

E Farnan¹, S Geoghegan¹, F Gormley¹, A Fe Talento², A Smyth³, N Lagan⁴, J McBrien⁴,
C Ó Maoldomhnaigh¹

1. Department of Paediatric Infectious Diseases, Children's Health Ireland (CHI) at Temple Street
2. Department of Microbiology, CHI at Temple Street
3. Department of Radiology, CHI at Temple Street
4. Department of General Paediatrics, CHI at Temple Street

Background

- We present a case of ventriculitis following infection with *Neisseria meningitidis* Serogroup B.

Case

- A previously-well, fully-vaccinated 15-year old boy presented to his local hospital with a 1-day history of myalgia, pyrexia, photophobia and worsening headache. On arrival, he had a diffuse non-blanching maculopapular rash, severe headache, GCS 14, and unequal pupils. He was treated with cefotaxime and dexamethasone. CT Brain demonstrated hydrocephalus. His pupils equalised after receiving 3ml/kg 3% NaCl and he was transferred to a tertiary paediatric intensive care unit self-ventilating on a propofol infusion.
- Initial CRP and white cells were elevated (CRP 284mg/L, WCC $23 \times 10^9/L$, Neutrophils $20.9 \times 10^9/L$). He was coagulopathic (PT 23.1) with a high Lactate (5.4). The remainder of his bloods were grossly normal. Meningococcal B DNA was detected on In Genius PCR screen at presentation, and 3 days later. No CSF was obtained due to the concerns regarding hydrocephalus.
- Clinically he improved, his headache resolved, and he had no neurologic deficit. His antibiotics were switched to Ceftriaxone.
- He became febrile on day 6 of a planned 7 days of treatment and thus antibiotics were continued past seven days while a cause for fever was investigated.
- An MRI Brain with contrast performed on day 6 of antibiotics demonstrated improvement of the degree of dilatation of lateral ventricles; however, showed fluid levels within the occipital horns of the lateral ventricles bilaterally that was mildly T2 hypointense compared to CSF that demonstrated diffusion restriction (Figure 1). There was associated thin FLAIR hyperintensity in the ependymal lining without any abnormal enhancement of the ventricular walls (Figure 2). There was no focal parenchymal abnormality or intracranial collection.
- Following the diagnosis of ventriculitis, a 4 week course of antibiotics was recommended following Infectious Disease and Microbiology guidance after which he had made a full clinical recovery and had a normal MRI brain.

Discussion

- In Europe, *N Meningitidis* has been shown to cause approximately 30% of paediatric meningitis cases¹. Ventriculitis is a known complication of central nervous system infections²; however, ventriculitis following invasive meningococcal disease is rare (0.6%)³. Our case highlights ventriculitis as a possible complication of *N meningitidis* serogroup B infection.

References

1. Martín-Torres F, Salas A, Rivero-Calle I, et al. Life-threatening infections in children in Europe (the EUCLIDS Project): A prospective cohort study. *Lancet Child Adolesc Health*. 2018;2:404-14. DOI: 10.1016/S2352-4642(18)30113-5

2. Luque-Paz D, Revest M, Eugène F, Boukthir S, Dejoies L, Tattevin P, Le Reste PJ. Ventriculitis: A Severe Complication of Central Nervous System Infections. *Open Forum Infect Dis*. 2021 Apr 29;8(6):ofab216. doi: 10.1093/ofid/ofab216. PMID: 34095339; PMCID: PMC8176394.

3. Bobde S, Sohn WY, Bekkat-Berkani R, Banzhoff A, Cavounidis A, Dinleyici EC, Rodriguez WC, Ninis N. The Diverse Spectrum of Invasive Meningococcal Disease in Pediatric and Adolescent Patients: Narrative Review of Cases and Case Series. *Infect Dis Ther*. 2024 Feb;13(2):251-271. doi: 10.1007/s40121-023-00906-x. Epub 2024 Jan 29. PMID: 38285269; PMCID: PMC10904702.

