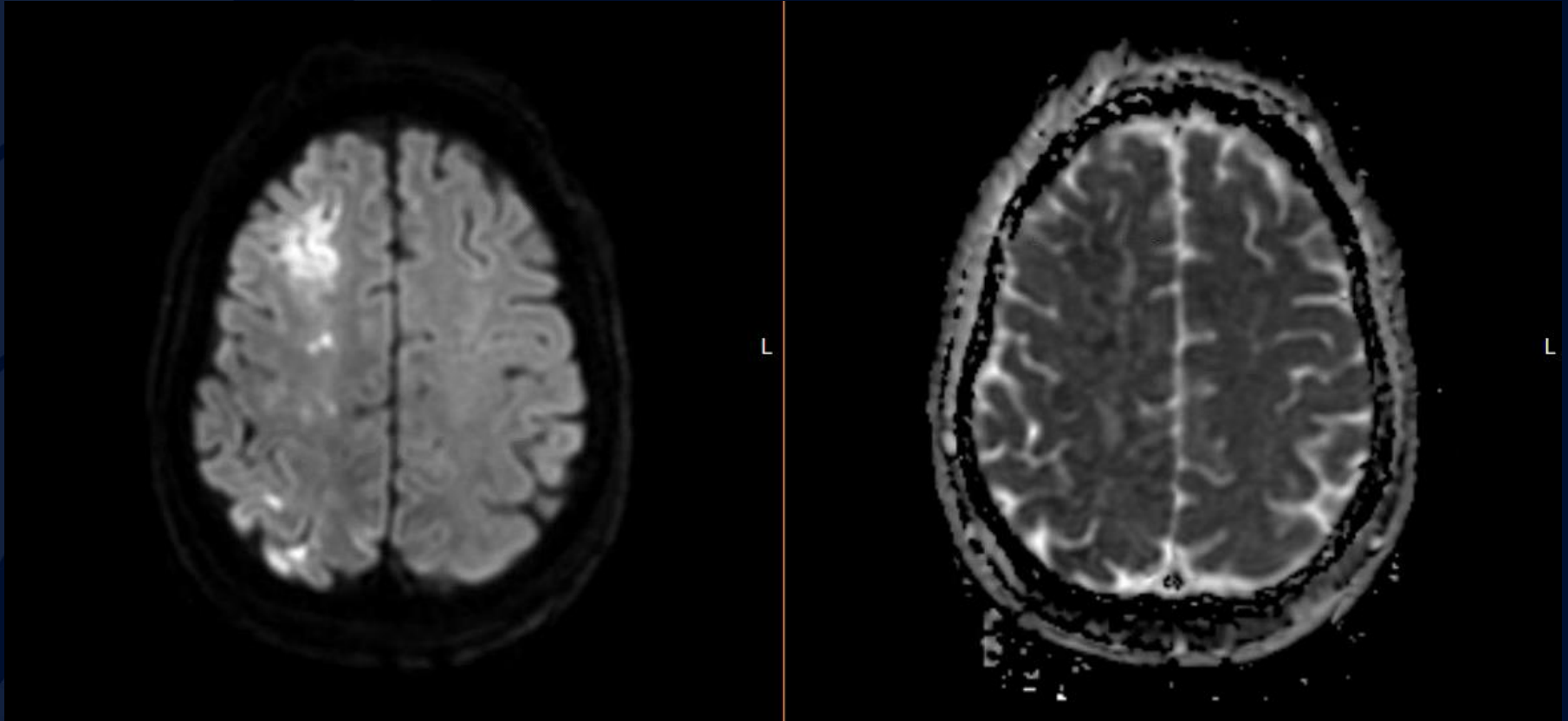
Day 1: MRI T2 FLAIR



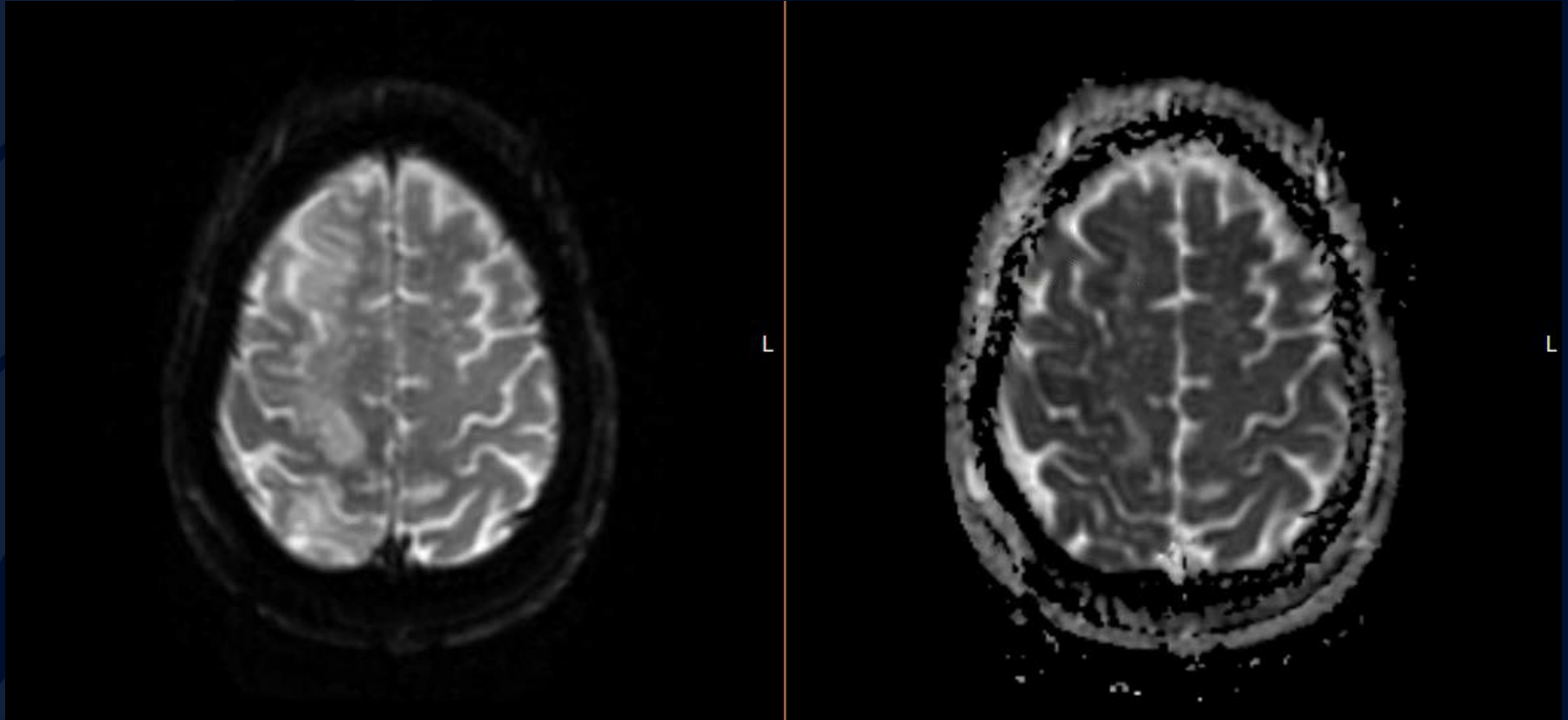
Day 1: MRI T2 FLAIR



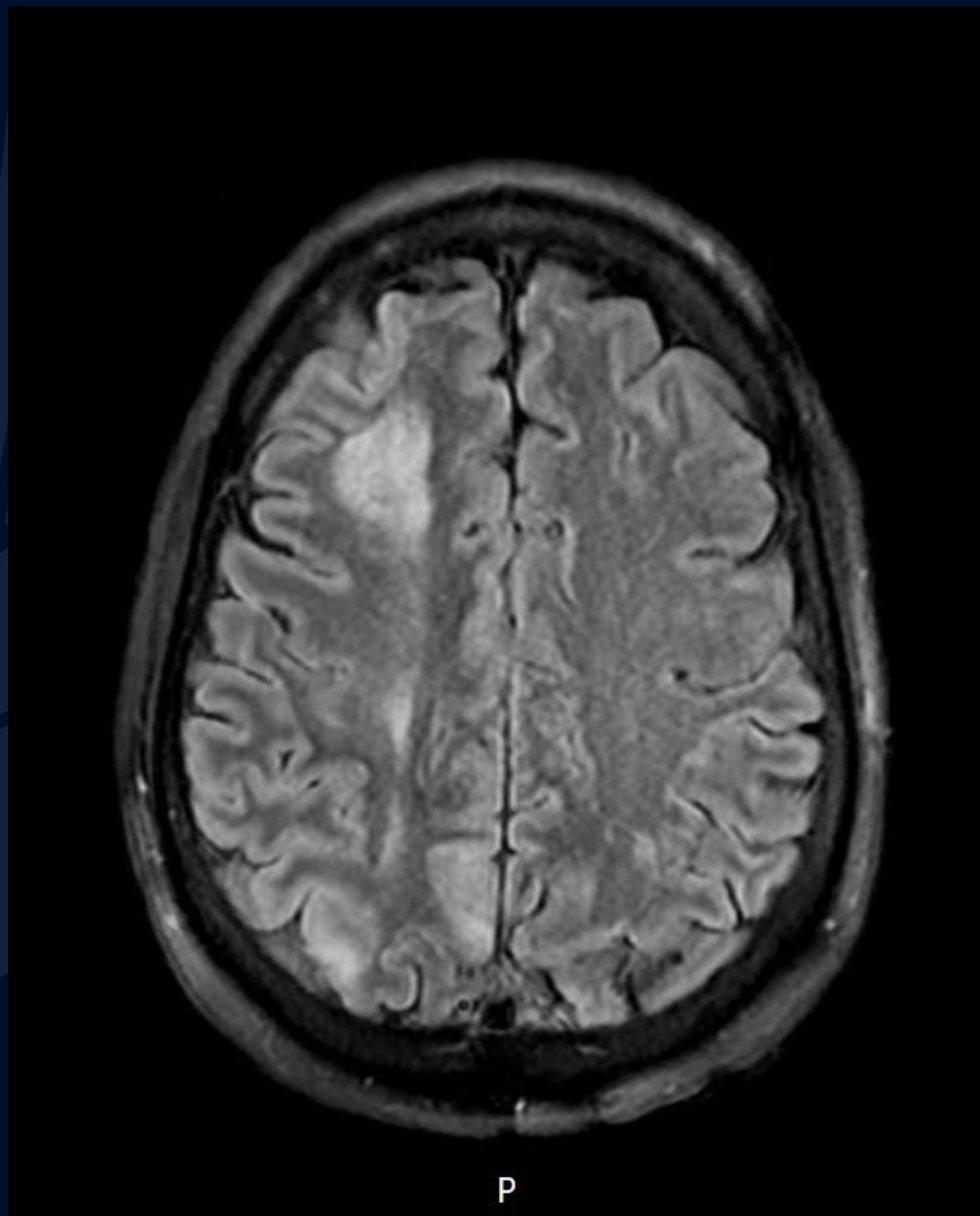
Day 2: MRI DWI (left) and ADC (right)



