56-year-old male presenting with new onset seizures after discontinuing antihypertensive medication

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CT with IV contrast

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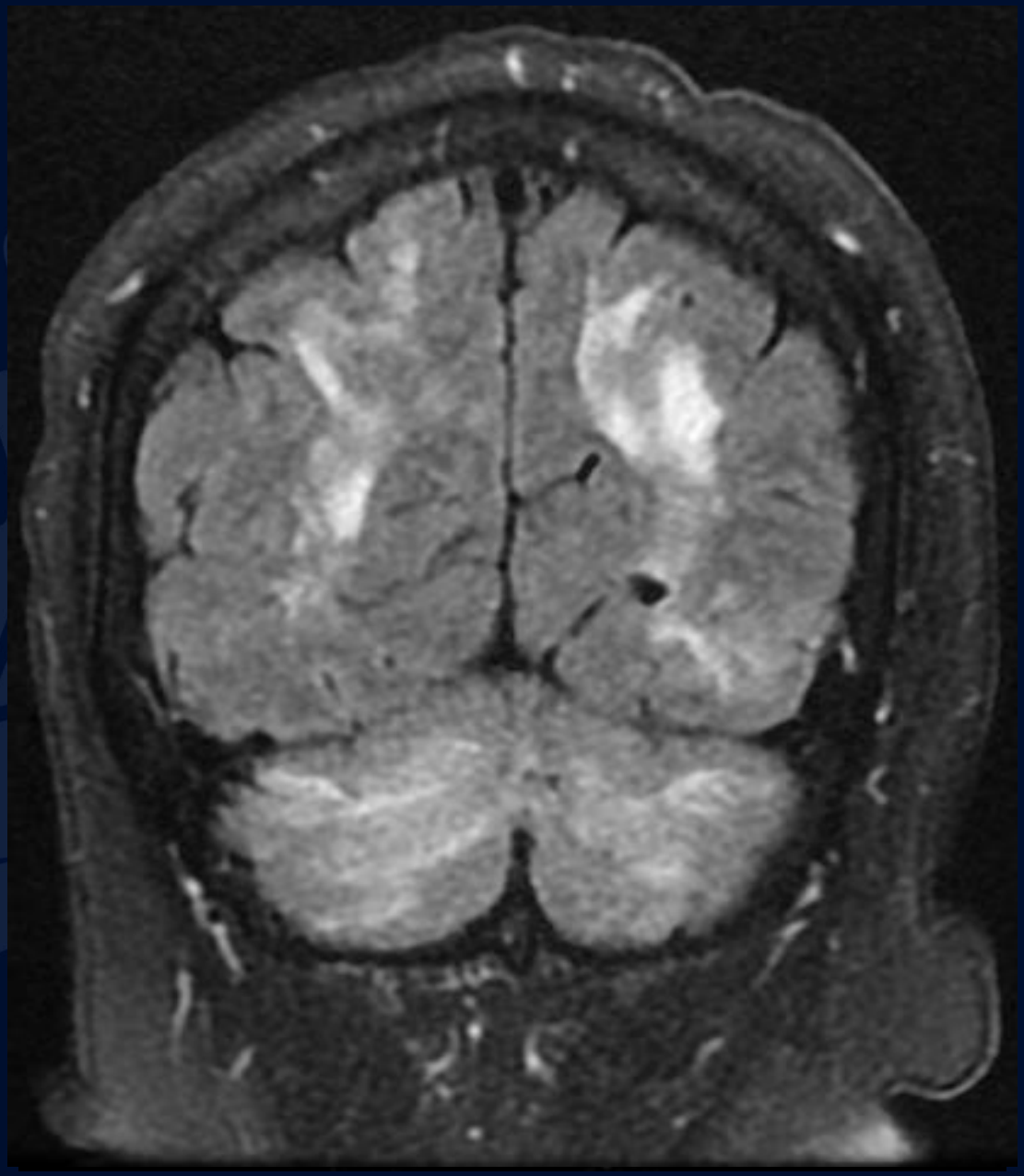
MR T2 FLAIR