Images

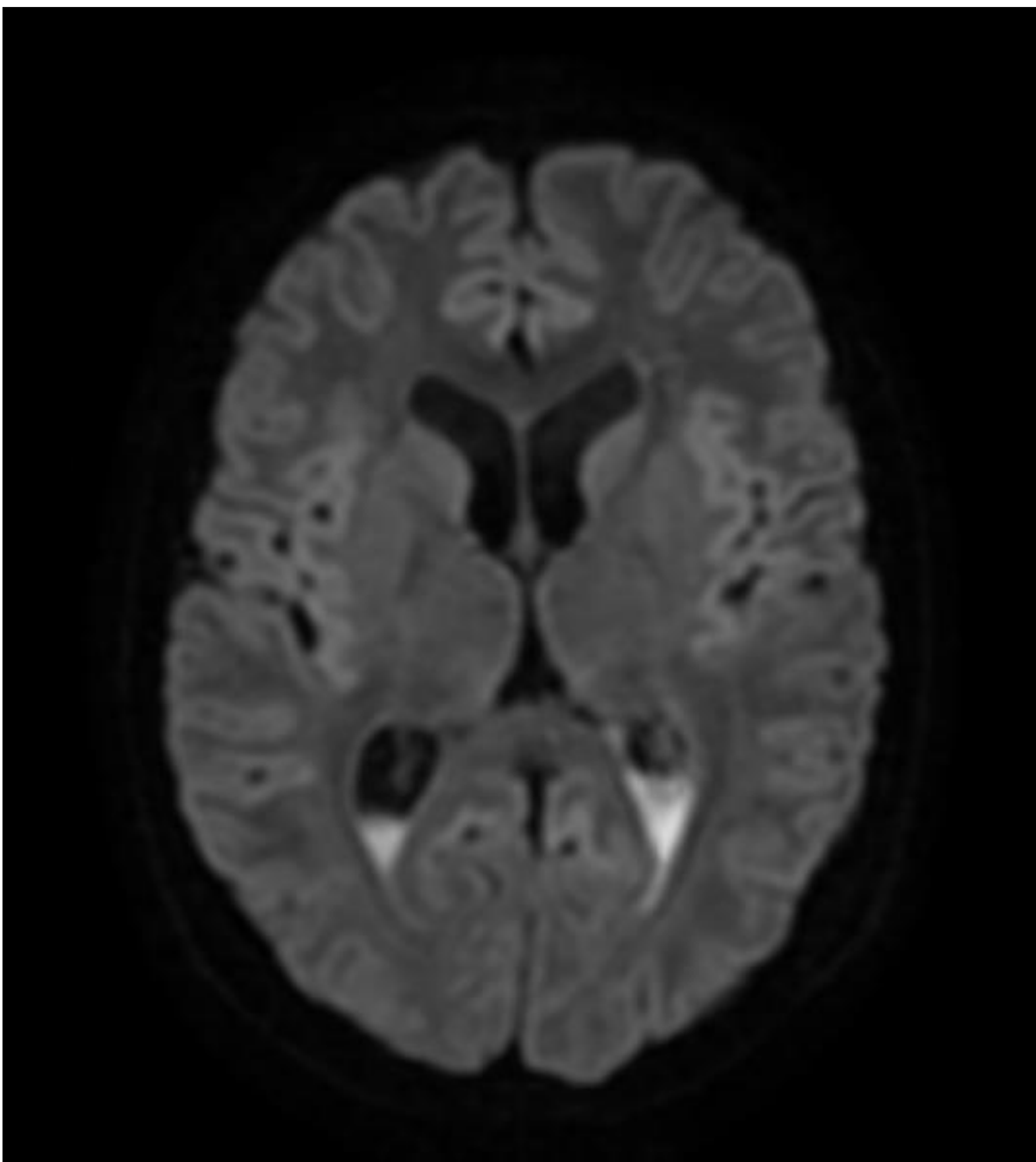


Figure 1: MRI Brain Axial DWI MUSE image showing fluid levels within the occipital horns of the lateral ventricles bilaterally