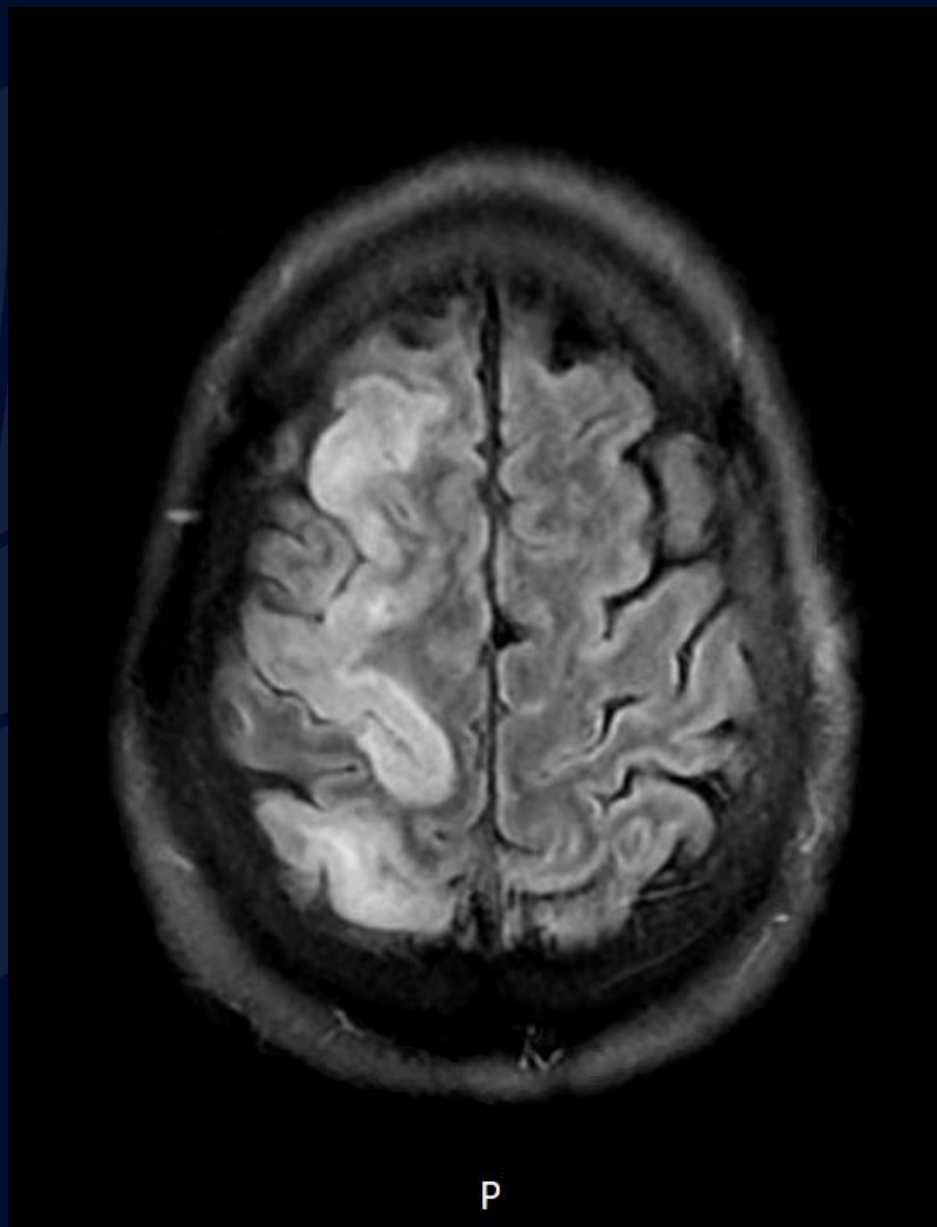
Day 2: MRI DWI (left) and ADC (right)



Day 2: MRI T2 FLAIR



Day 2: MRI T2 FLAIR



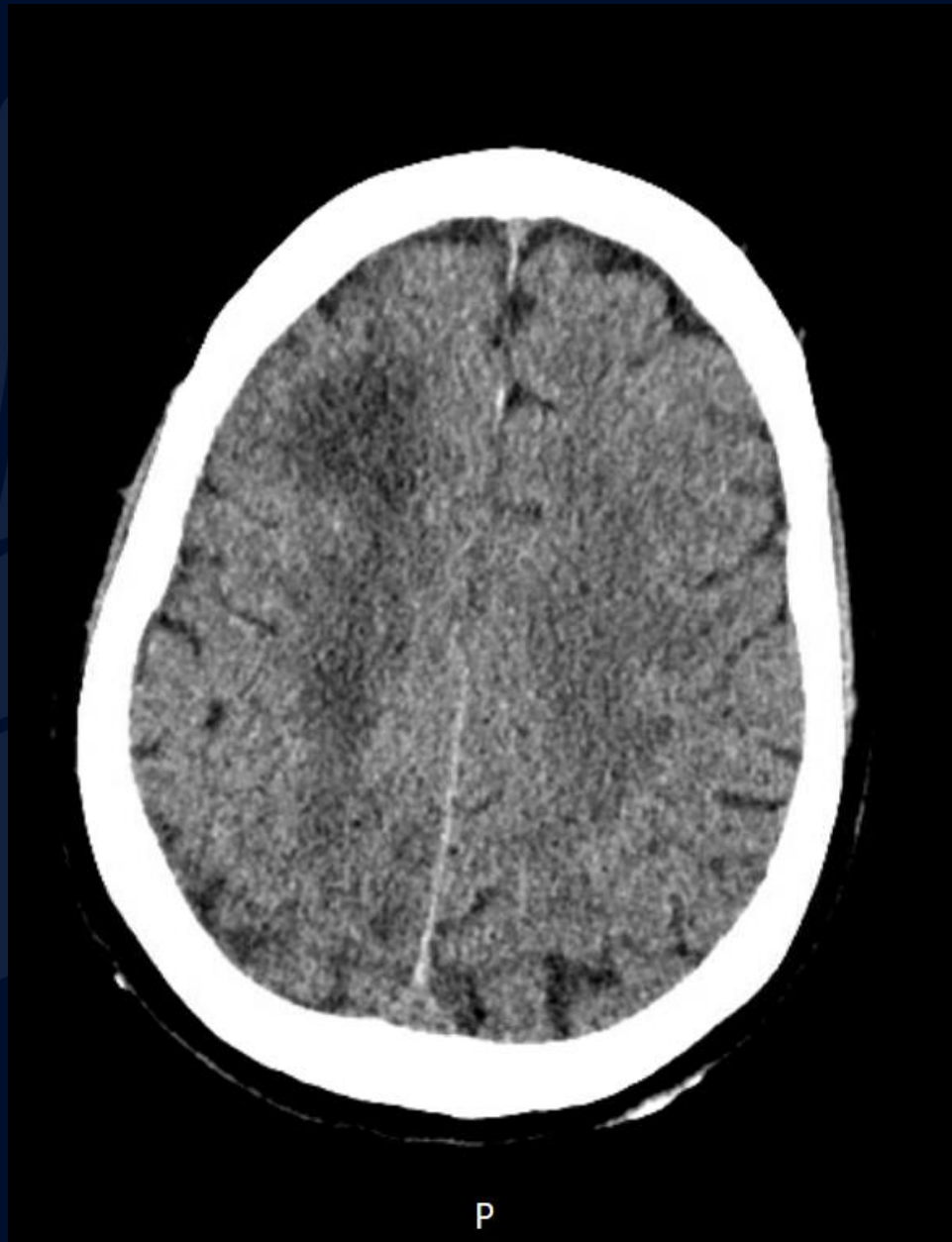
Day 2: CT abdomen and pelvis with IV contrast



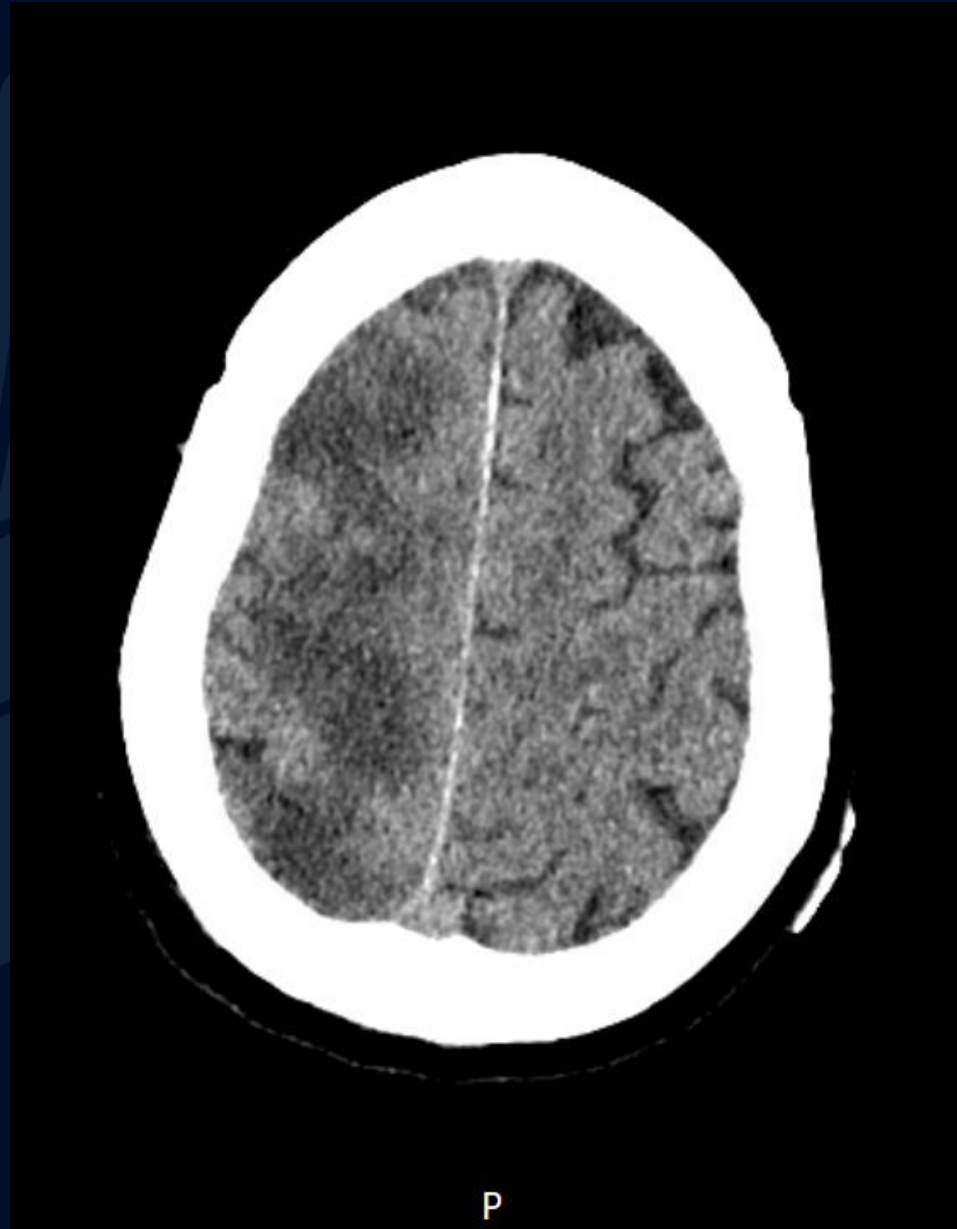
Day 2: CT abdomen and pelvis with IV contrast