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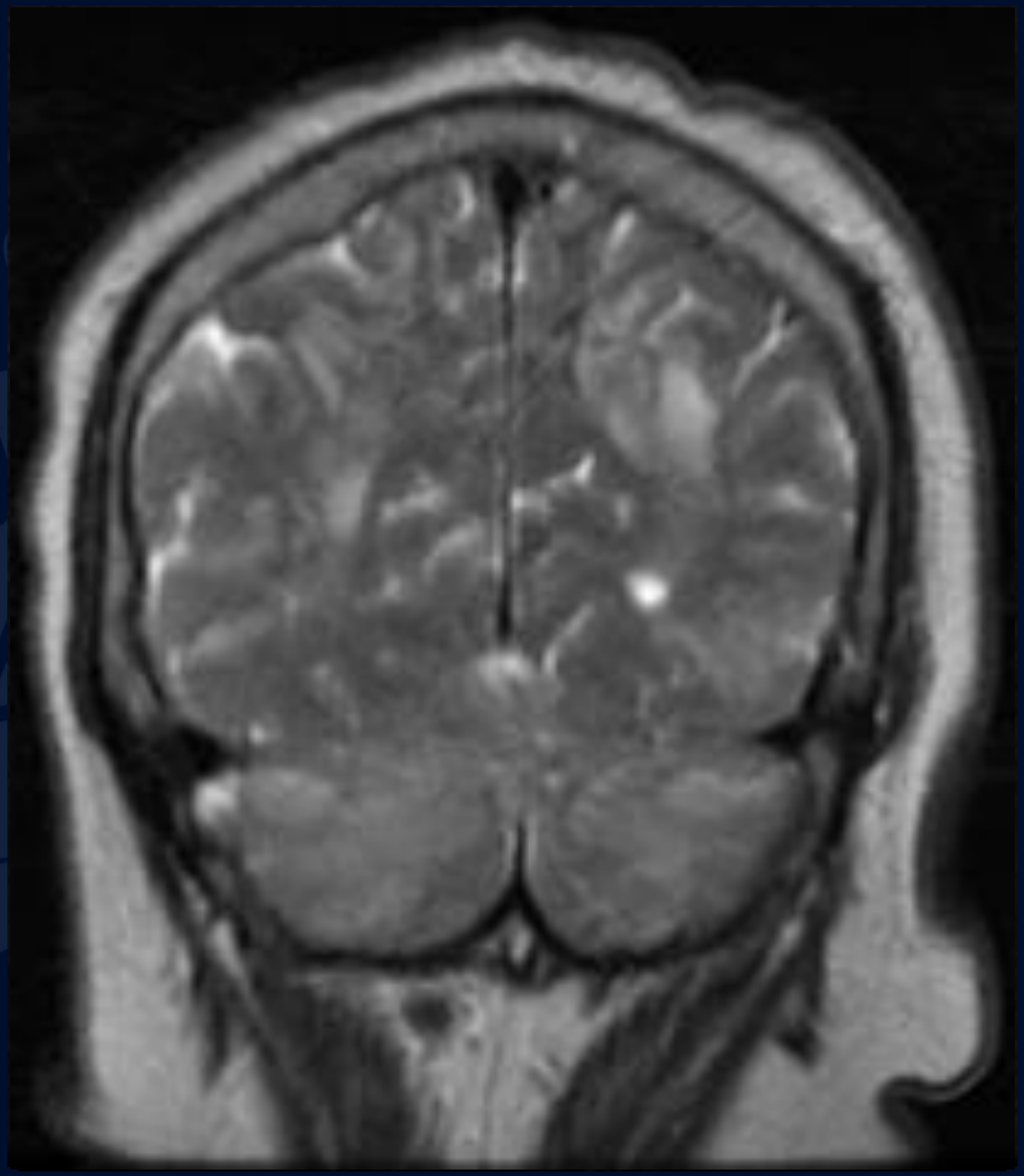
MR T2



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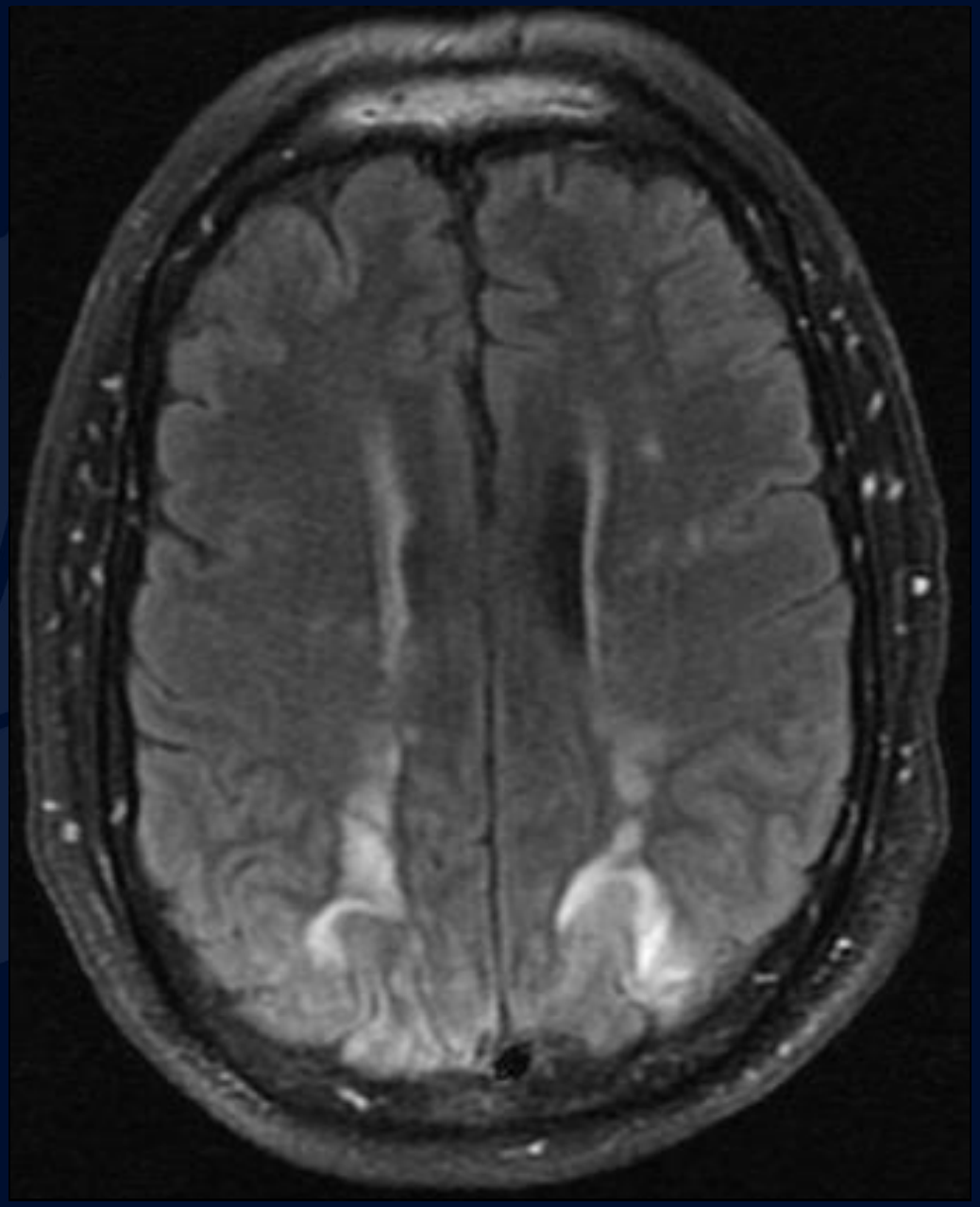
MR T2 FLAIR



