

Neuraxial Placement in Patients with Chiari I Malformation: A Case Series

Background

Chiari malformation type 1 (CM-I), is defined as a congenital herniation of the cerebellar tonsils caudally through the foramen magnum with displacement of the pons and medulla.¹ Increased brain turgor due to the malformation may occur, which can interfere with cerebrospinal fluid (CSF) absorption and lead to increased intracranial pressure.² This can be especially concerning in pregnant patients undergoing labor, where increases in intracranial pressure during labor could potentially result in tonsillar herniation.³ Because of these concerns, administering an epidural can be risky due to possible rupture of the dura and subsequent herniation in CM-I patients.⁴ We present a case series on patients with Chiari malformation undergoing neuraxial anesthesia.

Methods

Following the IRB approval to assemble this case series, electronic record databases were used to identify female patients under the age of 50 with Chiari I malformation who had been admitted to the UTMB hospital system. Patients who had delivered, vaginally or via C-section, and had undergone neuraxial analgesia were included in the study. Data on the patients’ age, mode of delivery, type of analgesia, types of anesthetic medications used for analgesia, neurologic symptoms, and other symptoms/complications were collected.

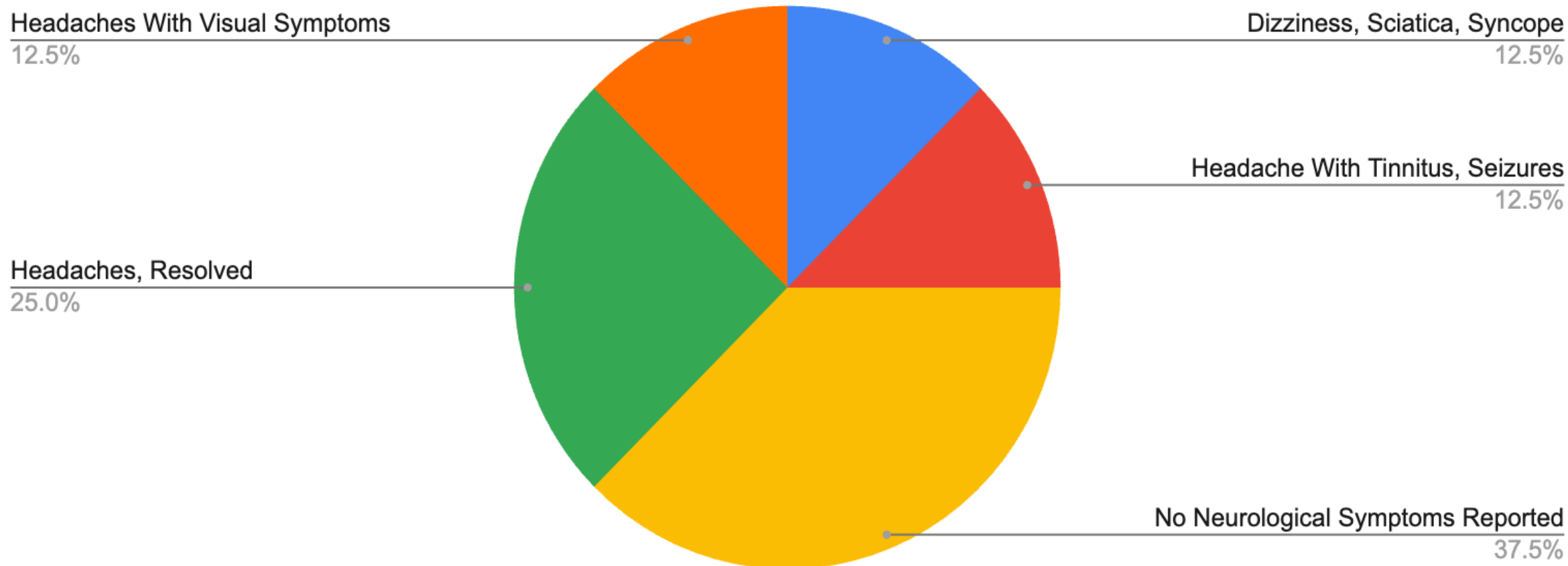
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Demographic Data

Race	Age	Pregnancies	BMI	Gestational Age	Comorbidities	Delivery	Anesthesia	Delivery
White	22 year old	G2P1	38.45	37 Weeks	Menorrhagia, Depression	Vaginal	Fentanyl+Bupivacaine	Epidural
Black	28 year old	G4P2	45.84	39 Weeks	DVT, Asthma, Gestational HTN	C-section	Fentanyl+Bupivacaine	Epidural
White	31 year old	G1P1	31.88	39 Weeks	Pituitary Adenoma, Seizure Disorder	Vaginal	Fentanyl+remifentanyl, lidocaine	IV, pudendal
White	32 year old	G2P0	24.43	39 Weeks	History of Cesarean and Preterm delivery,	C-section	lidocaine + epinephrine + fentanyl + sodium bicarb	epidural
White	32 year old	G2P1	35.02	39 Weeks	Migraine, Depression, TB exposure	C-section	Fentanyl+Bupivacaine	Epidural
White	33 year old	G4P2	33.48	40 Weeks	Asthma, Depression, GERD	vaginal	Fentanyl+Bupivacaine	Epidural
White	33 year old	G1P1	31.62	39 Weeks	Migraine, Tic Disorder	Vaginal	Fentanyl+Bupivacaine	Epidural
White	43 year old	G2P1	44.39	39 Weeks	TB, Anemia	Vaginal	Fentanyl+Bupivacaine	Epidural
White	44 year old	G1P0	26.02	38 Weeks	Syncope, Depression	vaginal	bupivacaine	Epidural

Results

Neurological Symptoms of Patients with Chiari I Malformation



Results

Nine patients ranging from ages 22-44 years old (mean age of 33) were included in this case series. Data set included eight Caucasian/White patients and one African American/Black patient. The most common symptoms experienced by these patients were headaches. One patient experienced syncope and sciatica along with their headaches. Another patient experienced headaches and seizures. A third patient experienced visual disturbances, nausea, and vomiting as well. Six out of seven patients tolerated epidural anesthesia. The seventh patient received pudendal nerve blocks and received intravenous opioids for analgesia.

Conclusion

This case series supports that patients with Chiari I malformation can successfully tolerate and undergo neuraxial analgesia for labor but may be more likely to experience neurologic symptoms. In the current case series, patients experienced tolerable symptoms such nausea, vomiting, headaches, and sciatica. One of the patients experienced seizures after placement, but this could not be directly attributed to the epidural itself. However, future studies could aid in determining other forms of management to further prevent neurologic symptoms in this patient population when undergoing neuraxial analgesia.

References

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