

Neuraxial anesthesia in a patient with history of Chiari malformation type-1

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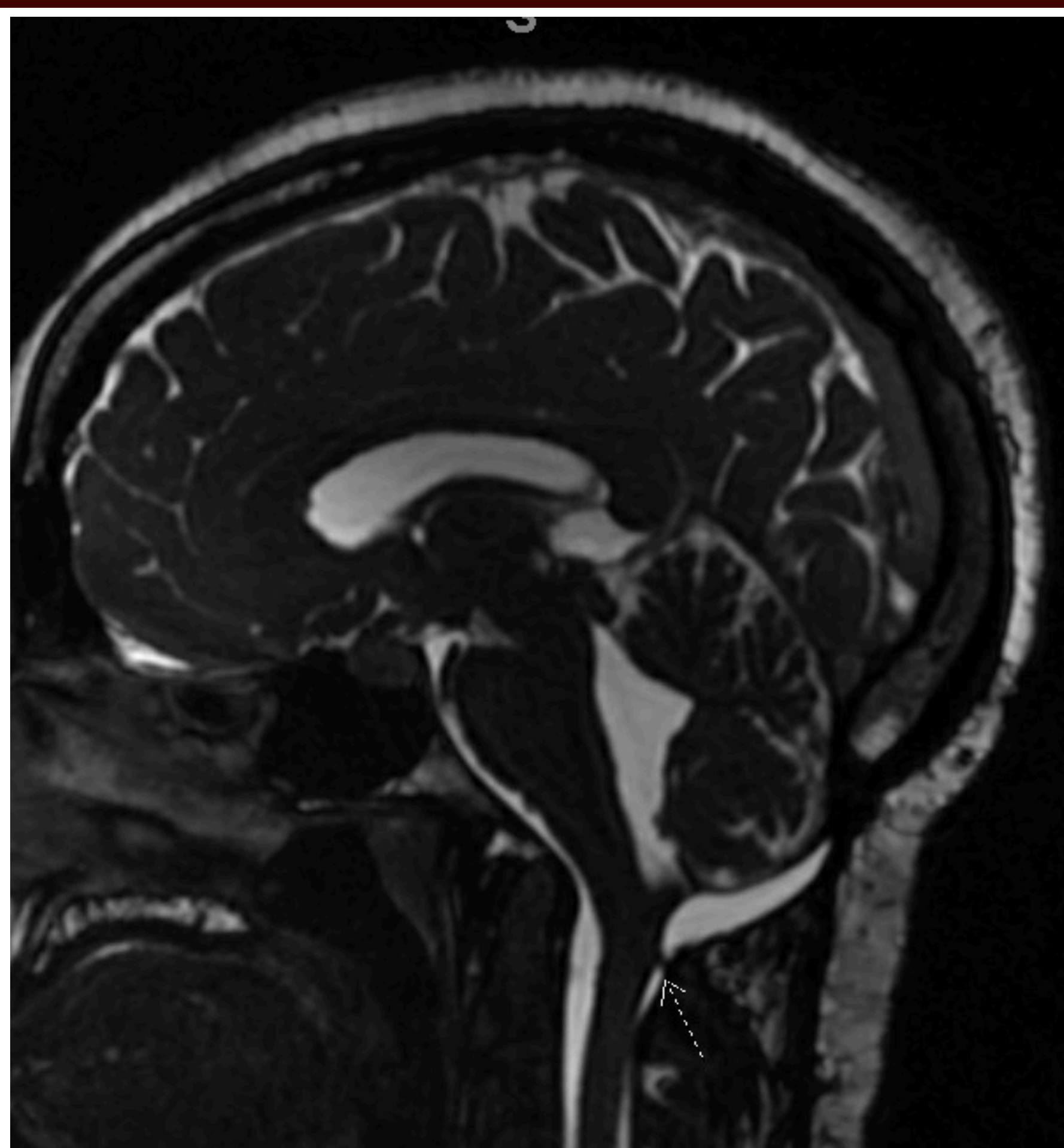


Background

- With CM1 there is the possibility of decreased CSF outflow and increased ICP above the tonsillar herniation, which, with the possible transient rise in ICP after an epidural or rapid decrease in intrathecal pressure with dural puncture, could result in further herniation and neurologic deterioration.¹
- Risk-benefit assessment of neuraxial techniques in patients with CM1 should consider symptoms, evidence of herniation, history of surgical repair, co-morbid conditions, and anticipated delivery course.

Case report

- 29-year-old G1P0 presented at 24+0 five years after suboccipital craniectomy and C1 laminectomy for decompression of tonsillar herniation and cervical syrinx.
- Exam notable for intermittent headaches with transient visual disturbances.
- Imaging:



Clinical course

- Patient counseled on an epidural with the possibility of a shortened second stage if symptomatic with the progression of labor.
- Admitted at 39+0 in spontaneous active labor with no features portending prolonged or difficult labor.
- DPE placed, followed promptly by vaginal delivery.
- Discharged home two days later with no neurologic complications.

Table 1. Features suggesting neurological deterioration with neuraxial anesthesia. Adapted from Milhourat TH et al., 1999

• Suboccipital headache	• Decreased hearing or hyperacusis
• Retro-orbital discomfort	• Vertigo
• Floaters or flashing lights	• Hoarseness
• Blurred vision	• Cough
• Photophobia	• Dysphagia
• Diplopia	• Sleep apnea
• Visual field cuts	• Tremors
• Dizziness	• Weakness
• Disequilibrium	• Muscle atrophy
• Pressure in the ears	• Lack of duraplasty
• Tinnitus	

Discussion

Physiologic changes of pregnancy and labor decrease volume and increase pressure of lumbar CSF.²

- Patients with baseline elevated ICP have a more pronounced transient increase in ICP after epidural injection that displaces CSF towards the head.¹
- CSF leak occurs with dural puncture, intentional or not. Even without known dural puncture, fatal herniation has occurred.¹
- With GA, laryngoscopy can increase ICP; subsequent hyperventilation to decrease ICP may affect the fetus.
- While increased ICP alone may not translate to increased risk or rate of herniation, additive changes in ICP with CM1, pregnancy, and neuraxial injection theoretically may.

Key points and References

- Symptoms, imaging should guide discussions regarding neuraxial techniques in patients with history of CM1.
- Symptoms may not correlate with imaging findings.
- In patients with no concerning features of CM1, a neuraxial technique may be offered.

1. Leffert, LR and LH Schwamm. Anesthesiology 2013; 119: 703
2. Ghaly, RF et al. SNI 2017; 8:10