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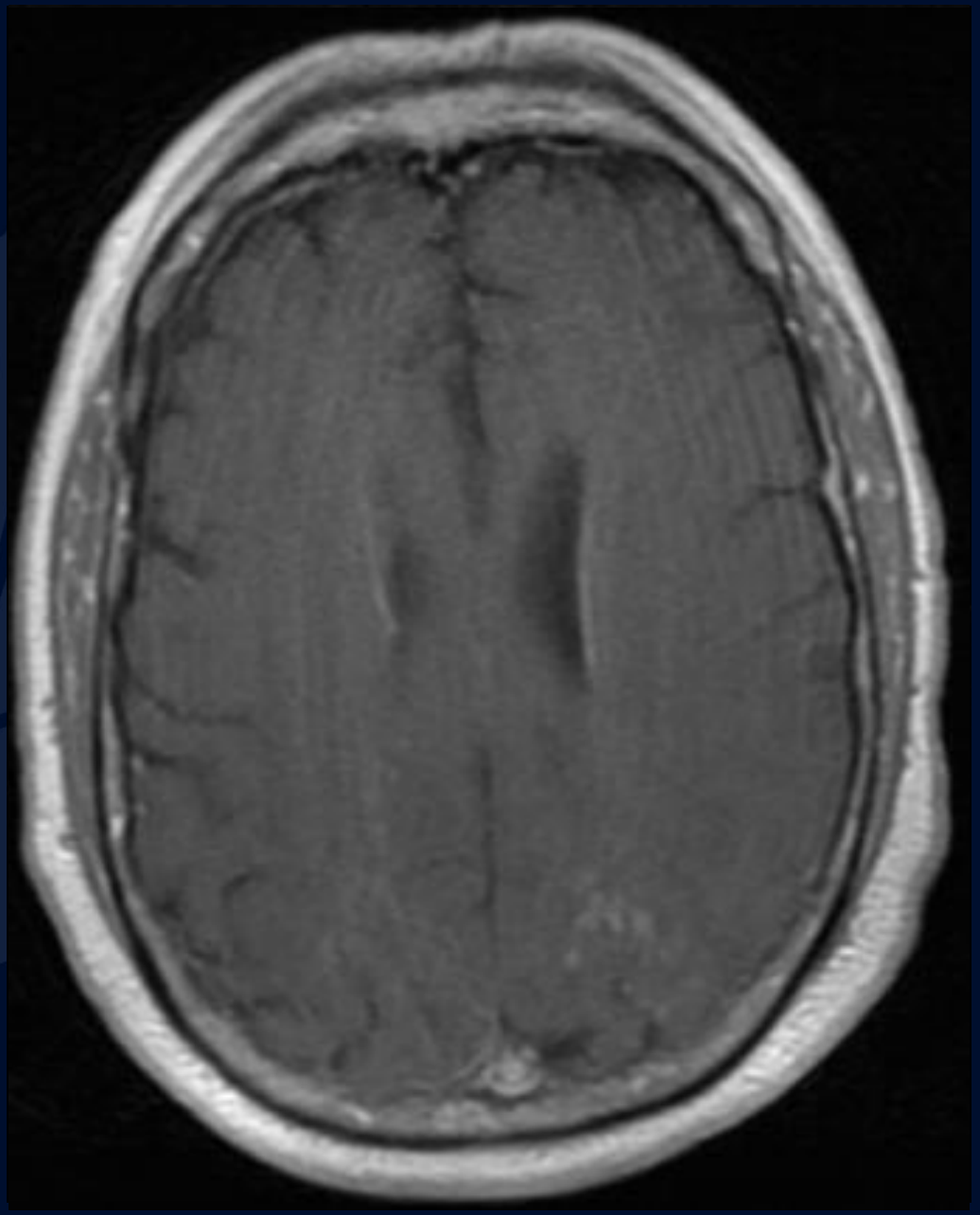
MR T1 + Gad



