

Inflammatory Polyneuropathy Following Neuraxial Labor Analgesia in a Patient with Chiari I Malformation

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Case Presentation

PPD -1: 36yo G1P0 PMH unrepaired Chiari I malformation, glaucoma, anxiety, spontaneous pneumothorax presenting for term induction

PPD -1: Intrapartum NSGY consultation with Chiari expert, cleared for neuraxial given mild Chiari symptoms. Epidural without DP placed by senior attending

PPD0: NSVD after prolonged second stage, chorioamnionitis, PPH, uterine atony, and pre-eclampsia without SF. Epidural catheter removed.

PPD1: Partial sensory and motor block 3h after discontinuation of epidural. 5/5 dorsi- and plantar flexion, 2/5 straight leg raise. Ddx residual anesthetic effect

PPD1: Persistent sensory / motor block with saddle anesthesia, inability to walk, urinary incontinence x1. Ddx peripheral nerve injury, epidural hematoma, abscess, progression of Chiari. STAT MRI brain + L spine unremarkable.

PPD4: Persistent symptoms, repeat MRI T + L spine showed mild/subtle enhancement of the ventral cauda equina nerve roots. Ddx GBS/AIDP, arachnoiditis. Pt received IVIG, steroids with subtle improvement in symptoms.

PPD17: Discharged to acute rehab with stable sx BLE weakness, incontinence, patchy sensory deficits. EMGs with possible early axonal motor neuropathy. Ddx GBS / AIDP postpartum.

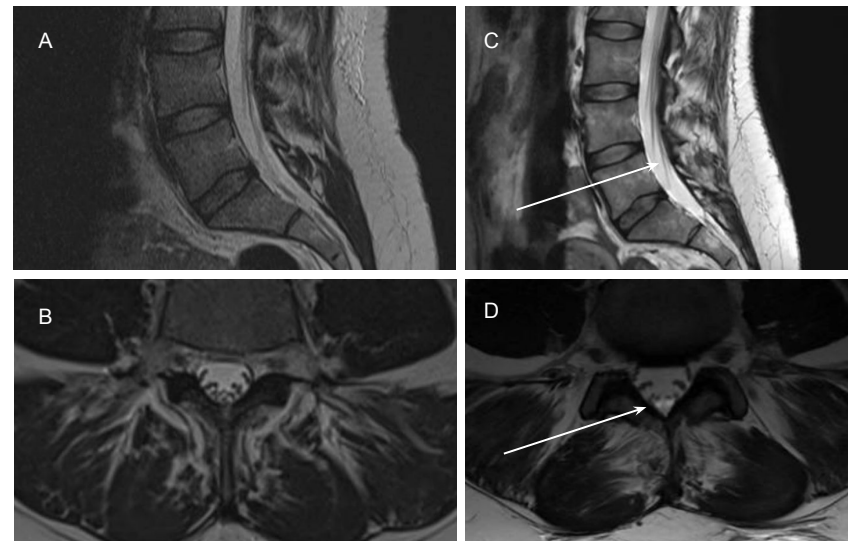


Figure 1: Interval cauda equina enhancement seen on MRI T2 TSE sequence at L4-5 at PPD 4 (A,B) and PPD25 (C,D).

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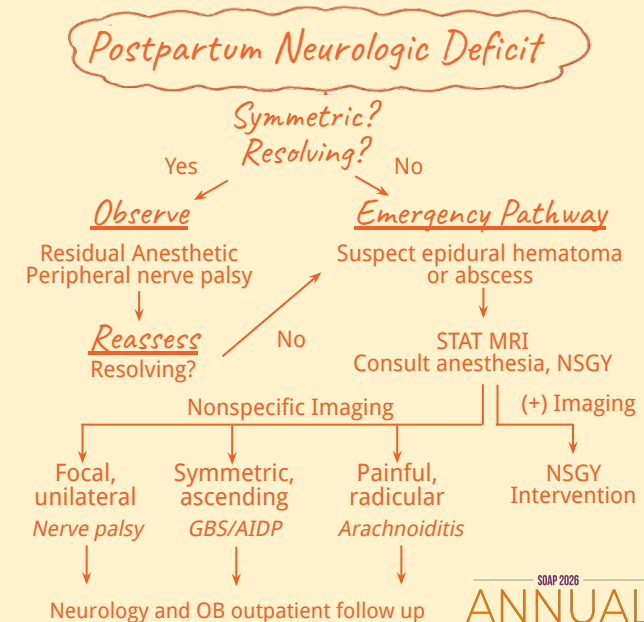


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Background

Neurological deterioration in the postpartum period

- Patients with Chiari I are thought to be at risk of neurological deterioration during labor and delivery due to the fear that contractions, pain, and pushing increase ICP.
- Retrospective studies suggests risk stratifying based on symptom severity (mild vs severe headaches, worsened by position or Valsalva, hydrocephalus, papilledema). Patients without severe symptoms have no absolute contraindication to neuraxial.
- More common causes of neurologic symptoms are peripheral nerve palsies, residual anesthetic effects, and feared neuraxial complications like epidural abscess or hematoma.
- New onset inflammatory polyneuropathies are rare compared to the pathologies above. The most common is Guillan-Barre (GBS) / AIDP, which presents with progressive weakness and dysreflexia, +/- sensory or autonomic symptoms. Symptoms peak at < 4 weeks.¹
- Symptoms of *chronic* inflammatory demyelinating polyneuropathy (CIPD) peak at > 8 weeks.
- Limited case reports describe patients developing GBS/AIDP days to weeks after epidural placement, or developing post-surgical CIDP^{2,3}. Timely diagnosis and treatment with steroids and IVIG can result in full recovery.



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Discussion & Key Points

- The case highlights the importance of peripartum consultation, expert procedural administration⁴, and prompt follow up in patients with neurologic complications.
- This patient was concerned that Chiari type I was a contraindication for neuraxial analgesia. Anesthesia and neurosurgical consultation allayed fears, but she ultimately suffered an unrelated adverse outcome.
- Prompt imaging and neurology/neurosurgical consultation^{5,6} aggressive PT, and multidisciplinary communication were essential to helping the patient cope with both physical disability and psychological consequences.
- Diagnosis was also challenging, as the deficit did not follow a clear dermatomal pattern or pathognomonic presentation, nor was it clear whether neuraxial analgesia had contributed.
- Should this patient present in labor again, careful consideration of the appropriateness of neuraxial should be undertaken.

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3. Steiner, I., Argov, Z., Cahan, C., & Abramsky, O. (1985). Guillain-Barré syndrome after epidural anesthesia: direct nerve root damage may trigger disease. *Neurology*, 35(10), 1473-1473.

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