A Complex Presentation of Headache after Lumbar Puncture For an Epidural Blood Patch

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INTRODUCTION

Post-dural puncture headache (PDPH) is a well-known clinical complication of intrathecal space instrumentation. Various modalities have been proffered for treatment of PDPH, however epidural blood patch (EBP) remains the gold-standard therapy.

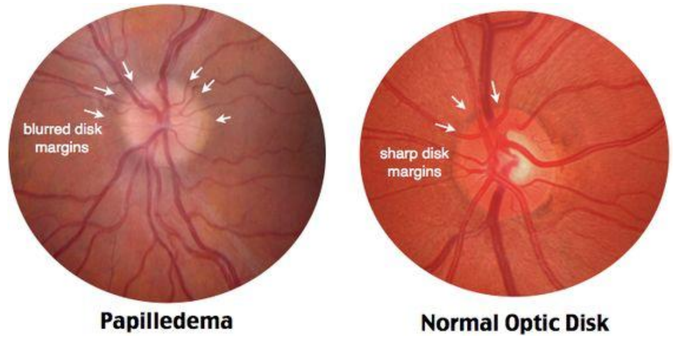
Notwithstanding its widespread usage, clinicians should not regard it as a benign procedure without complications. Judicious consideration should be applied to patient selection in addition to indication, timing and optimum technique to mitigate risk and improve outcomes.

CASE DESCRIPTION

- 27-year-old healthy G1P1 at 16 weeks with persistent, bi-frontal, throbbing headache of two-week duration with associated papilledema (Fig.1), nausea, vomiting, and pulsatile tinnitus.
- Brain MRI was negative for space occupying lesions. Lumbar puncture was significant for opening pressure of 31 mm H_20. Patient was diagnosed with idiopathic intracranial hypertension (IIH) and prescribed acetazolamide 250 mg daily.
- She returned with a severe postural headache, vomiting, and diarrhea.
- Brain MRA/MRV was negative for vascular thrombosis.
- Five days later, she presented with a constant, throbbing, frontal, bi-parietal headache, aggravated by coughing and sneezing with accompanying nausea and vomiting.
- Acute Pain Service is consulted for EBP placement.
- On evaluation, she denied the positional component to her headache, which was previously present.
- EBP placement was not offered due to concern that her current headache was from worsening IHH rather than PDPH.

DISCUSSION

- Anesthesiologists must be familiar with the signs and symptoms of headache of intracranial hypotensive vs. hypertensive etiologies and readily distinguish between the two as their treatments differ vastly.
- PDPH is attributed to intracranial hypotension from CSF leakage into the epidural space. Decreased subarachnoid hydrostatic pressure results in subsequent meningeal and cranial nerve traction with gravity.[3]
- The injection of autologous blood in the lumbar epidural space has emerged as definitive treatment for PDPH unresponsive to conservative therapy. It has been proposed that injected blood of a significant volume patches the dural breach while the added volume increases CSF pressure; thus, reducing traction on meningeal structures, leading to relief.[2]
- IIH is increased intracranial pressure in the absence of a space-occupying intracranial lesion. An increase in CSF or obstruction to venous drainage from the brain are proposed mechanisms.[1] Treatment consists of close monitoring with therapeutic LP, pharmacologic therapy, and surgical intervention if indicated.[2]
- Although EBP is a low risk procedure, serious complications have been reported. Rebound intracranial hypertension may occur from increased CSF pressure.
- A rare, but noteworthy complication is Terson syndrome, the abrupt loss of vision likely from vitreous hemorrhage (Fig.2) after an acute increase in pressure within the subarachnoid space.[5]



CONCLUSIONS

- Our patient presented with headache associated with IIH and was treated with appropriate therapeutic intervention.
- Upon re-presentation, the admitting service erroneously concluded that the headache was due to intracranial hypotension and referred patient for EBP.
- EBP remains gold-standard therapy for PDPH, however, the procedure is not without complications.
- Given the potentially devastating complications that result from the mis-diagnosis of headache of opposing etiologies, patients presenting for intervention warrant careful and diligent evaluation.
- Anesthesiologists should be prudent in the patient selection process. This particularly holds true for patients with complex headache histories, pre-existing vision compromise or co-morbidities that result in increased intracranial pressures.
- Epidural space injection increases subarachnoid pressure in a volume and rate-dependent fashion and places the patient at risk for an abrupt increase in subarachnoid space pressure which is likely to lead to retinal hemorrhage by way of compromising drainage in the retinal venous system.[5]
- Anesthesiologists offering EBP in their scope of practice should be aware of all of the potential complications occurring post-EBP, but should take special note of RIH and Terson syndrome.

REFERENCES

1. Duffy PJ, Crosby ET. Can J Anesth. 1999;46:878. https://doi.org/10.1007/BF03012979.
2. Safa-Tisseront V, et al. Anesthesiology. 2001; 95(2):334-339. PMID:11506102.
3. Gielen M. Reg Anesth. 1989;14:101-106.
4. Kranz PG, et al. Am J Neuroradiol. 2014;35(6):1237-1240. PMID: 24407273.
5. Pagani-Estévez GL, et al. Reg Anesth Pain Med. 2016;41(2):164-188. doi: 10.1097/AAP.0000000000000352.