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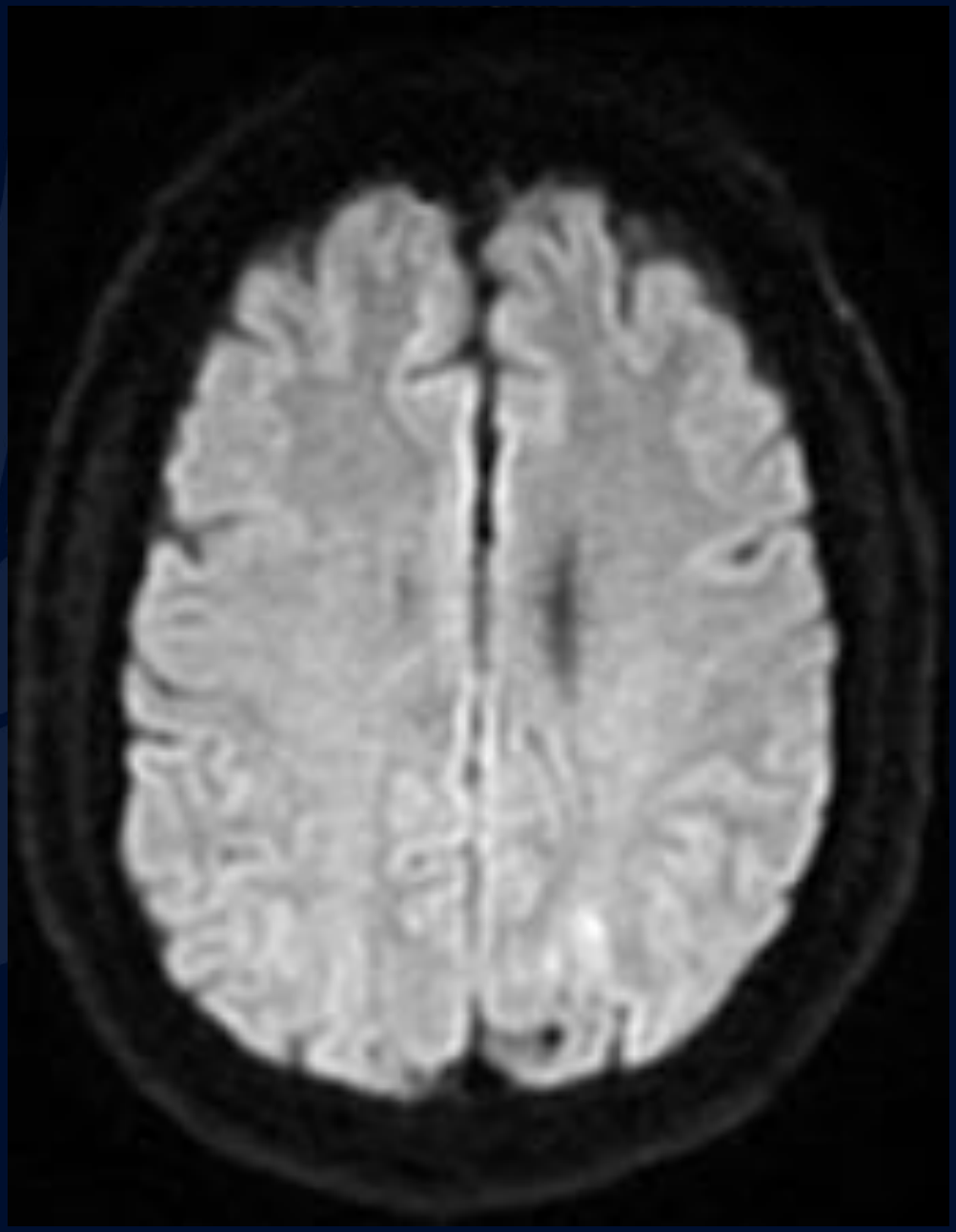
MR T2 DWI



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Posterior Reversible Encephalopathy Syndrome (PRES)

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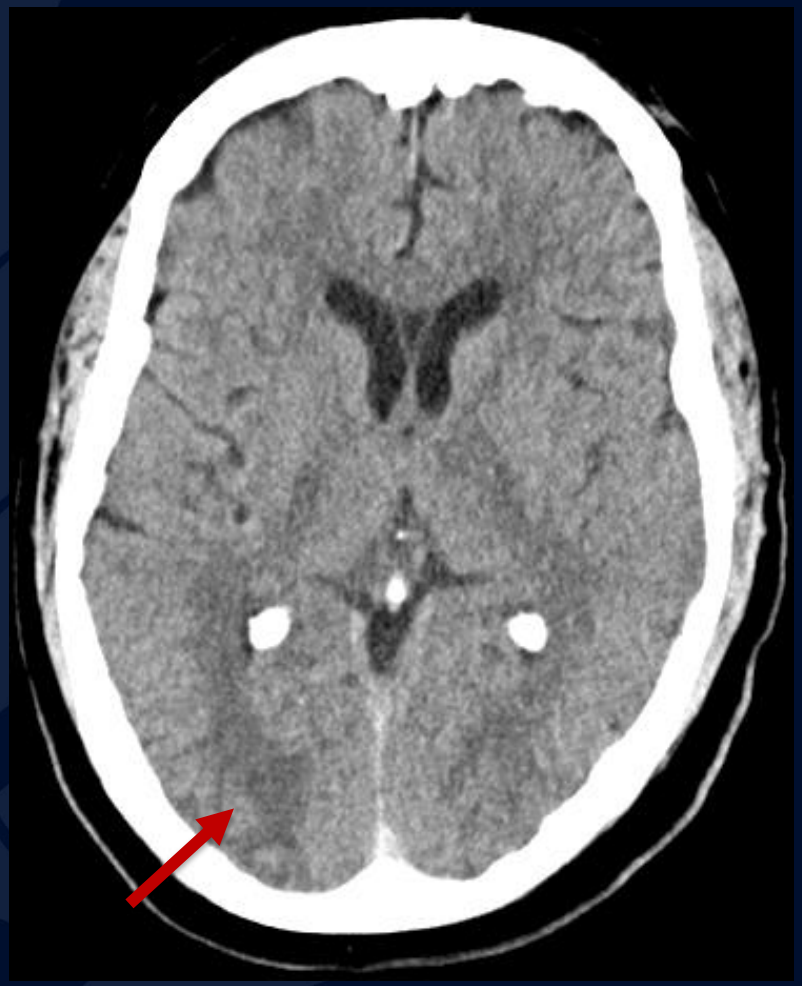
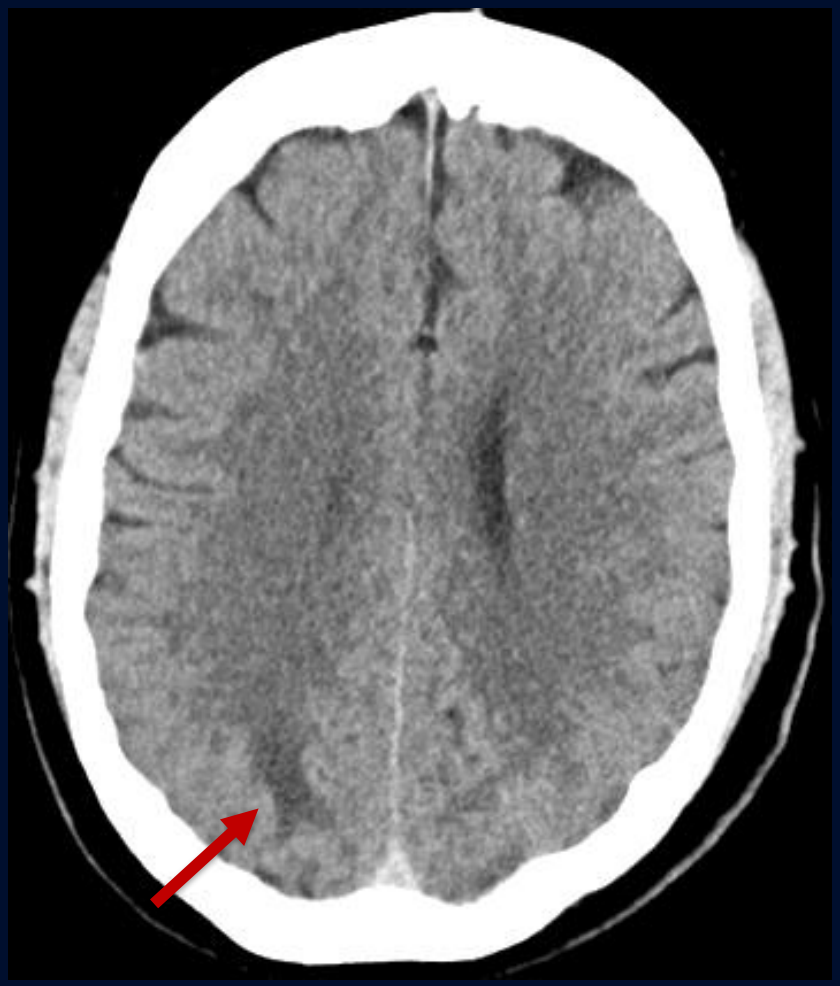
CT with IV contrast