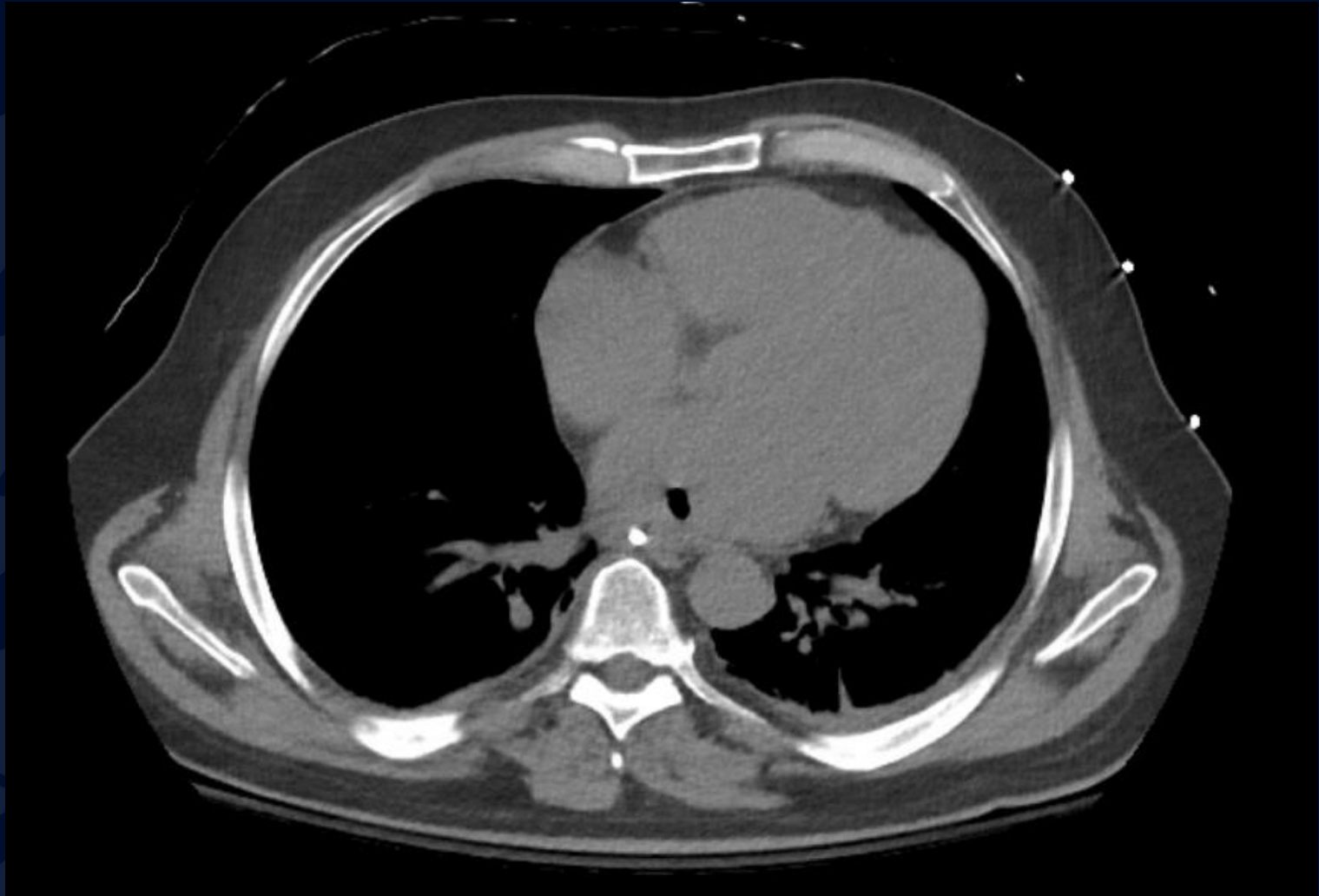
Day 3: CT head without contrast



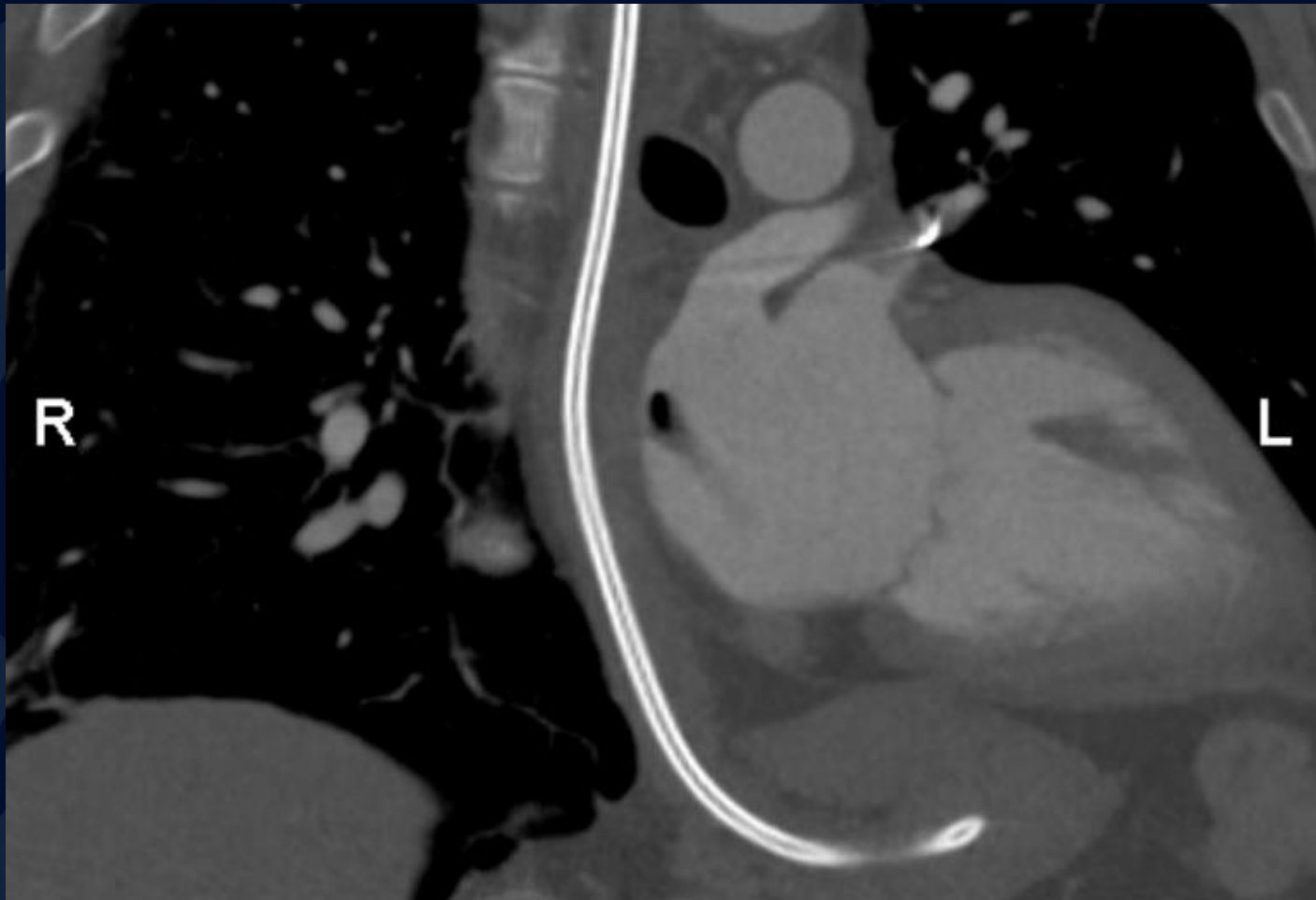
Day 3: CT head without contrast



Day 4: CT chest without contrast



Day 4: CT chest without contrast

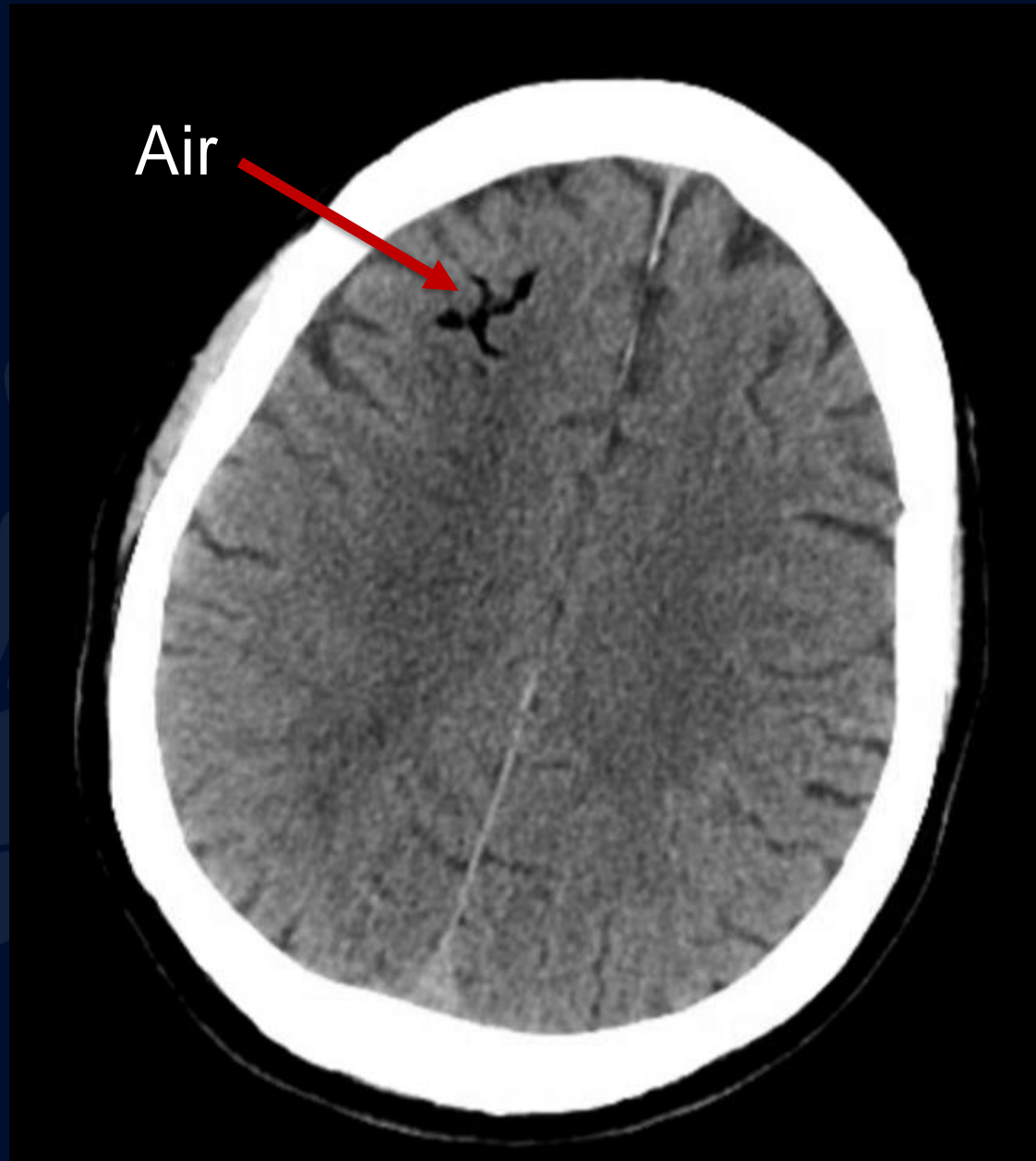


A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. The leaf has a prominent central vein and several smaller veins branching out, with a scalloped edge.

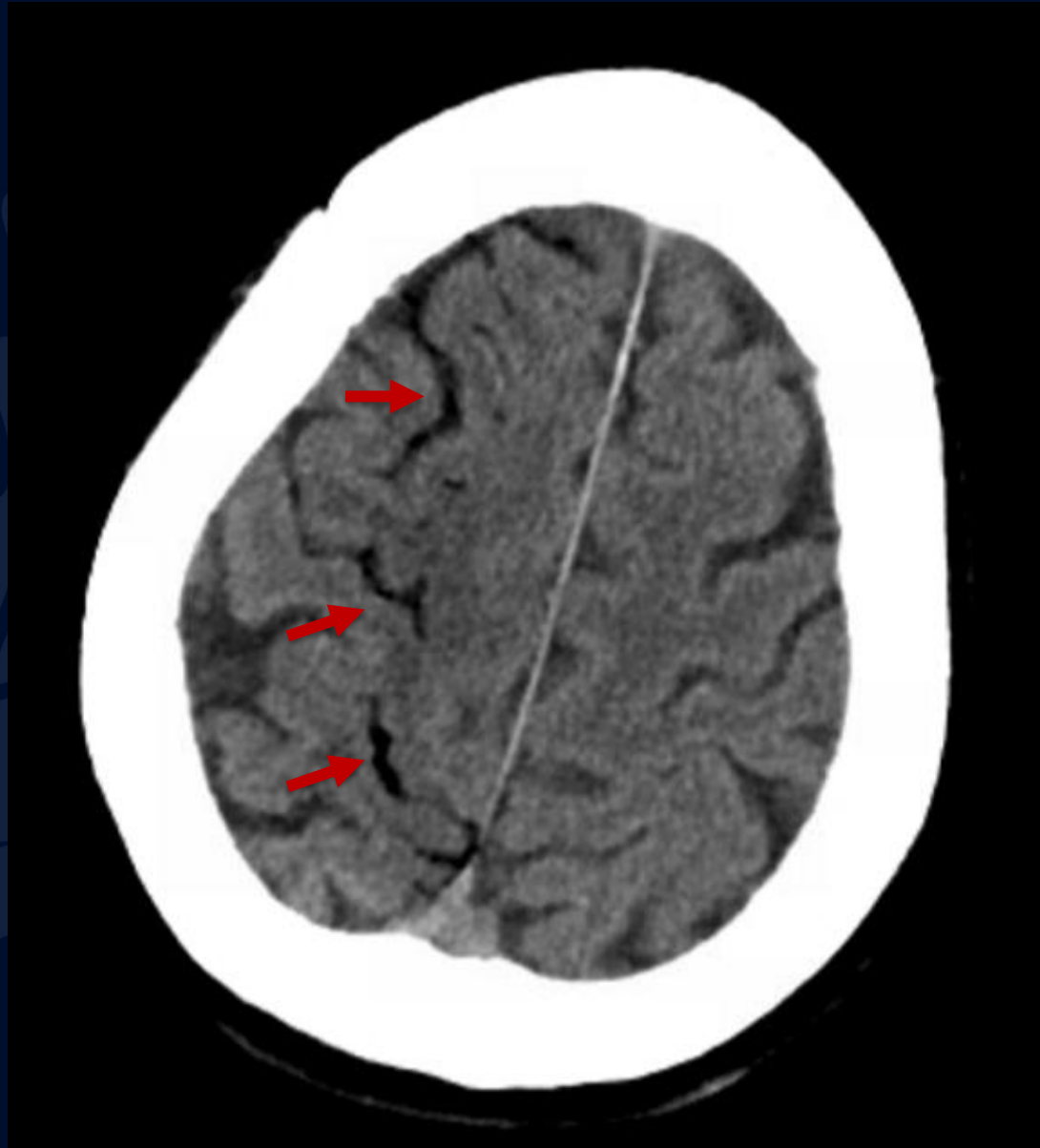
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Air Embolus Secondary to Atrial-Esophageal Fistula

