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Peri-partum management of a parturient with benign intracranial hypertension and a lumbo-peritoneal shunt: A Case Report

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Abstract

Case Presentation: A 35-year-old parturient with a BMI of 38 and pseudotumor cerebri with an LP shunt in situ.

Treatment: Following a discussion with her neurosurgical team, a lumbar epidural was sited under ultrasound guidance for labor analgesia. She proceeded to have an uneventful vaginal delivery.

Discussion: Pseudotumor cerebri, also known as idiopathic or benign intracranial hypertension has an incidence of 1-2 per 100,000 **[1]**. It is most prominent in women of childbearing age with an elevated body mass index (BMI). Presentation is characterized by signs of increased intracranial pressure (ICP), including headaches and visual abnormalities when ICP exceeds 20 mmHg **[1]**. Lumbo-peritoneal (LP) or ventriculoperitoneal (VP) shunts are used to treat patients with intractable headaches, and progressive visual dysfunction in those patients where conservative measures have failed **[2]**.

While peripartum management of benign intracranial hypertension and ventriculoperitoneal shunts have been described previously **[2,3]**, few reported cases document successful neuraxial anesthesia in patients with lumbar-peritoneal shunts.

Keywords: Epidural analgesia; Pseudo tumour cerebri; Pregnancy

Introduction

Benign or idiopathic intracranial hypertension (BIH) is usually seen in obese women of childbearing age **[1]**. Common presenting complaints include headaches and visual abnormalities secondary to elevated intracranial pressure. Neuroimaging is negative for lesion-causing mass effect and CSF composition is normal **[4]**. If untreated, BIH can progress to visual loss secondary to swelling of the optic disc. Radiology in BIH is typically normal, with occasional findings of small ventricles and the "empty sella sign" which occurs due to flattening of the pituitary gland secondary to elevated **[4]**. Further investigations may include an MR venogram to exclude cerebral venous sinus thrombosis. Lumbar puncture reveals elevated opening pressures. CSF analysis attempts to exclude other possible differential diagnoses **[4]**. In the presence of elevated opening pressures, the removal of CSF can alleviate symptoms.

VP and LP shunts are used to treat BIH in patients who are unresponsive to conservative therapies such as diuresis, steroids, and serial lumbar punctures **[4]**. Spinal anesthesia is a safe option for patients with benign intracranial hypertension, indeed lumbar puncture is used therapeutically to drain CSF and reduce intracranial pressure. However, it is contraindicated in the setting of an LP shunt. While a rise in CSF pressure is independent of pain, **[5]** it is exaggerated by it. Epidural analgesia reduces hemodynamic surges during contractions and minimizes their effect on ICP. Consideration may be given to shortening the second stage of labor through instrumental delivery to prevent further increases in CSF pressure during this time **[6]**.

Case Report

A 30-year-old lady presented to our institution's high-risk pre-operative assessment clinic at 36 weeks gestation with a background history of benign intracranial hypertension. This had been diagnosed 4 years previously following the onset of headache, temporary loss of vision combined with high pressures on lumbar puncture. An LP shunt was cited by the neurosurgical service at another institution and the patient had been symptom-free since.

On examination, she had a well-healed surgical incision on the right-hand side of her spinal column at the level of L5/S1 with a palpable catheter tunnelled in subcutaneous tissue. The patient was obese (BMI 38) and had gestational diabetes that was controlled by dietary measures and a normal clotting profile. The neurosurgeon who performed the LP shunt placement stated that neuraxial anesthesia was not contraindicated.

The patient went into spontaneous labor and had a lumbar epidural sited at the L2/3 interspace cephalad to the scar under ultrasound guidance. A close-ended multiport catheter was sited (Smiths' medical). Test dose with 5mls 0.25 % bupivacaine yielded a negative result. An additional 5mls of 0.25 % bupivacaine with 50mcg of fentanyl produced a sensory block from T9-S1 bilaterally. Continuous infusion of 0.125 % levobupivacaine and 2mcg/ml of fentanyl was commenced at a rate of 6ml/hr. This provided effective analgesia. Our patient progressed in labor and she went on to deliver vaginally.

Discussion

The management of this condition in pregnancy and around the time of delivery is challenging. This becomes increasingly complex in the setting of an indwelling device, in our case, an LP shunt. The decision regarding the mode of delivery and anesthetic technique should be multidisciplinary and individualized for each patient. There is little evidence comparing the safety of neuraxial versus general anesthesia in this patient population. The primary aim of each technique should be to avoid surges in ICP **[3,7]**.

With the potential for cesarean delivery, the risk for airway catastrophe in an obese parturient was a major factor in electing for early epidural placement **[8]**. Ultrasound aided with the identification of the midline, level, and depth of the epidural space, further improving safety **[9]**.

In conclusion, it is essential to adopt a multi-disciplinary approach to assess and adopt an individualized plan for delivery in patients with benign intracranial hypertension.

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