Vasogenic edema

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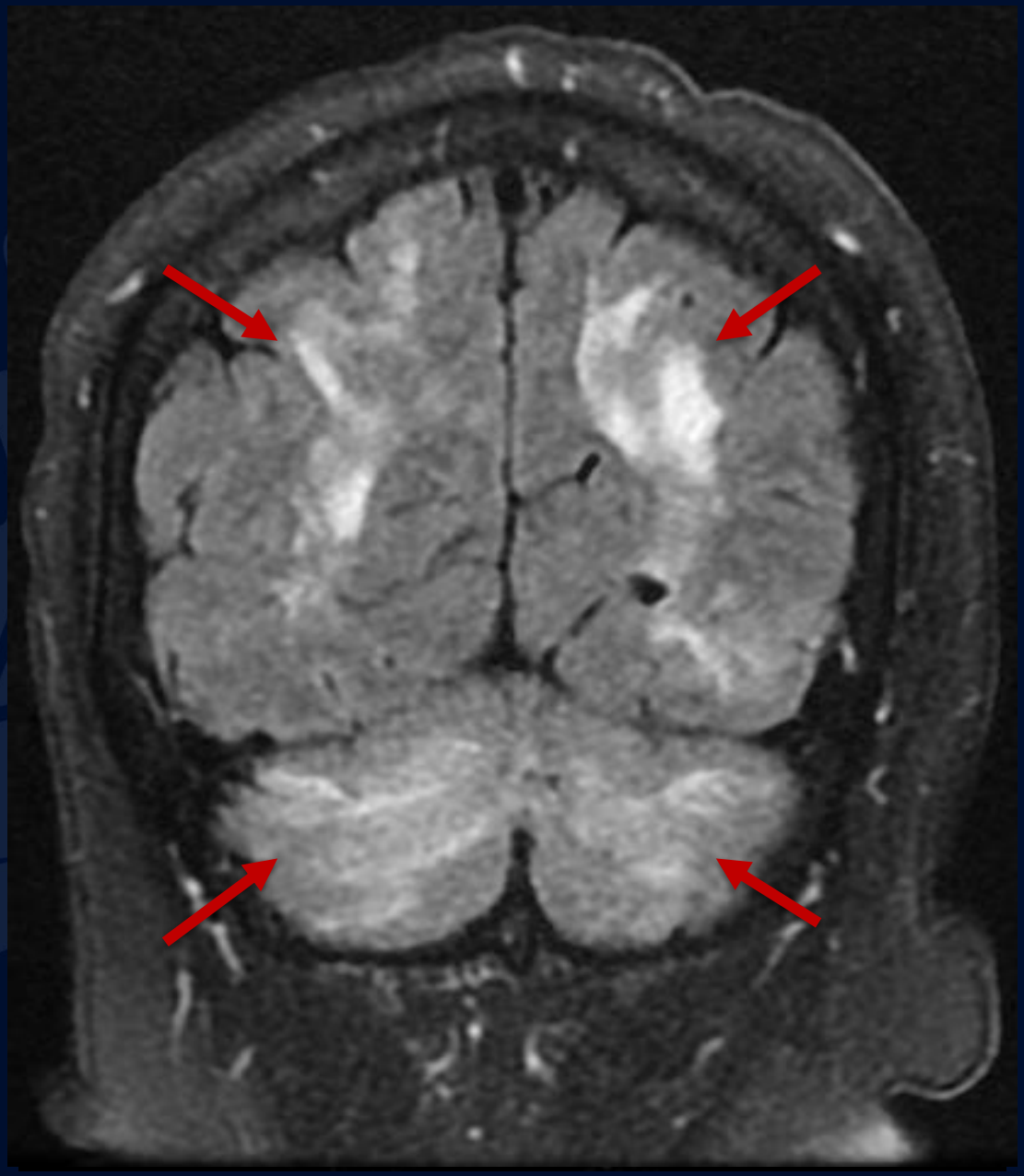
MR T2 FLAIR

