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Inadvertent Dural Puncture During Placement of a Labour Epidural in a Parturient with a Cerebellopontine Angle Tumour: A Case Report

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INTRODUCTION

Dural puncture (DP) is a complication of neuraxial techniques with its incidence ranging from 0.5-2.5%[1]. This may cause transient loss of cerebrospinal fluid (CSF) with displacement of cerebral structures and is associated with a range of complications, including post dural puncture headache, cranial nerve palsies, and subdural hematoma[2,3]. The most serious complication of a DP in a patient with raised intracranial pressure (ICP) is brain herniation and death[4]. Here, we describe the case of a parturient with class 3 obesity and a cerebellopontine angle (CPA) tumour presenting at full-term for induction of labour who had an unintentional DP during epidural insertion. We discuss the initial patient work-up, the pertinent anesthetic considerations for their delivery, and the subsequent multi-disciplinary management of the DP.

CASE PRESENTATION

A 40-year-old G1P0 female at 39 weeks gestation presented for induction of labour for BMI of 53. During consideration for epidural, the patient mentioned she was diagnosed with a CPA tumour 3 years earlier that was lost to follow-up due to the pandemic. The case was reviewed by anesthesia, obstetrics, and neurology and the induction was postponed for urgent imaging. Our hospital has no neurosurgical service so neurosurgery at another tertiary hospital was consulted. MRI revealed mild mass effect on the pons but it was felt the best plan would be an assisted-vaginal delivery with placement of an epidural for analgesia or anesthesia if an operative delivery was required. The most experienced operator attempted the epidural but there was an inadvertent DP. A spinal catheter was placed which initially provided pain relief but failed after a few hours. It was felt a second epidural attempt posed an unacceptable risk of DP with potential for herniation. The parturient was now in active labour and having decelerations necessitating urgent delivery. The decision was made to proceed with Caesarian section under general anesthesia. Surgery was uneventful and neurosurgery recommended strict bedrest in supine position for 24-hours post-operatively with compression stockings and prophylactic enoxaparin. This was followed by elevating the patient at 10-degree increments per hour until sitting upright with the recommendation that the patient be placed in Trendelenburg and transferred to neurosurgery with the onset of any CNS symptoms. She remained asymptomatic and was discharged home on post-partum day five.

CONCLUSION

DP in a patient with an intracranial lesion carries the risk of brain herniation. Multidisciplinary input regarding management is essential. If considering a Caesarian section, the risks of general anesthesia for a high BMI parturient, including difficult intubation, post-partum hemorrhage, and thromboembolism, must be weighed against attempting epidural anesthesia with the risk of an inadvertent DP. Measures to temporize herniation include Trendelenburg positioning, and utilizing a spinal catheter to inject intrathecal isotonic saline to restore CSF volume and ICP[5]. If an epidural blood patch is considered, interventional radiology may be of assistance and neurosurgery should be immediately available.

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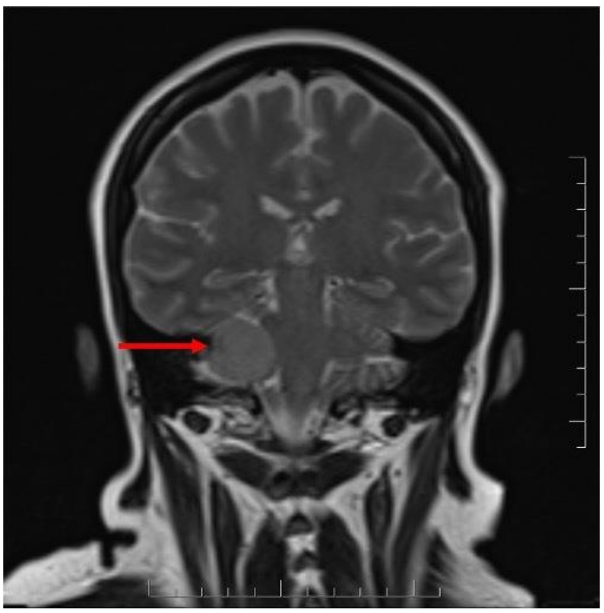

Figure 1. Magnetic resonance imaging of the patient showing the cerebellopontine tumour (marked by red arrow).

Spinal Hydromorphone Versus Morphine for Post-Cesarean Delivery Analgesia: A Non-Inferiority Trial

AUTHORS

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INTRODUCTION

Cesarean Delivery (CD) is the most common surgical procedure performed in North America [1]. Intrathecal (IT) morphine is the standard for post-cesarean delivery (CD) analgesia. Recently, adverse events, drug shortages[2] and a potential superiority in cases of opioid addiction[3] prompted research into IT hydromorphone. These studies established the ED90 for both opioids for post-CD analgesia[4] and failed to prove superiority of morphine over hydromorphone.[5] Non-inferiority of IT hydromorphone has yet to be tested. Our study sought to establish non-inferiority of IT hydromorphone when compared to IT morphine for post-CD analgesia.

METHODS

In our single-center, blinded, Randomized Controlled Trial, 126 parturients presenting for elective CD were randomized to receive either IT morphine 150 mcg or IT hydromorphone 75 mcg as part of a spinal anesthetic technique. The primary outcome was the difference in the average Numeric Rating Scale (NRS) pain scores for the first 24 hours after CD, with a pre-established non-inferiority limit of 1. Secondary outcomes included differences in quality of recovery measured by the Obstetric Quality of Recovery score-11 (ObsQoR-11), 24-hour opioid consumption, NRS pain scores every 6 h, respiratory rate, oxygen saturation, time to first opioid request, number of treatments for nausea and pruritus, and APGAR scores.

RESULTS

Non-Inferiority of IT hydromorphone when compared to morphine was confirmed (mean difference -0.46, p=0.12). No significant differences were found for the majority of the secondary outcomes. There was a non-statistically significant finding of an earlier time-to-first opioid request in the hydromorphone group.(6.2h vs 10.2h; p=0.35).

DISCUSSION

IT hydromorphone is non-inferior to IT morphine for post-CD analgesia. Both opioids provide effective analgesia and hydromorphone may be a suitable alternative to morphine.

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Average Pain Scores for the first 24 hours Post-Cesarean Delivery

Time	Morphine n=60	Hydromorphone n=56	Difference (95% CI of the difference)	P
mean (SD)	4.0 (1.7)	3.6 (1.5)	-0.46 (-1.0 to 0.1)	0.12
median [IQR]	4 [3-5]	3.5 [2-5]	-0.5 (-2.2 to 1.2)	0.56

Difference is for hydromorphone – morphine. P is two-sided. 95% CI for difference in medians obtained by bootstrapping with 10,000 repetitions.

Figure 1