Double Intracranial Trouble: Delayed Diagnosis of Postpartum Intracranial Hypotension After Intrathecal Catheter Placement Obscured by Intracranial Hemorrhage in the Setting of Pre-eclampsia

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Introduction

Intracranial hypotension (IH) is a rare complication by idiopathic or iatrogenic loss of cerebrospinal fluid (CSF). IH is characterized by a positional headache that mimics and is frequently mistaken for a postdural puncture headache (PDPH) or in severe cases, subarachnoid hemorrhage (SAH).[2,4] Additional symptoms include nausea, vomiting, blurred vision, phonophobia, photophobia, vertigo, and neck pain with flexion. Gadolinium-enhanced MRI findings of pachymeningeal (dural) enhancement are pathognomonic for IH. Due to inferior brain displacement after loss of CSF, patients can develop a transient unilateral or bilateral abducens nerve palsy as the brain matter droops. The headache can frequently be resolved or improved with epidural blood patch (EBP).[2]

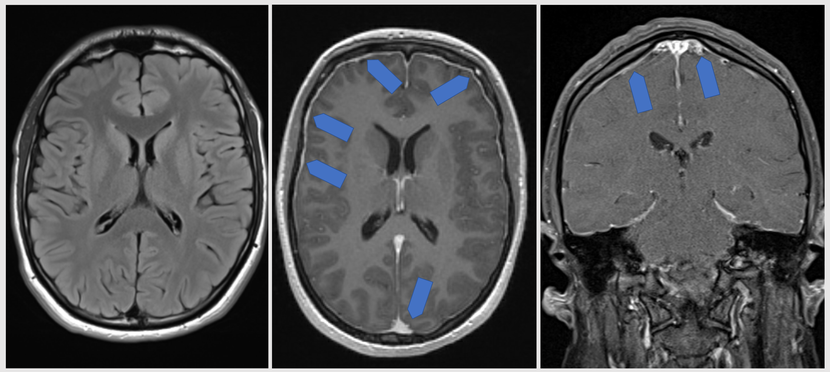

Fig. 1: Normal T1 MRI Brain[1]

Figs 2 & 3: Patient's MRI head with contrast demonstrating pachymeningeal enhancement

Case Presentation

A 26 year-old G2P2 presented from an outside hospital after becoming unresponsive requiring intubation with stroke-like activity 24 hours after a cesarean section under general anesthesia. The pregnancy was complicated by pre-eclampsia with severe features requiring induction of labor at 35w2days. Incidental intrathecal catheter was placed. Cesarean section was performed under general anesthesia due to intolerance of labor and intrathecal catheter complications.

24 hours postop she developed severe headache, slurred speech and respiratory arrest with BP of 203/134. CT demonstrated SAH without aneurysm. On POD 2 CT angiogram demonstrated no aneurysm. Bilateral abducens palsy was discovered on POD 3.

Brain MRI with contrast on POD 5 demonstrated pachymeningeal enhancement, mild venous sinus distention and cerebellar tonsil and corpus callosum drooping. EBP was performed on POD 6 with 20 mL of blood and the patient was extubated later that day. The patient's severe headache was reported to be positional in nature and on POD 7 a second EBP was performed with 20 mL of blood administered. Headaches were persistent despite the EBP. By discharge after 16 days, the patient had regained significant function and had full resolution of vasospasm and nerve palsy.

Discussion

The diagnosis of Intracranial Hypotension was dependent upon MRI visualized brain sag with pachymeningeal enhancement paired with findings of abducens nerve palsy. This diagnosis could have been missed in the setting of intracranial hemorrhage thought to be secondary to preeclampsia. While the diagnosis was delayed, dual EBP performed for PDPH likely hastened the resolution of postural headaches and CN VI palsy. Literature suggests treatment with EBP as the mainstay treatment for IH. Additional consideration to PDPH should be considered if symptoms are severe and neurosurgery consultation is of paramount importance.

Figure 2: Cranial nerve VI – abducens palsy [3]

References

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2) Greif S, Practical Neurology May 2014.
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4) Schievink WI, Neurosurgery. 2001. Mar;48(3):513-6.