Hyperintensities within the subcortical white matter bilaterally

Patchy hyperintensities within the cerebellum bilaterally



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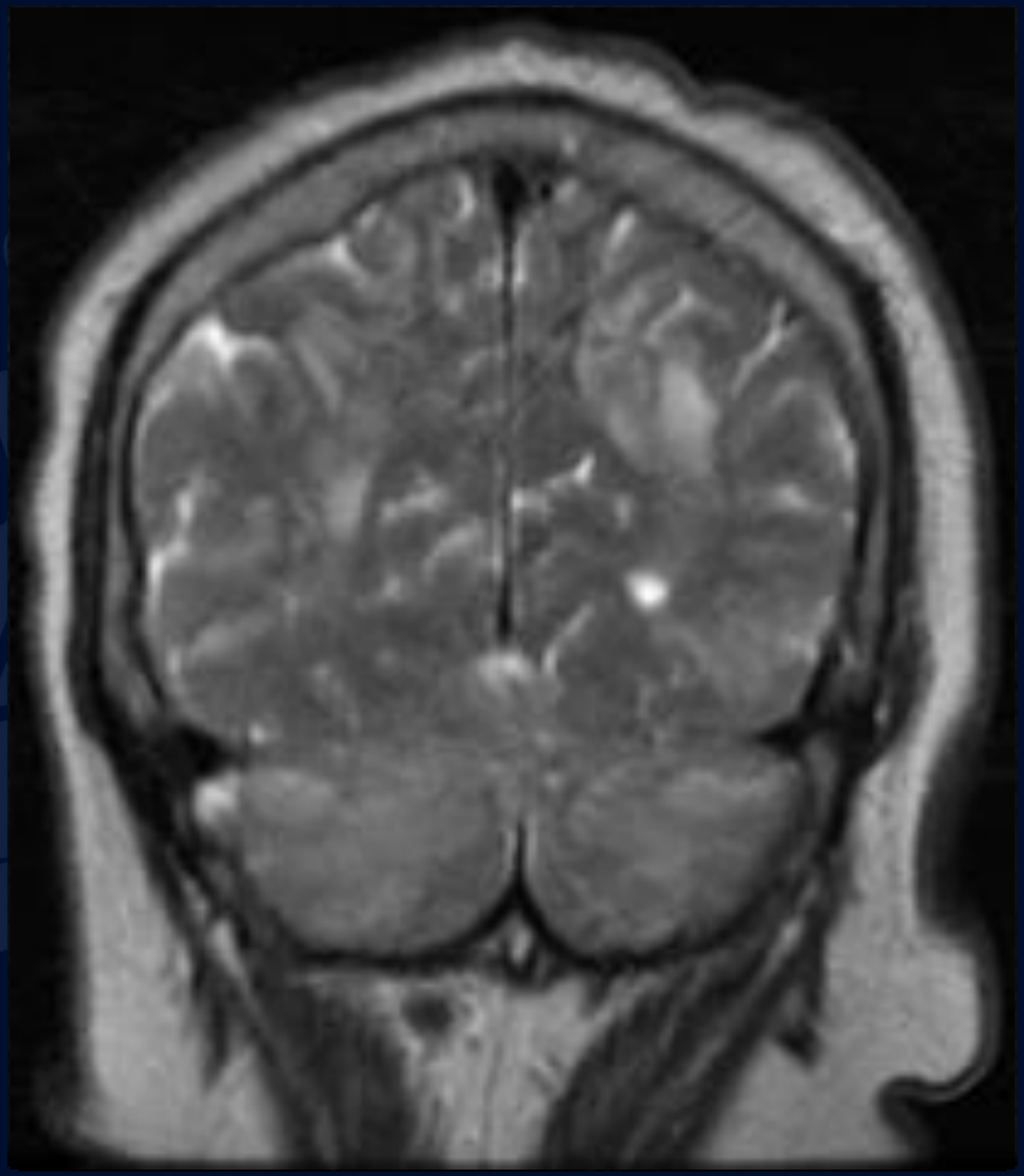
MR T2

