Spinal anaesthesia for emergency Caesarean section in a parturient with acute subarachnoid haemorrhage

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Abstract

Introduction

Peripartum subarachnoid haemorrhage (SAH) is a rare occurrence (observed to be between 5.8 and 17.1 per 100,000 deliveries). In this case report, we describe the management of a patient with acute SAH, who underwent emergency Caesarean section under spinal anaesthesia.

Case report

We present a case of a previously healthy, 30-year-old parturient woman; she was 37 weeks into her first pregnancy and presented with pounding headaches. She had a Glasgow Coma Scale (GCS) score of 15 without neurological deficits. Computed tomography revealed SAH without raised intracranial pressure. A multidisciplinary team comprising of neurosurgeons, obstetricians and anaesthesiologists, advised on an emergency Caesarean section prior to further neuroradiological procedures.

Spinal anaesthesia without sedation was selected for the avoidance of the hypertensive response during intubation, avoidance of airway manipulation and possible aspiration, as well as for provision of excellent analgesia and continuous monitoring of patient’s GCS perioperatively.

Under standard monitoring and intra-arterial blood pressure monitoring, spinal anaesthesia was administered with hyperbaric bupivacaine 0.5%, 2.3 ml and fentanyl 15 mcg. Surgery proceeded uneventfully, patient remained haemodynamically stable and anaesthesia recovery was uncomplicated. Post-operative pain was managed with oral paracetamol, mefenamic acid and patient-controlled intravenous morphine. Satisfaction for anaesthesia was found to be high due to good maternal and foetal outcome.

Discussion

General anaesthesia for Caesarean section in patients with intracranial haemorrhage has been described. However, because of the rarity of the condition, there is no consensus with regards to optimal anaesthetic care. Despite the numerous advantages that spinal anaesthesia can offer, the authors did not find any precedent reports in the literature.

In addition to the known risks of the spinal anaesthesia, post-dural-puncture headache (PDPH) may be difficult to diagnose in a patient with existing headaches. Practitioners are required to remain vigilant, because worsening headache, due to PDPH, may confound the evaluation of re-bleed in intracranial aneurysm.

Conclusion

In a patient, with recent SAH and minimal neurological deficit undergoing emergency Caesarean section, spinal anaesthesia should be considered, as it has multiple advantages.

Introduction

Subarachnoid haemorrhage (SAH) in pregnancy is a rare event, occurring at a rate between 5.8 and 17.1 per 100,000 deliveries1,2. However, SAH still remains a major cause of indirect maternal mortality3. This cause is postulated because of the occurrence of aneurysmal or pial vessel rupture as a consequence of elevated arterial pressure. Thus, the importance of blood pressure control in parturient woman at risk of bleeds is paramount4. There is no consensus with regards to the optimal anaesthesia management for a parturient woman with acute SAH. We describe a case of a parturient woman, who underwent uneventful, urgent lower segment Caesarean section (LSCS) under spinal anaesthesia.

Case report

The patient was a 30-year-old Chinese female with no medical problems. At the time of her presentation, she was 37 weeks into her first pregnancy, which had been uneventful. She presented with a sudden onset pounding headache in the temporal region over the previous two days, which was associated with nausea and vomiting. She had no obstetric complaint, and foetal movements were found to be normal.

On admission, her heart rate was found to be 84/min, and blood pressure was 127/71 mmHg. Her score on the Glasgow Coma Scale (GCS) was 15 and there were no focal neurological signs (World Federation of Neurosurgeons’ grade I)4. Full blood count and coagulation studies were observed to be normal. There was no clinical or laboratory evidence of pre-eclampsia. A plain computed tomography (CT) was performed, which showed an acute SAH within the preptioneal cistern. Also, no hydrocephalus (Fisher grade 2)5 was observed.

As the pregnancy was term, urgent delivery of the baby via Caesarean section was indicated to avoid the onset of labour and any associated

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For citation purposes: Ng O, Thong SY. Spinal anaesthesia for emergency Caesarean section in a parturient with acute subarachnoid haemorrhage. OA Case Reports 2013 Mar 01;2(3):25.
Elevations of blood pressure and intracranial pressure (ICP), which may aggrivate the bleed. Further work-up for intracranial lesions while minimizing radiological exposure to the foetus would then be facilitated. The Caesarean section would then be followed by a contrast-enhanced CT angiographic study or a four-vessel study, with a view to coil any intracranial aneurysm, if present.

After a multidisciplinary discussion between neurosurgeons, obstetricians and anaesthesiologists, a consensus was made for an urgent Caesarean section under spinal anaesthesia with the patient’s consent.

In addition to standard pulse oximetry, electrocardiogram and non-invasive blood pressure monitoring, a 20 G intra-arterial cannula was inserted into the patient’s right radial artery to enable beat-to-beat monitoring of the arterial pressure and enable early intervention of haemodynamic variability. The patient was then placed in the right lateral position and cleaned and draped in a sterile fashion. Using a 27 G Whitacre needle and via the landmark technique, the space between the fourth and fifth lumbar vertebrae was accessed. At this level, cerebrospinal fluid (CSF) flow was not attained, and a second attempt at the interspace immediately above was successful on the first pass. Doses of 2.3 ml of hyperbaric bupivacaine 0.5% and 15 mcg of fentanyl were administered. The patient was immediately turned supine. There was a loss of sensation to cold up to the T5 dermatome. Skin incision proceeded 5 minutes after the spinal block had been given and surgical anaesthesia was completed.

The baby was delivered 10 minutes after the surgical incision was made. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The intra-operative anaesthesia was completed. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The intra-operative anaesthesia was completed. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- fort throughout. The operation, which took 40 minutes, proceeded uneventfully and the patient experienced no discom- for
indicated in the scenario of a negative CT scan when the clinical suspicion is high, or in centres which lack facilities for radiological detection of SAH. Intracerebral haemorrhage and SAH following subarachnoid block have been reported in the literature, but this appears to be a rare event and the pathophysiology is unclear. To avoid the occurrence of an inadvertent dural puncture, an epidural technique was not selected because of the longer time of onset, relatively lower density of sensory blockade and increased risk of significant CSF leak or post-dural-puncture headache (PDPH).

A possible problem of a spinal block is the potential for sudden hypotension, which can not only compromise uterine perfusion, but also precipitate nausea and vomiting, which can aggravate raised ICP. In our patient, this was prevented by maintaining a narrow blood pressure margin with the use of small boluses of phenylephrine.

Patients with peripartum SAH generally present with headache. This can potentially confound diagnoses more commonly associated with pregnancy such as severe pre-eclampsia and PDPH. The latter is of particular concern for anaesthetists when assessing obstetric patients with atypical headaches after central neuraxial blockade. Conversely, worsening headache due to PDPH may confound the evaluation of a re-bleed. Fortunately, our patient did not experience this problem.

Conclusion
In this case report, a parturient woman, who developed acute SAH presented with complex clinical issues, which required multidisciplinary management. There is currently no consensus with regards to the best anaesthetic care for such patients undergoing urgent Caesarean section. Here we presented the case of a patient with SAH and minimal neurological deficit managed successfully under single shot spinal anaesthesia, demonstrating the myriad benefits and potential drawbacks of such a technique.

Abbreviations list
CSF, cerebrospinal fluid; CT, computed tomography; GA, general anaesthesia; GCS, Glasgow Coma Scale; ICP, intracranial pressure; LSCS, lower segment Caesarean section; PDPH, post-dural-puncture headache; RA, regional anaesthesia; SAH, subarachnoid haemorrhage.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References