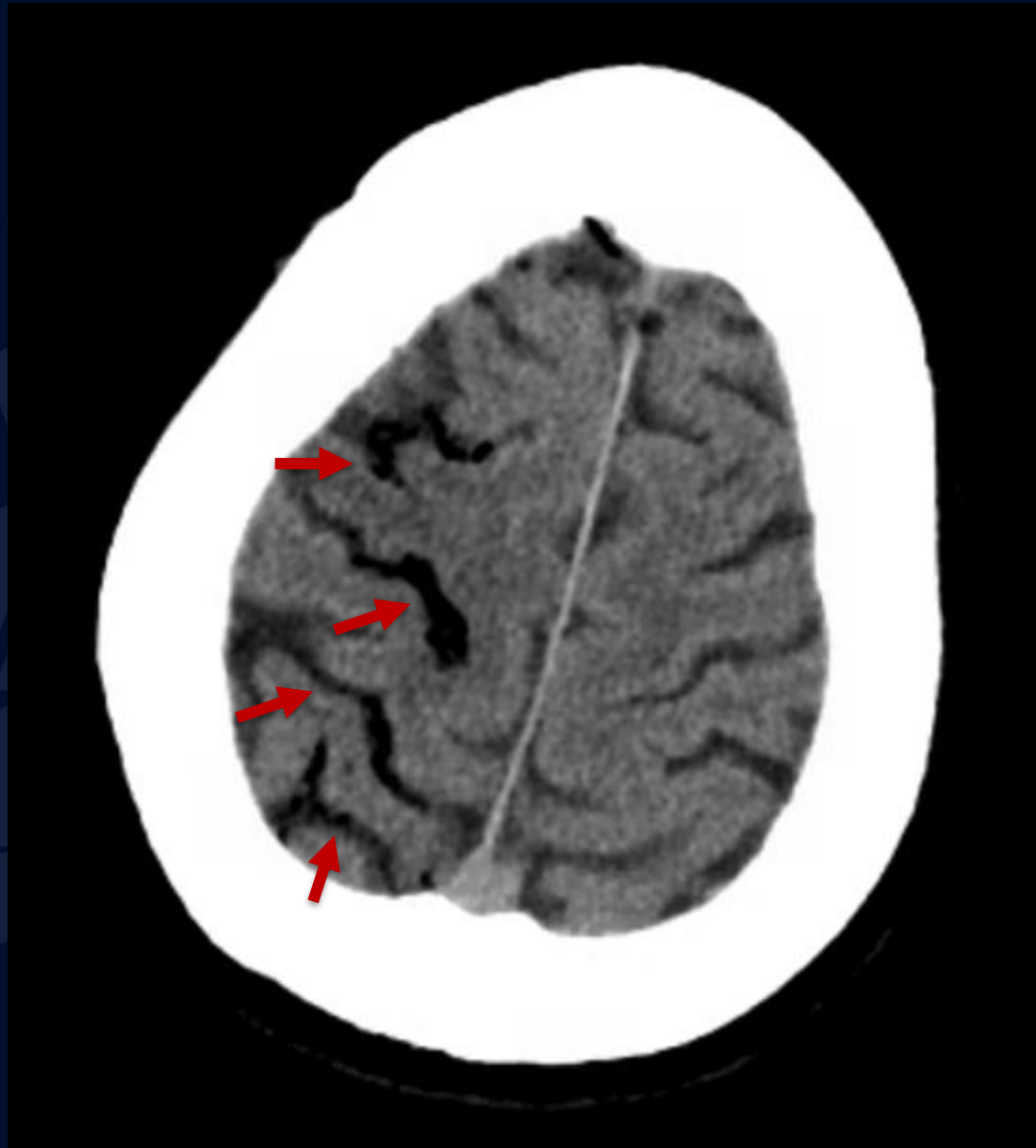
Day 1: CT head without contrast



Day 1: CT head without contrast

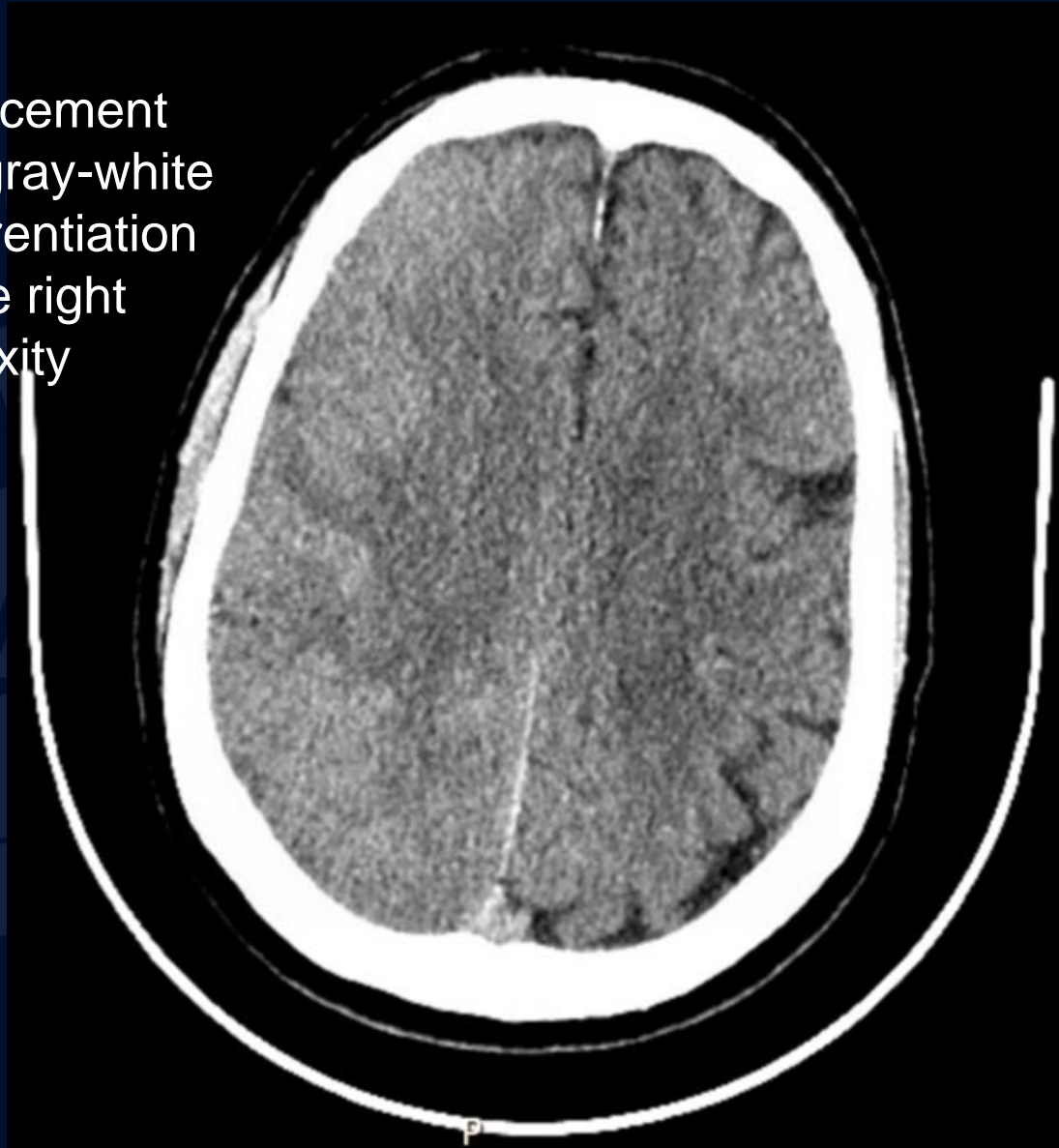


Day 1: CT head without contrast



Day 1: Repeat CT head without contrast

Sulcal effacement
and loss of gray-white
matter differentiation
along the right
convexity