Hyperintensities within the subcortical white matter bilaterally

Patchy hyperintensities within the cerebellum bilaterally



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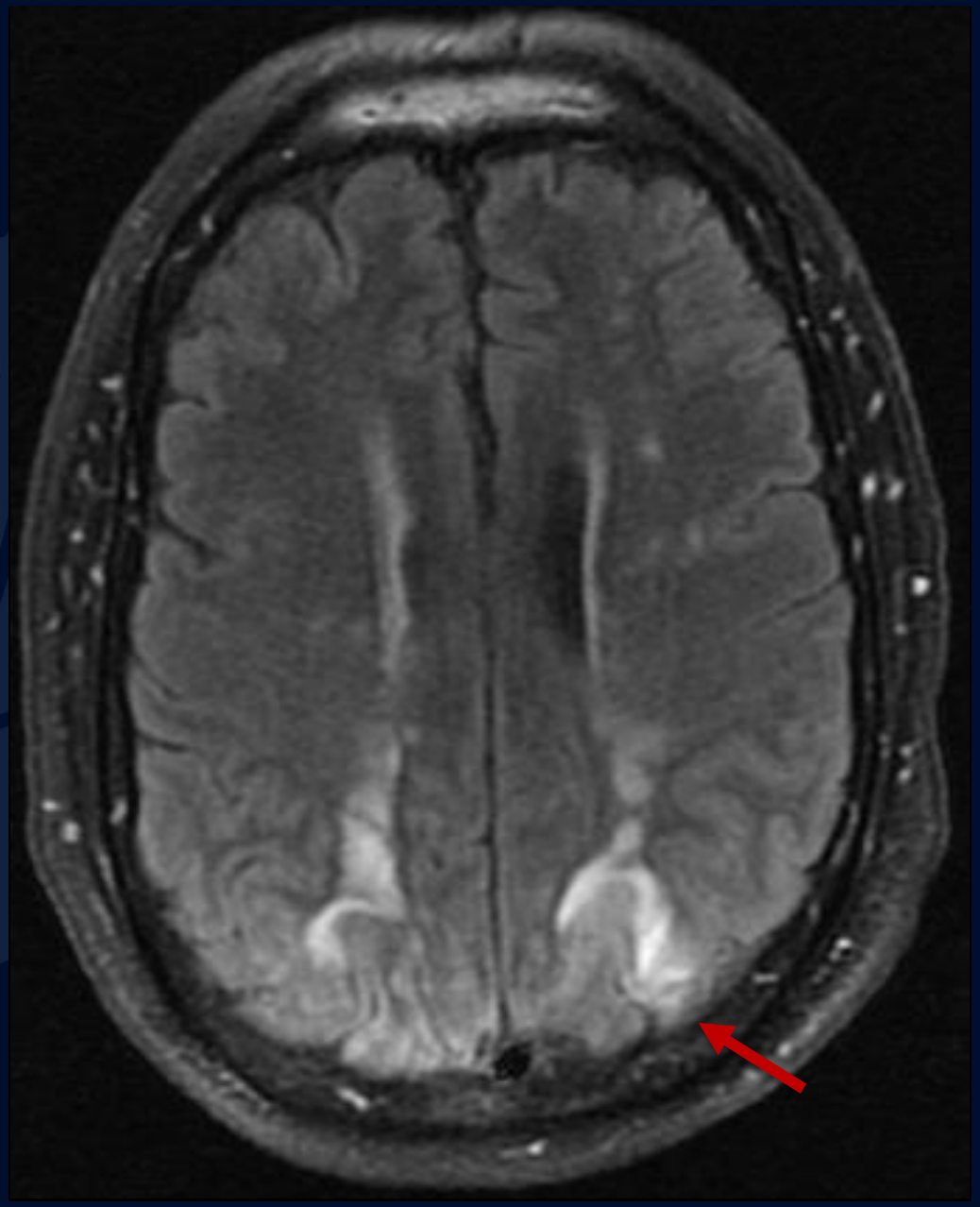
MR T2 FLAIR



Hyperintensities within the occipital subcortical white matter

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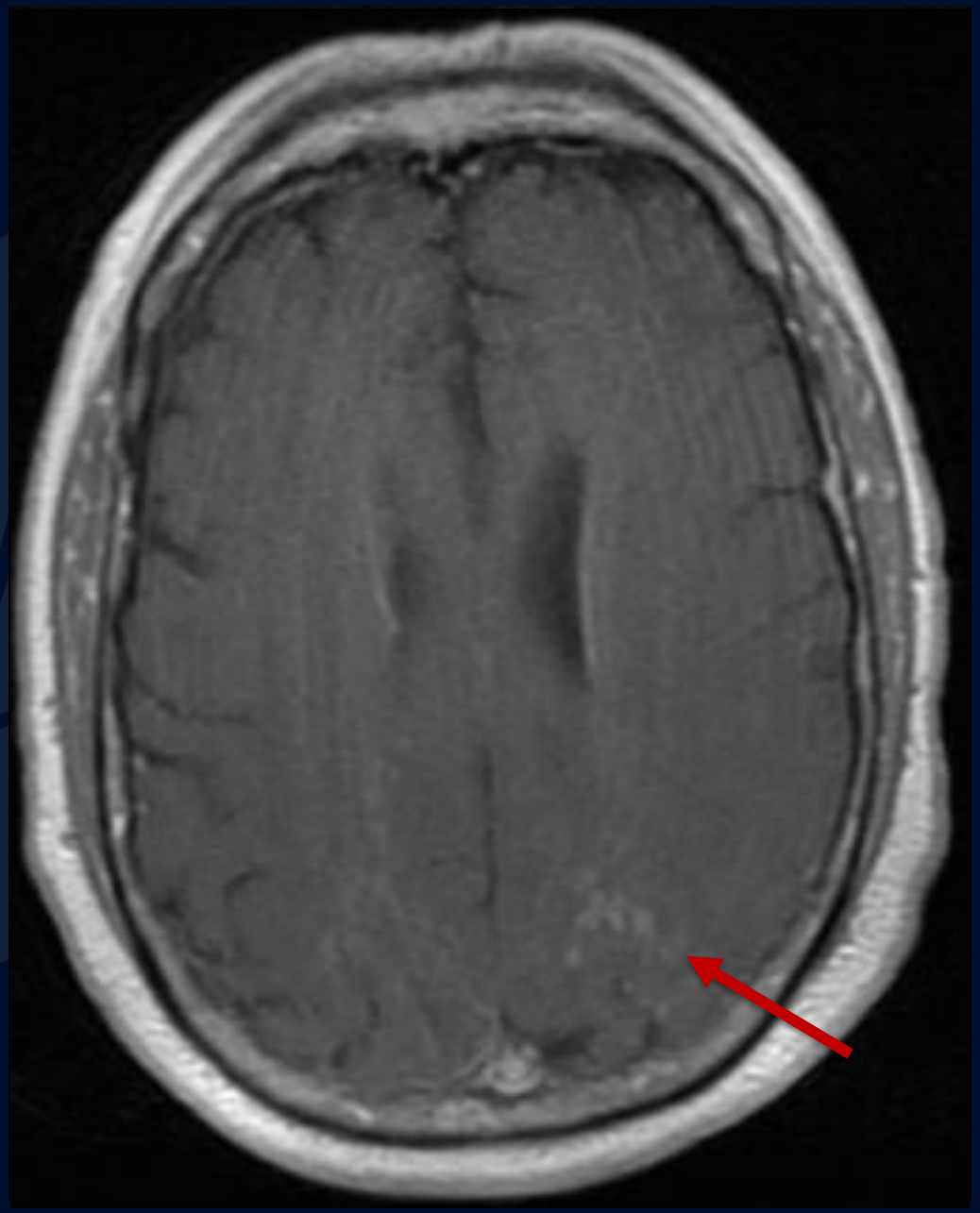

