

Cerebral Venous Sinus Thrombosis Following Epidural Blood Patches for Post-dural Puncture Headache

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Background:

Cerebral venous sinus thrombosis (CVST) is a rare with an incidence of 13.2 to 15.7 per million patient-years¹.

It occurs predominately in females, and 20% of the cases happen during pregnancy or postpartum period².

The exact mechanism of postpartum CVST remains unclear. Pregnancy is a risk factor. It is presumed that requiring an epidural blood patch (EBP) can predispose CVST development, with the blood patch's ability to cause cerebral vasoconstriction, possibly impeding on cerebral blood flow and contributing to thrombosis³.

We describe a case of CVST in a postpartum patient who required a decompressive hemicraniectomy after failed EBP.

Case presentation:

A healthy 22-year-old G3P3 with epidural analgesia for vaginal delivery developed classical post-dural puncture headache (PDPH) symptoms on postpartum day 1 and was initially managed conservatively with caffeine and hydration.

On day 2, she received an EBP with resolution of her pain.

On day 4, her headache recurred, and she received second EBP without relief. She was admitted for neurological workup and started on prophylactic heparin.

Initial CTA/CTV did not show thrombosis, but CT showed bulky hyperdense pituitary gland with concern for pituitary hemorrhage and possibly pituitary apoplexy/Sheehan's syndrome; which was later ruled out.

On day 7, her headache became unilateral with diffuse right-sided paresthesia. Brain imaging found CVST. She was started on enoxaparin.

On day 9, neurologic symptoms worsened. Repeat imaging showed expanded hematoma with midline shift and mass effect. She underwent emergent decompressive hemicraniectomy.

She later developed fever and mastitis. She tested negative for factor V Leiden and Factor II G20210A mutation, anti-B2 glycoprotein antibodies and anticardiolipin antibodies.

On day 24, she was discharged with a modified Rankin score of 4 indicating moderately severe disability.

Discussion:

This interesting case with repeated negative workup before the discovery of CVST on day 7, but also the severity of the CVST. Following the discovery of CVST on imaging, her hematoma continued to expand despite LMWH that subsequently required decompressive hemicraniectomy, and unfortunately the patient had moderately severe disability upon discharge.

This case is a great example of the importance of continued evaluation of headaches after unsuccessful blood patches for early diagnosis and improved outcome.

Conclusion:

- CVST is a rare condition, and a large percentage of cases develop in the pregnant or postpartum population.
- After unsuccessful blood patches, brain imaging is indicated to rule out CVST and other intracranial pathology.
- Despite negative workup, if symptoms persistent or change, additional workup is necessary.
- Early diagnosis and management can lead to decreased morbidity.

References

1. Gokey R, M Das J. Venous Sinus Thrombosis. [Updated 2022 Sep 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. <https://www.ncbi.nlm.nih.gov/books/NBK560598/>
2. Ferro JM, Canhão P, Stam J, Boussier MG, Barinagarrementeria F; ISCVT Investigators. Prognosis of cerebral vein and dural sinus thrombosis: results of the International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT). *Stroke*. 2004;35(3):664-670. doi:10.1161/01.STR.0000117571.76197.26
3. Ghatge S, Uppugonduri S, Kamarzaman Z. Cerebral venous sinus thrombosis following accidental dural puncture and epidural blood patch. *Int J Obstet Anesth*. 2008;17(3):267-270. doi:10.1016/j.ijoa.2008.01.001