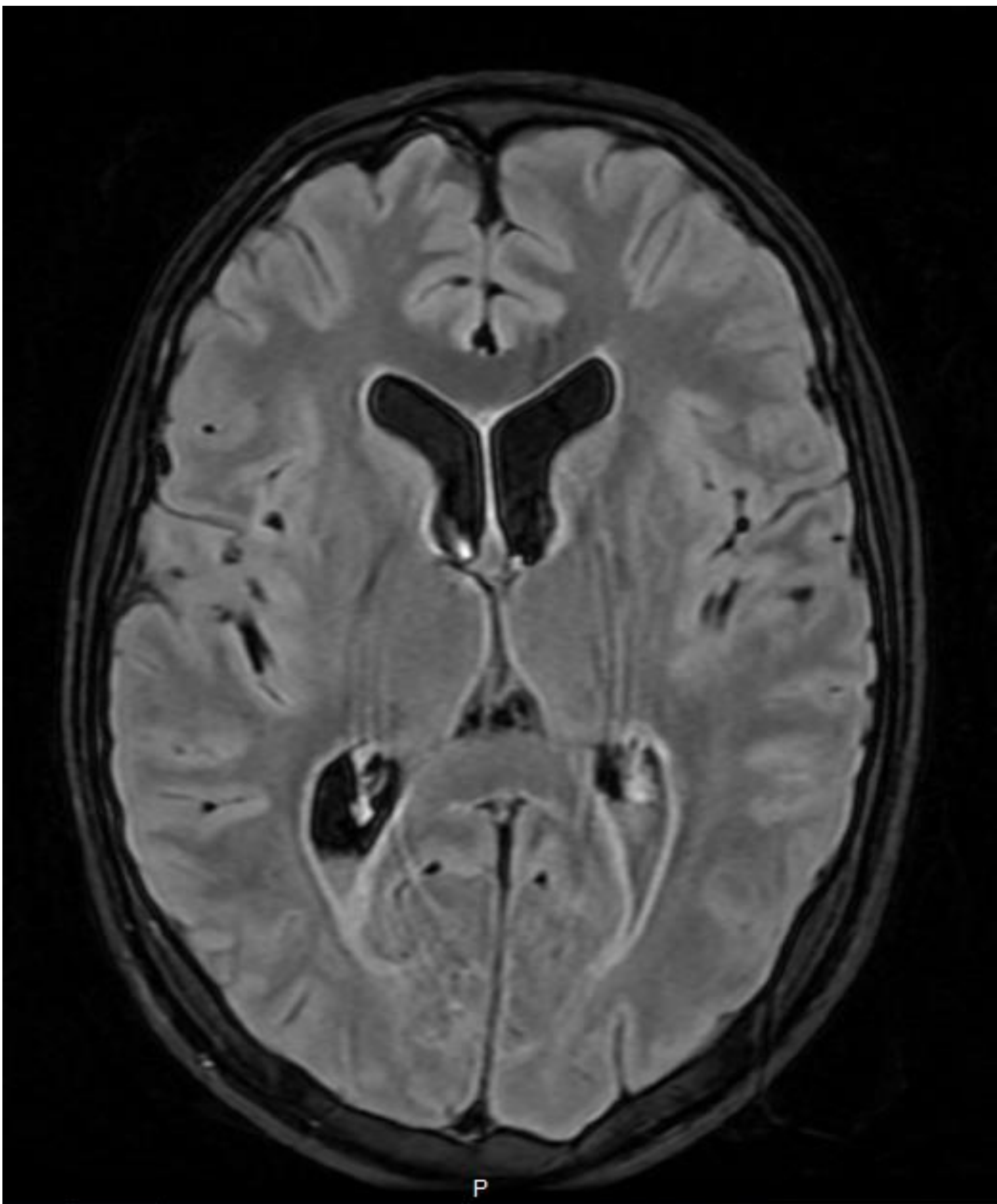


Figure 2: MRI Brain Axial T2 FLAIR showing associated thin FLAIR hyperintensity in the ependymal lining without any abnormal enhancement of the ventricular walls