Minimal patchy enhancement

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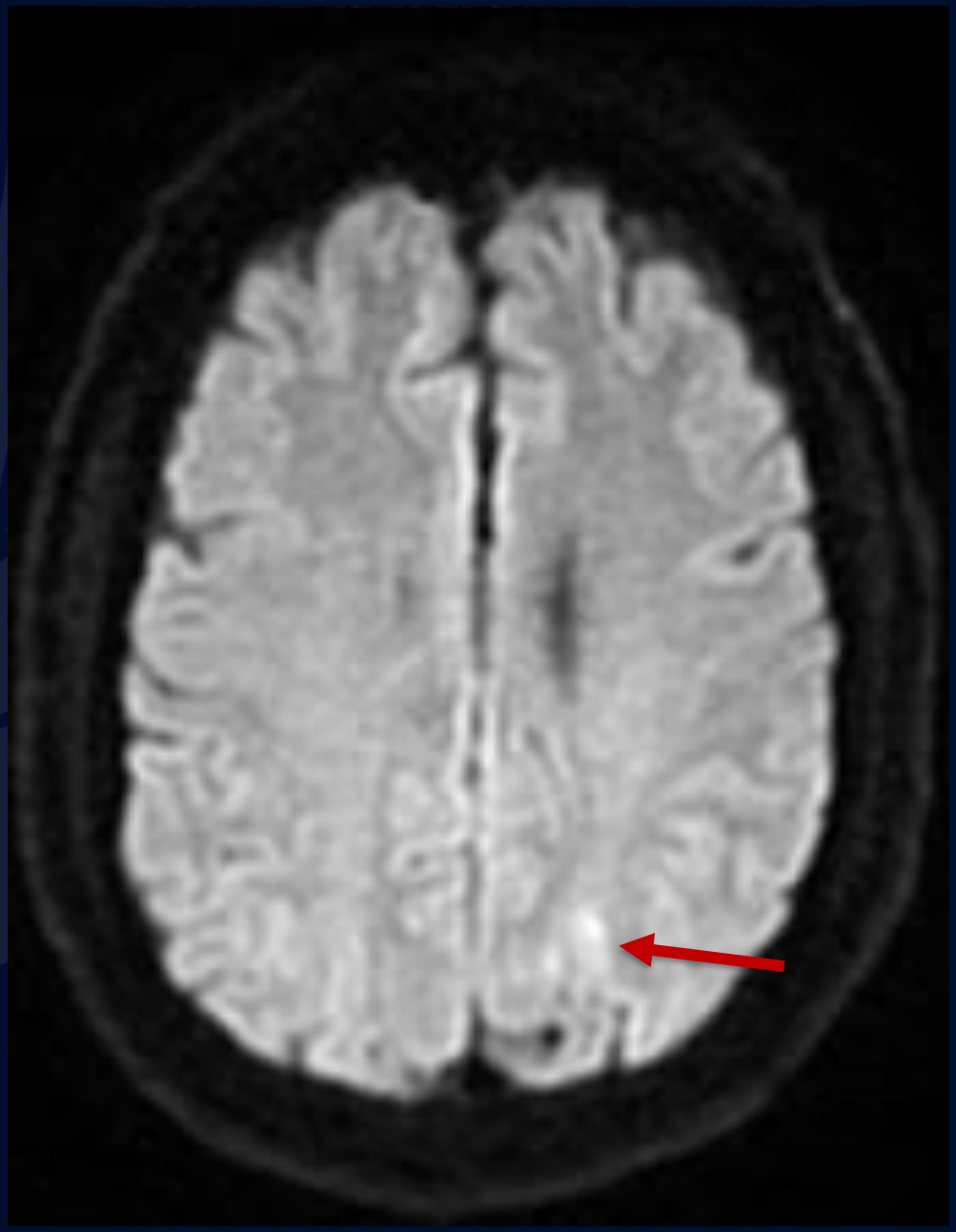

Minimal focal diffusion restriction, the remaining affected area does not demonstrate diffusion restriction

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PRES

PRES is a neurotoxic state that occurs secondary to the inability of the posterior circulation to autoregulate in response to acute changes in blood pressure. Hyperperfusion with resultant disruption of the blood-brain barrier results in vasogenic edema, usually without infarction, most commonly in the parieto-occipital regions.

Differential Diagnosis

- Inflammatory cerebral amyloid angiopathy
  - Microhemorrhages with surrounding edema
- Progressive multifocal leukoencephalopathy
  - Spares the cortex, affected areas showing little to no enhancement
- Posterior circulation infarct
  - Cerebellar and occipital involvement
  - Demonstrated restricted diffusion (vs PRES which usually does not)
- Gliomatosis cerebri
  - Asymmetric involvement

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PRES Imaging Findings

Imaging findings are reflective of vasogenic edema

CT

- Bilateral nonconfluent hypodense foci
- +/- symmetric lesions in the basal ganglia

MRI

- Parietooccipital T2/FLAIR hyperintensities in 95%
- T1 hypointense
- +/- basal ganglia, pontine, cerebellar involvement
- 3 patterns of hemorrhage
  - Focal parenchymal hemorrhage, microhemorrhages, convexity SAH
- Variable patchy enhancement
- Most often, no diffusion restriction though is possible

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References

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Bartynski WS, Boardman JF. Distinct imaging patterns and lesion distribution in posterior reversible encephalopathy syndrome. AJNR Am J Neuroradiol. 2007 Aug;28(7):1320-7. doi: 10.3174/ajnr.A0549. PMID: 17698535; PMCID: PMC7977645.

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