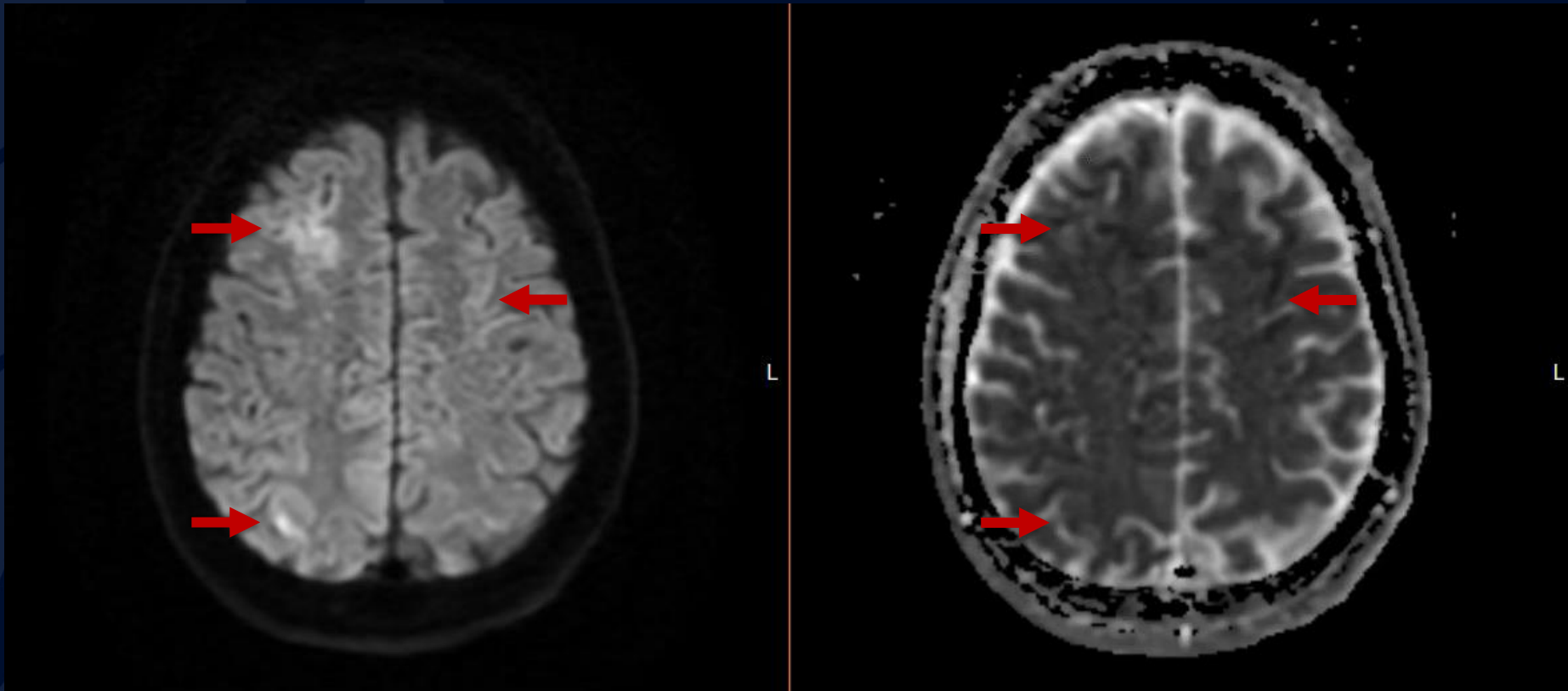


Day 1: CT abdomen with IV contrast



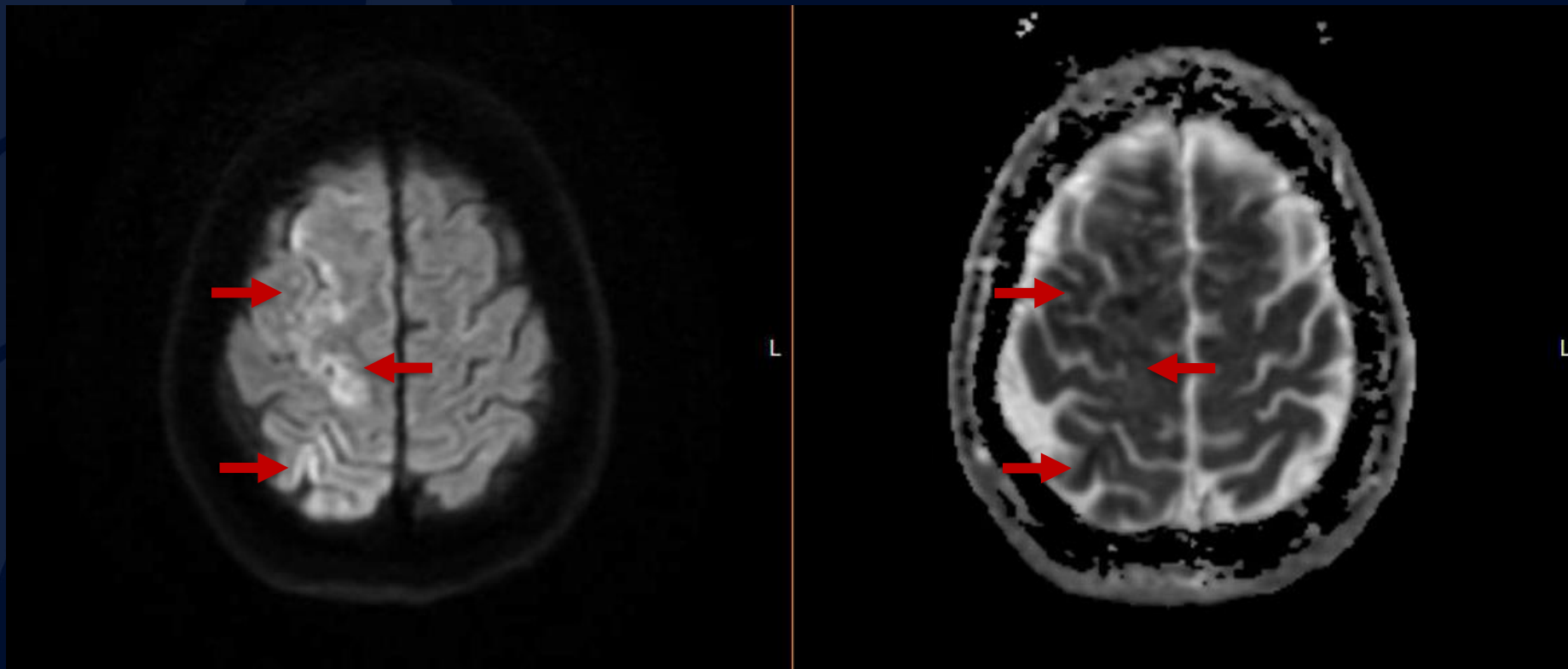
Hypoattenuation
suspicious for acute
splenic infarct

Day 1: MRI DWI (left) and ADC (right)



Diffusion restriction most prominent in the right fronto-parietal region

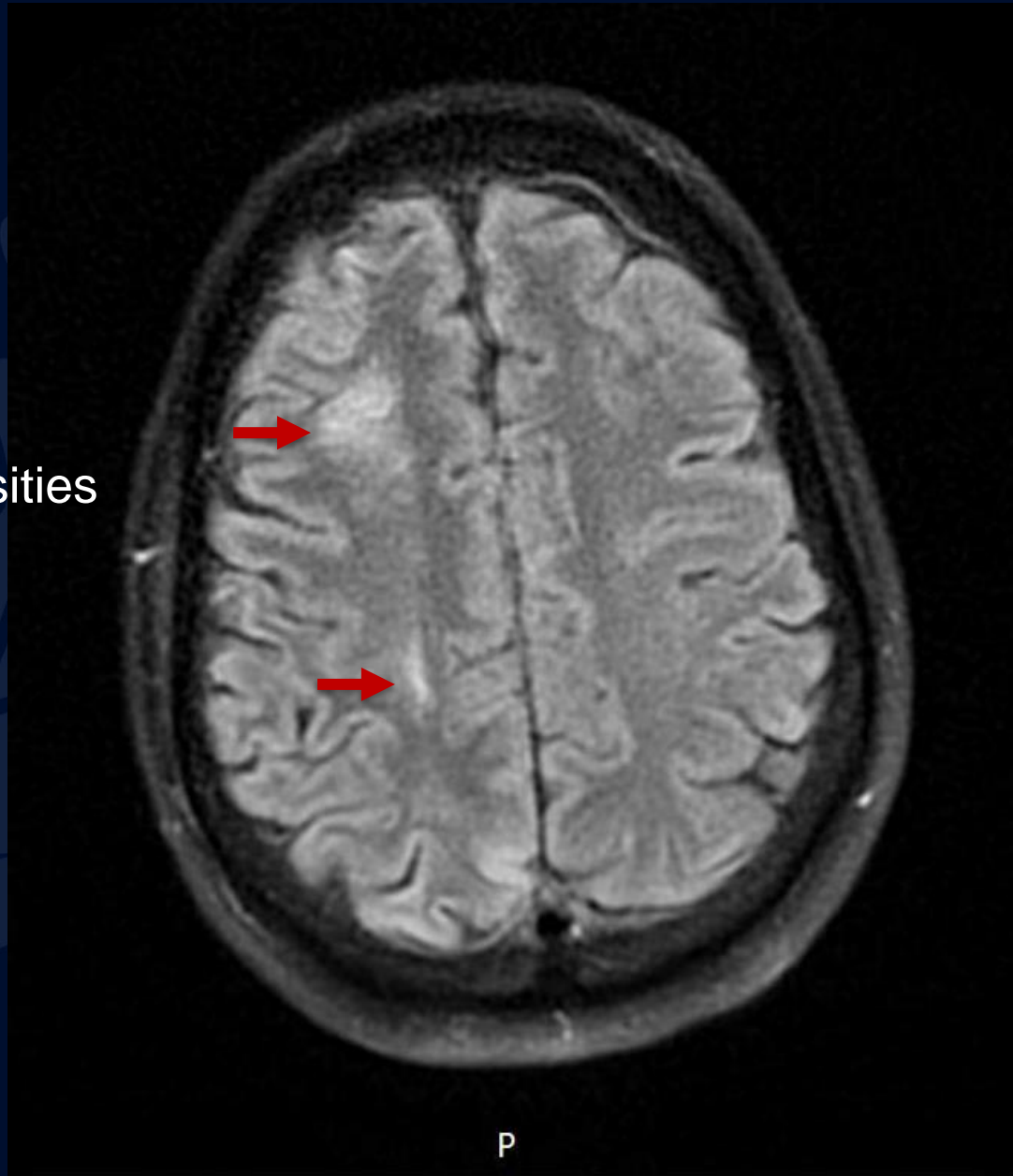
Day 1: MRI DWI (left) and ADC (right)



Diffusion restriction most prominent in the
right fronto-parietal region

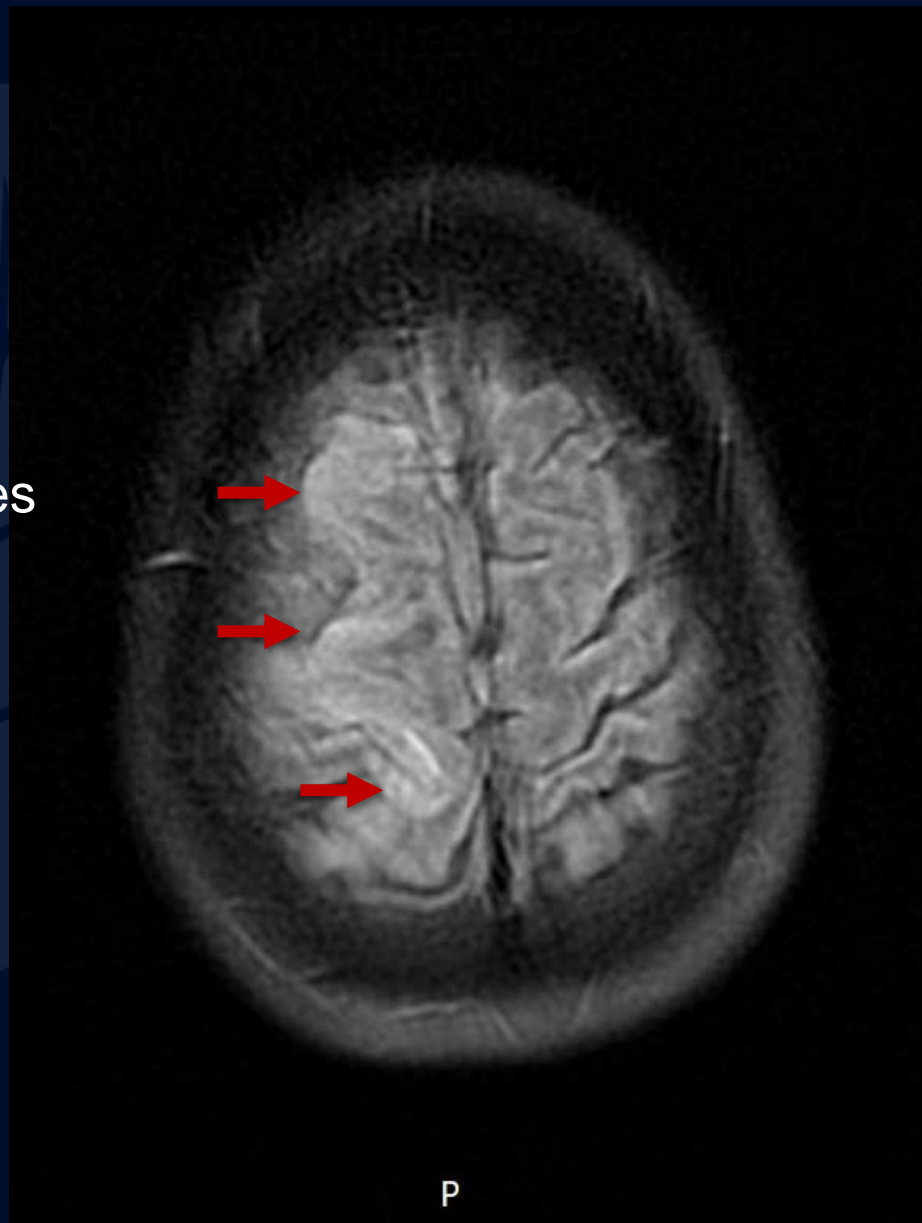
Day 1: MRI T2 FLAIR

Hyperintensities

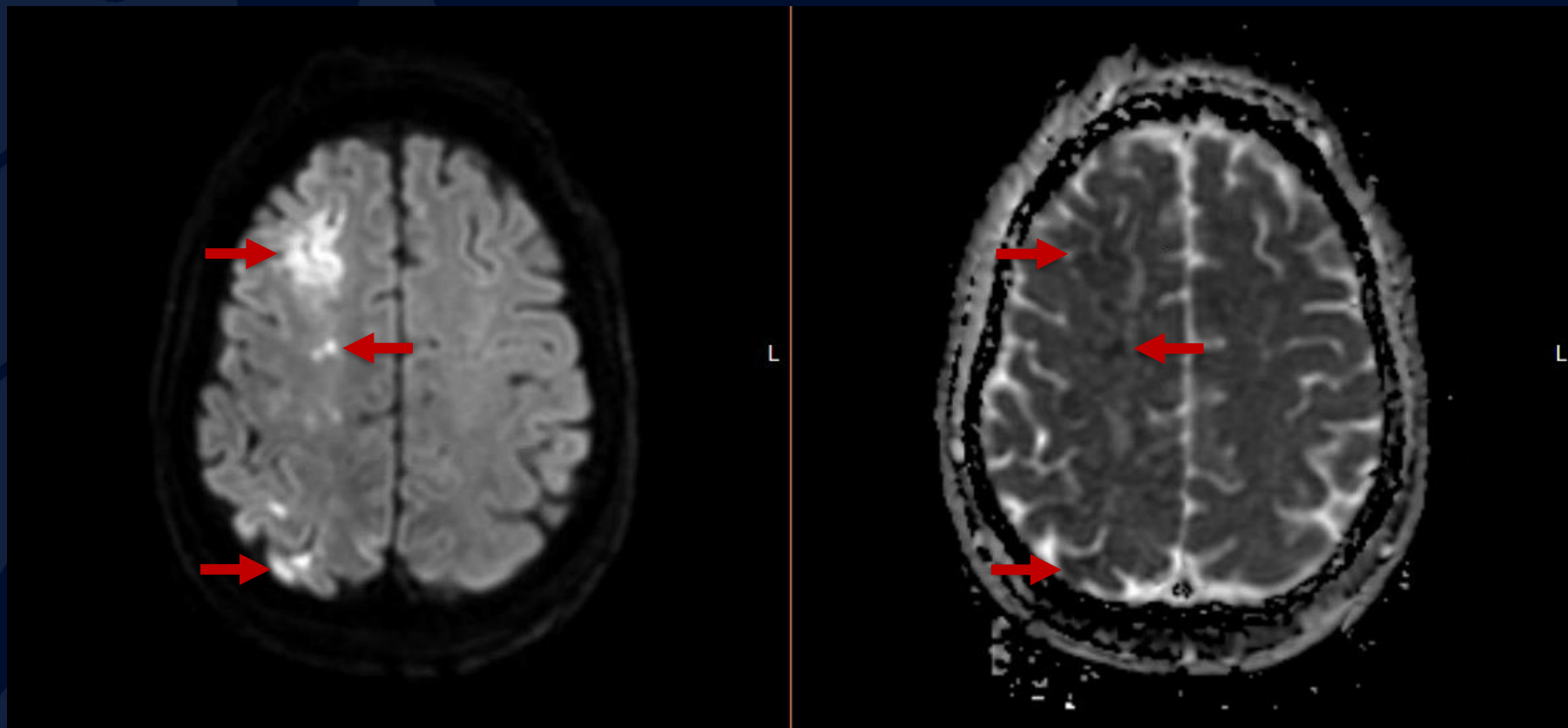


Day 1: T2 FLAIR

Hyperintensities

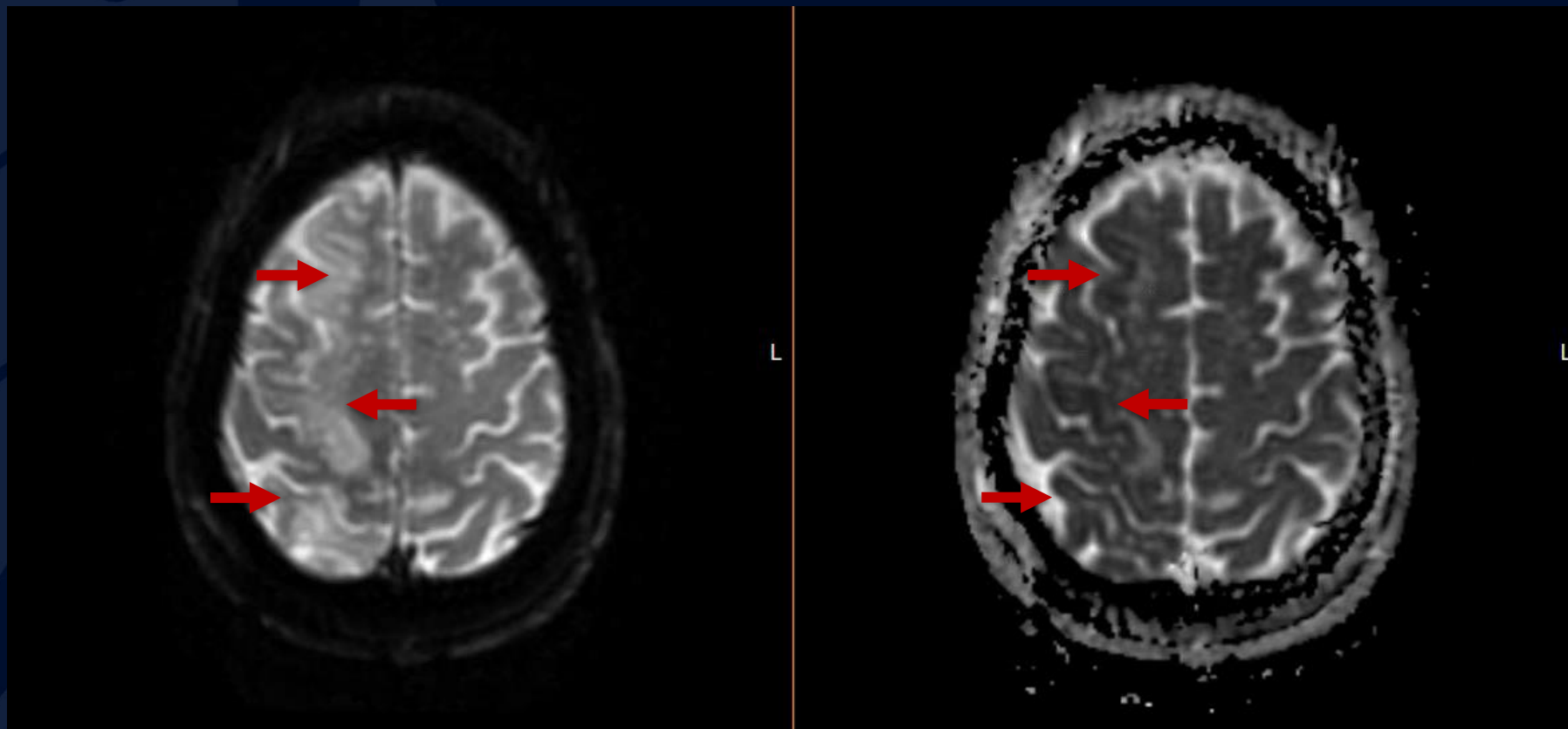


Day 2: MRI DWI (left) and ADC (right)



Diffusion restriction

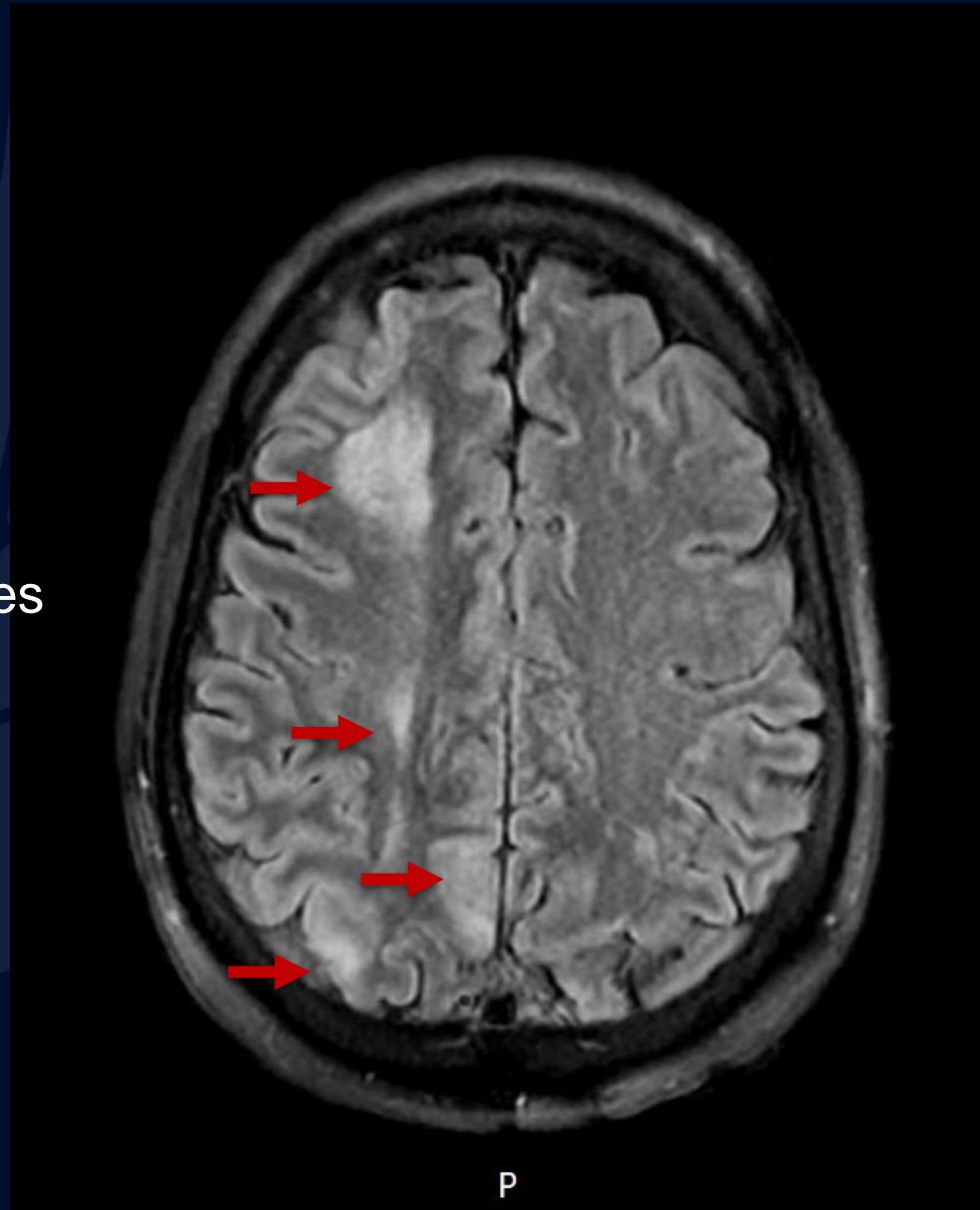
Day 2: MRI DWI (left) and ADC (right)



Diffusion restriction

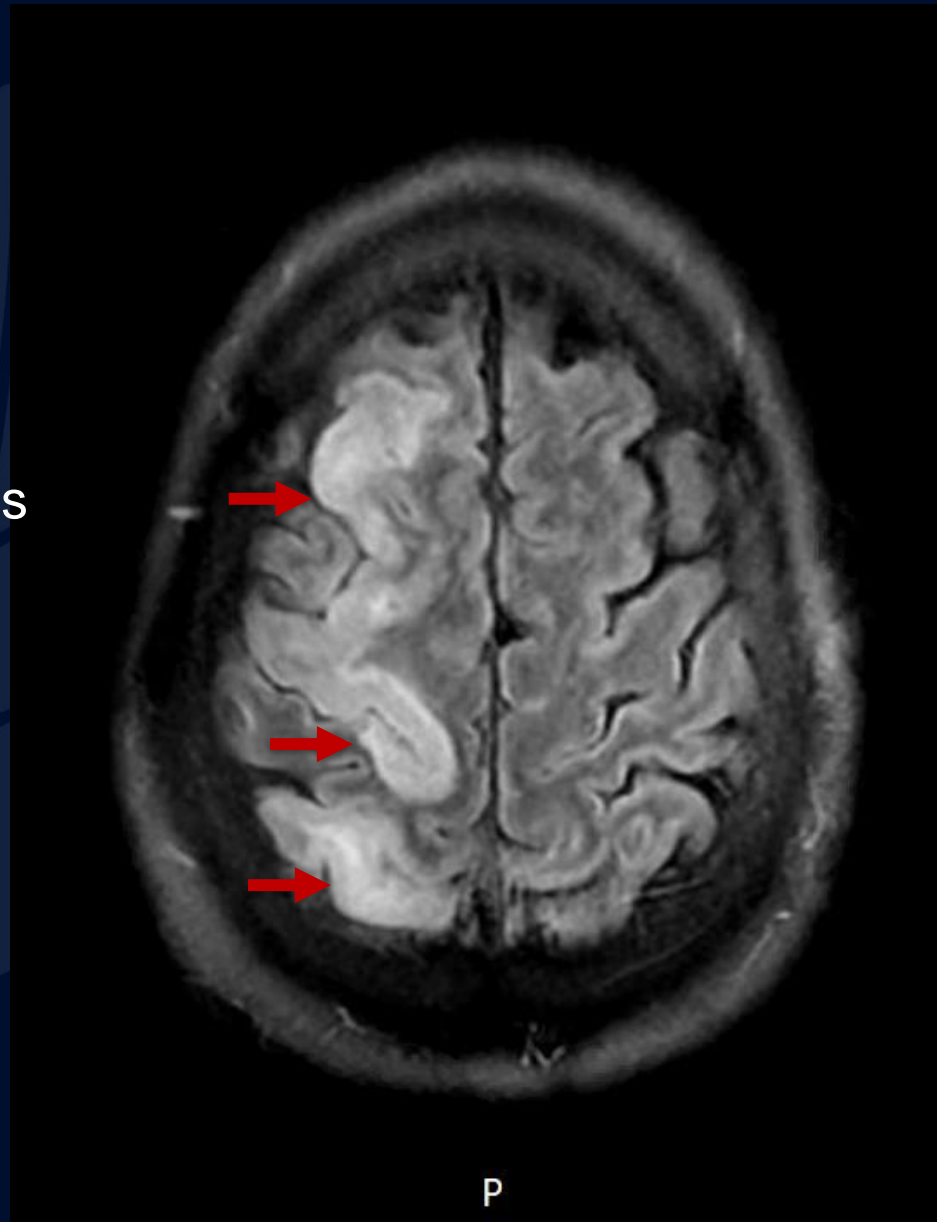
Day 2: MRI T2 FLAIR

Hyperintensities



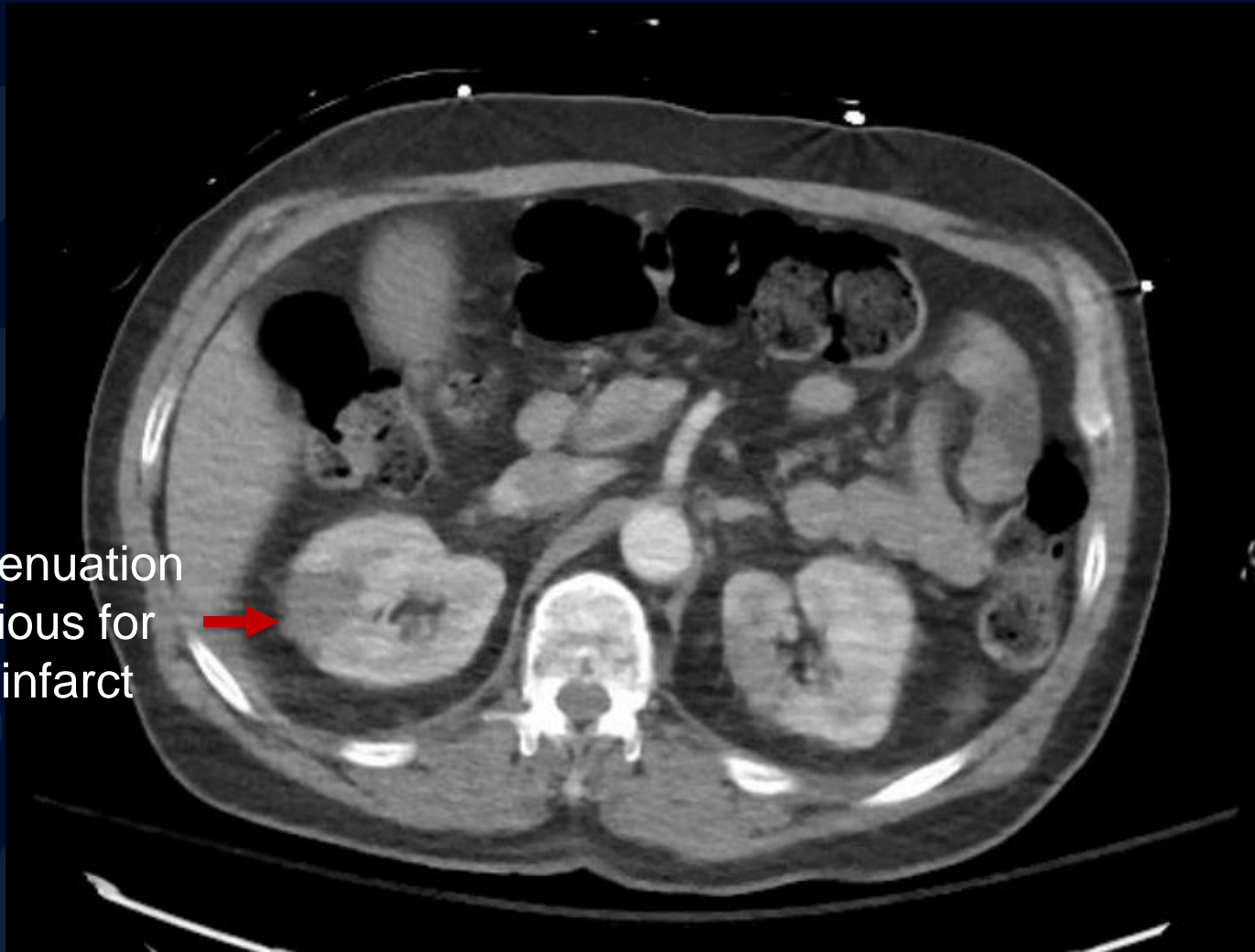
Day 2: MRI T2 FLAIR

Hyperintensities

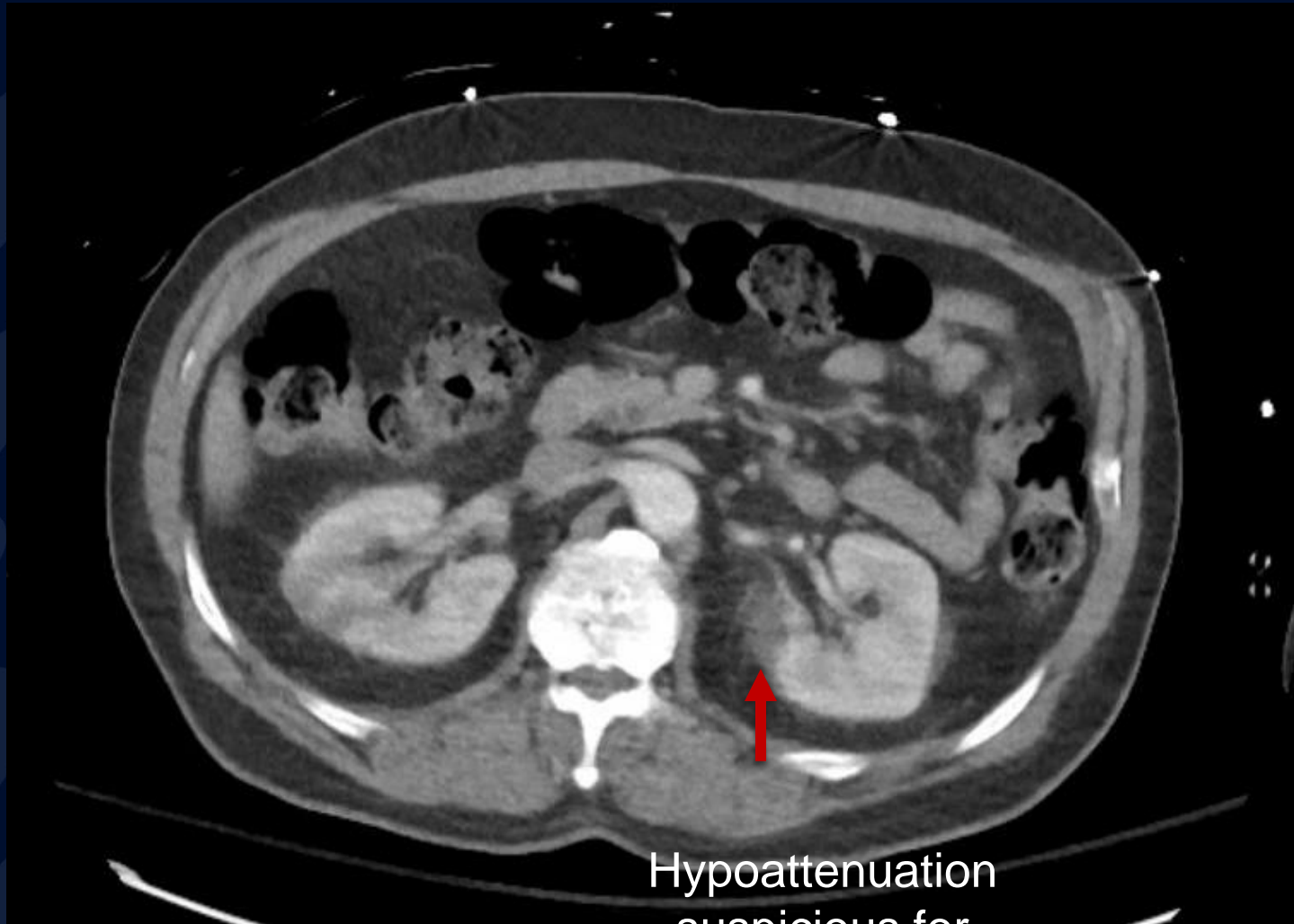


Day 2: CT abdomen and pelvis with contrast

Hypoattenuation
suspicious for
renal infarct



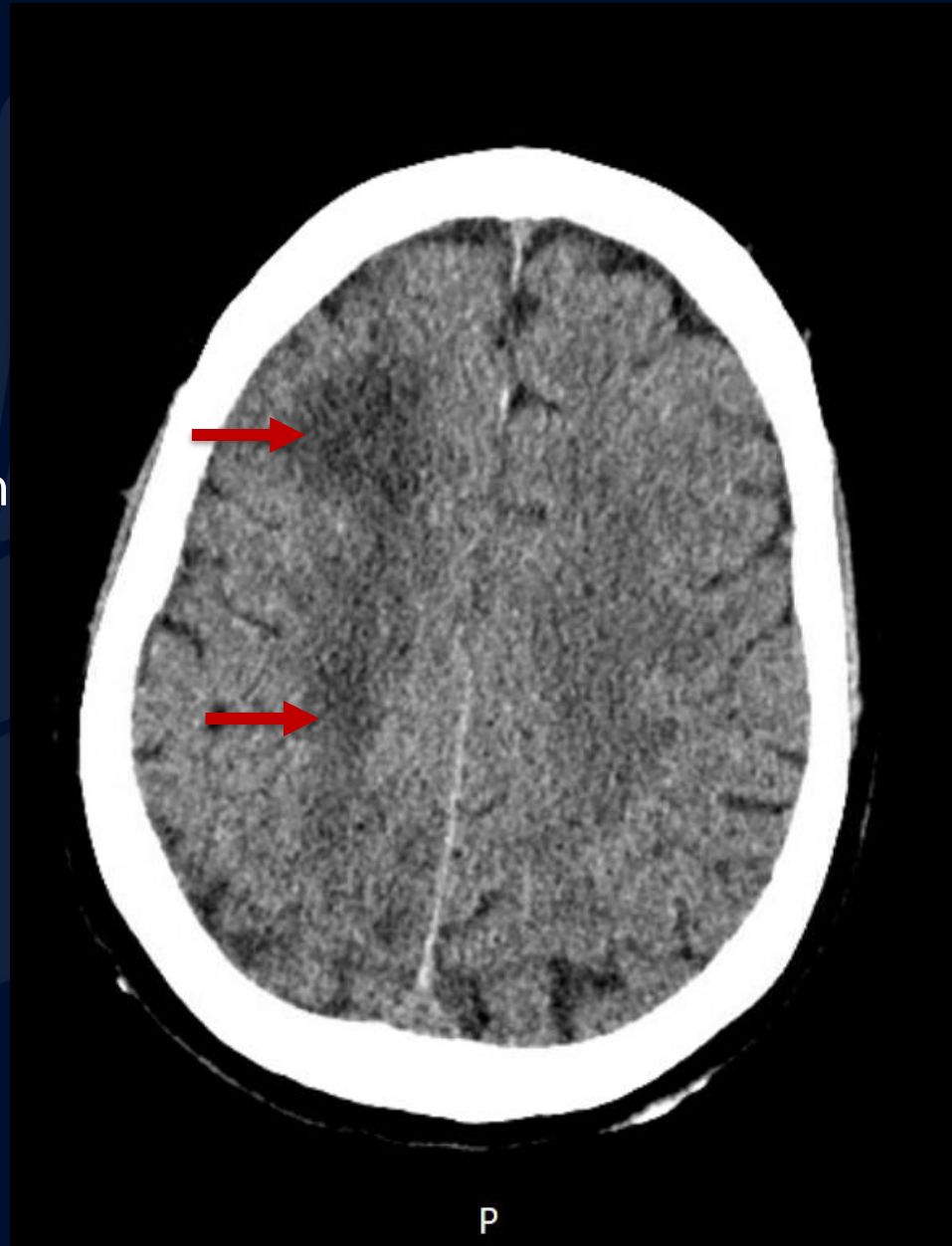
Day 2: CT abdomen and pelvis with contrast



Hypoattenuation
suspicious for
renal infarct

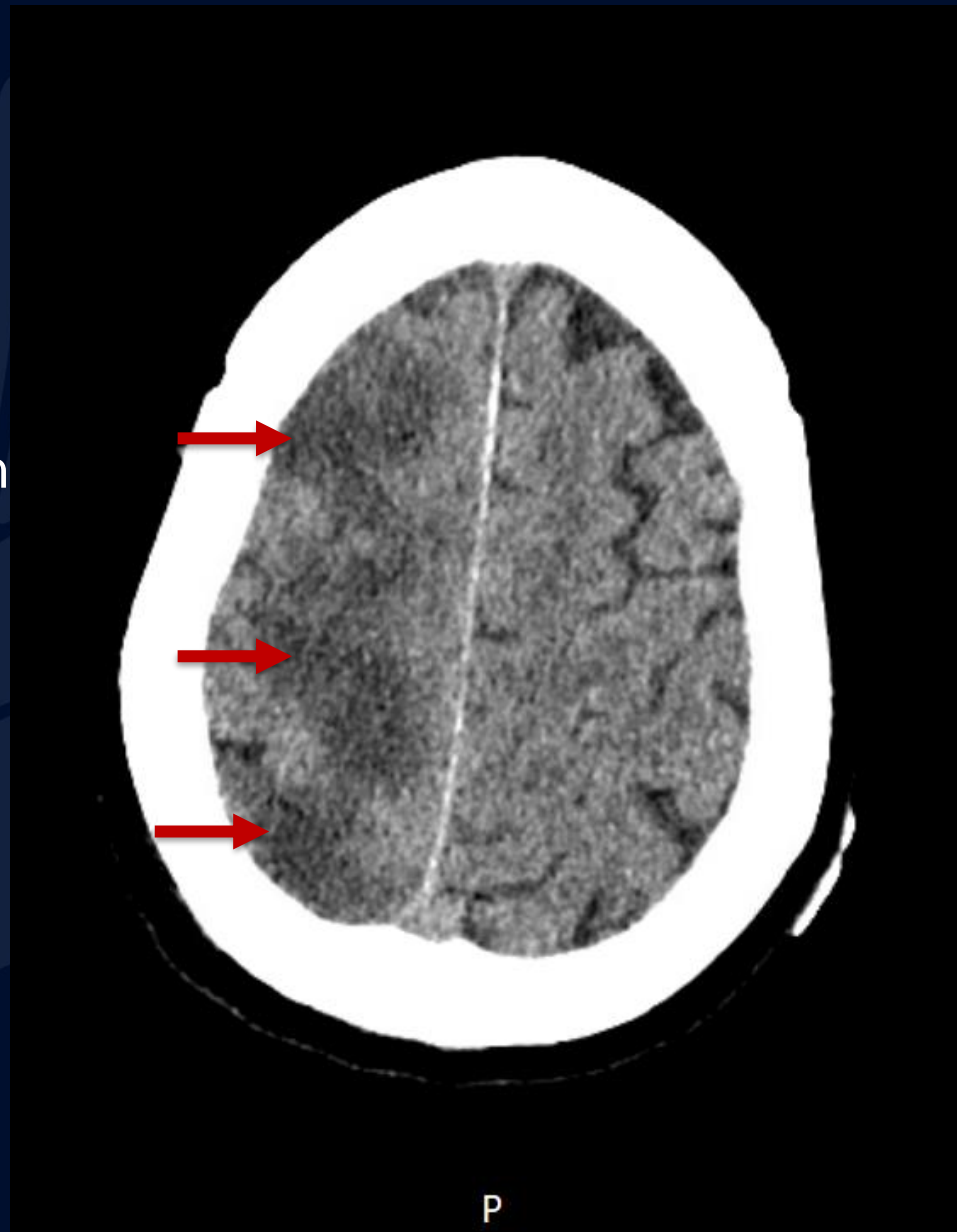
Day 3: CT head without contrast

Hypoattenuating areas of infarction

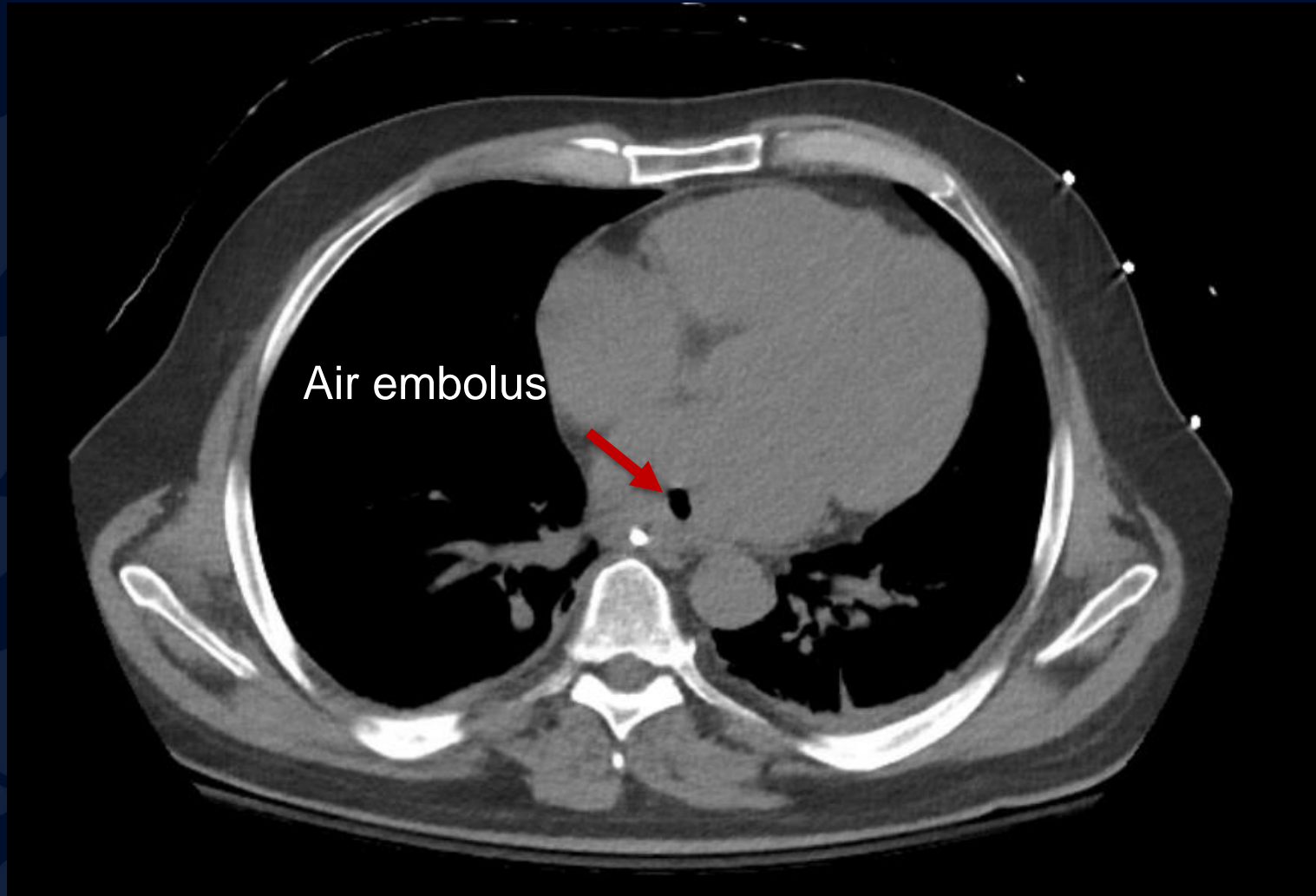


Day 3: CT head without contrast

Hypoattenuating areas of infarction



Day 4: CT chest without contrast



Day 4: CTA chest without contrast



Atrial Esophageal Fistula

Etiology: Rare but fatal complication of a-fib ablation procedures resulting from thermal injury to the esophagus and surrounding structures. This occurs in 0.1-0.25% of ablation procedures.

Epidemiology: Mortality rate of 100% without treatment.

Differential: Air emboli can be caused by anything that introduces air from the outside world to the vascular system such as fistulas, trauma, surgery, procedures involving needles or catheters, childbirth, paradoxical air embolism through PFO

Treatment: Surgical intervention to close the fistula. There are poor outcomes for patients who do not undergo surgery and are rather stented.

Imaging Findings

CT

- Most sensitive modality for detecting atrial-esophageal fistula
- Angiography can show connection between esophagus and LA with extravasation of contrast from LA into the esophagus via a fistulous tract
- More often, evidence of contrast or air extravasation from the esophagus is found, as in this case
- If air has embolized, CT will reveal air identified by areas of hypoattenuation

MR

- Imaging of the brain will reveal findings characteristic of stroke if air has embolized
- MRA/MRV may show poor blood flow through affected vasculature
- T2 FLAIR hyperintense
- Restricted diffusion on DWI and ADC

References

1. Khan M, Rashid MU, Zafar H, Ullah W, Khan AH. A Rare Complication of Cardiac Ablation: Atrial-esophageal Fistula Presenting as Odynophagia. *Cureus*. 2020 Feb 4;12(2):e6871. doi: 10.7759/cureus.6871. PMID: 32181101; PMCID: PMC7053677.
2. Pappone C, Vicedomini G, Santinelli V. Atrio-Esophageal Fistula After AF Ablation: Pathophysiology, Prevention & Treatment. *J Atr Fibrillation*. 2013 Oct 31;6(3):860. doi: 10.4022/jafib.860. PMID: 28496888; PMCID: PMC5153030.
3. Kapur S, Barbhuiya C, Deneke T, Michaud GF. Esophageal Injury and Atrioesophageal Fistula Caused by Ablation for Atrial Fibrillation. *Circulation*. 2017 Sep 26;136(13):1247-1255. doi: 10.1161/CIRCULATIONAHA.117.025827. PMID: 28947480.
4. Gordy S, Rowell S. Vascular air embolism. *Int J Crit Illn Inj Sci*. 2013 Jan;3(1):73-6. doi: 10.4103/2229-5151.109428. PMID: 23724390; PMCID: PMC3665124.
5. Kim YG, Shim J, Lee KN, Lim JY, Chung JH, Jung JS, Choi JI, Lee SH, Son HS, Kim YH. Management of Atrio-esophageal Fistula Induced by Radiofrequency Catheter Ablation in Atrial Fibrillation Patients: a Case Series. *Sci Rep*. 2020 May 18;10(1):8202. doi: 10.1038/s41598-020-65185-9. PMID: 32424298; PMCID: PMC7235255.