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CASE REPORT

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Intracranial subdural hematoma after spinal anesthesia for cesarean section: A case report

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Abstract

Background: Intracranial subdural hematoma (ISH) is a known but rare complication of spinal anesthesia that mainly presents with persistent headaches.
Case presentation: A 35-year-old gravida 2 para 2 presented to the outpatient clinic with a history of headaches, dizziness, and vomiting for two days after an elective cesarean section under spinal anesthesia 20 days prior. Brain magnetic resonance imaging (MRI) revealed bilateral subdural hematomas. She was scheduled for burr hole craniotomy and was discharged five days post-evacuation. She presented seven days later with a two-day history of convulsions and headaches. A computed tomography scan revealed recurrent bilateral subdural hematomas that were evacuated via repeat burr hole craniotomy. Postoperatively, she developed blurred vision, diplopia, slurred speech, and episodes of loss of balance. A repeat MRI showed satisfactory clearance of the hematomas before discharge.
Conclusion: A high index of suspicion for ISH should be indicated in patients with severe and persistent headaches after spinal anesthesia not relieved by conservative treatment, especially with the onset of other neurological symptoms.

Keywords: intracranial subdural hematoma, spinal anesthesia, surgical management, craniotomy

Introduction

Spinal anesthesia is a commonly used mode of anesthesia, especially for obstetric cases. Intracranial subdural hematoma (ISH) is a rare complication of spinal anesthesia with an incidence of 1 in 500 000 cesarean deliveries (1). Intracranial subdural hematoma results from a dural puncture, accidental during epidural insertion, or intentional for anesthetic, diagnostic, or therapeutic indications. The main symptom is severe headache (2). It is often misdiagnosed as post-dural puncture headache (PDPH). This is a case of recurrent subdural hematoma after spinal anesthesia for cesarean section due to one previous scar.

Case presentation

A 35-year-old gravida 2 para 2 presented to the outpatient clinic at Aga Khan Hospital with a two-day history of headaches, dizziness, and vomiting. She had undergone an elective cesarean section due to one previous scar under spinal anesthesia 20 days prior to her current presentation. Her antenatal care was unremarkable. She was rhesus negative, had no history of coagulation disorders, use of anticoagulants, neurologic disease, or trauma. Spinal anesthesia was administered in a

sitting position at L3-L4 level space by a 25G Quincke needle with hyperbaric bupivacaine 12mg. Her delivery was uneventful. She experienced a headache on the second postoperative day, which was treated as PDPH with bed rest, intravenous fluids, and analgesics. She was discharged on the fifth postoperative day. A review on the eighteenth postoperative day was unremarkable.

On examination, her vital signs and laboratory investigations were normal. Magnetic resonance imaging (MRI) of the brain revealed bilateral acute on chronic subdural hematomas along the cerebral convexities, more significant on the right (Figure 1). Bilateral burr hole craniotomy was done, and large volumes of hematomas were evacuated. Her symptoms resolved, and she was discharged on the fourth postoperative day. She presented to the accident and emergency unit with a two-day history of persistent headaches, right-sided focal convulsions, and drowsiness seven days later. Her vital signs, physical exam, and laboratory tests were unremarkable. Computed tomography (CT) scan of the head revealed recurrent right acute on chronic subdural hematomas along the cerebral convexity (Figure 2). Repeat burr hole craniotomy was done for evacuation. Postoperatively, she developed blurred vision, diplopia, slurred speech, and episodes of loss of balance. A repeat MRI brain on the sixth postoperative day revealed satisfactory clearance of the hematomas. She was discharged on day seven post evacuation on anticonvulsants, physiotherapy, and speech therapy.

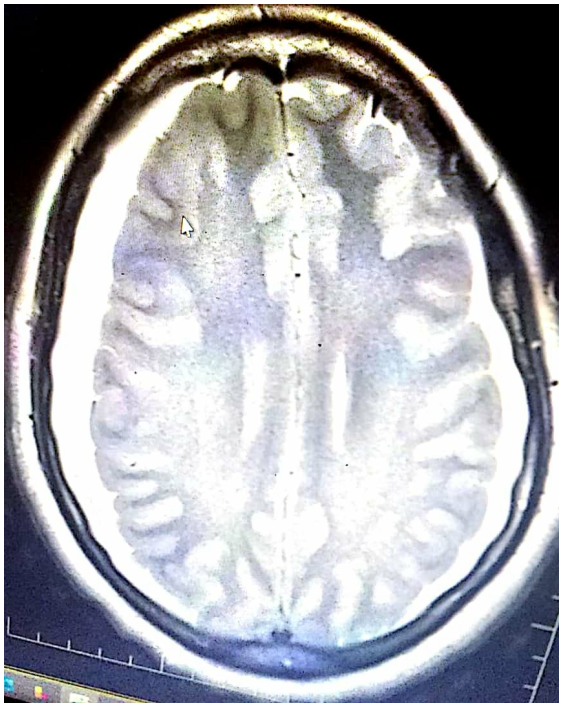

Figure 1: Magnetic resonance imaging (MRI) of the brain showing bilateral subdural hematoma

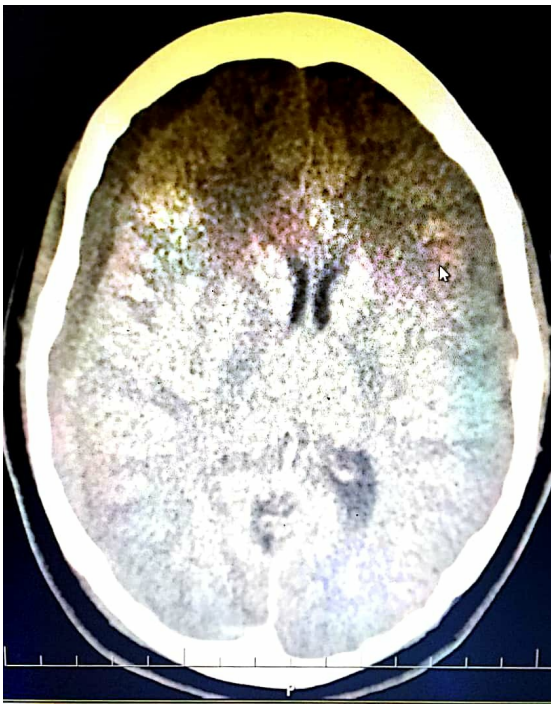

Figure 2: Computed tomography (CT) of the brain showing subdural hematoma

Discussion

Intracranial subdural hematoma is a potentially fatal complication of spinal anesthesia, with very few cases reported in the literature (3). It is postulated that there is loss of cerebrospinal fluid from dural matter puncture, which leads to a decrease in intracranial and intraspinal pressure causing caudal displacement of the brain and spinal cord. This causes stretching of intracranial subdural bridging veins and pain-sensitive structures (4), causing them to rupture, leading to blood extravasation and hematoma formation (5). The predisposing factors to ISH include female gender, young age, pregnancy, chronic alcoholism, diabetes mellitus, cardiovascular disease, anticoagulants, large-bore needles, multiple injection attempts during spinal anesthesia, cerebral vascular abnormalities, and brain atrophy (6). Pregnancy was the only predisposing factor in this case. Factors that may predispose obstetric patients to ISH include physiologic changes of pregnancy, postpartum diuresis, dehydration, more elastic dura, early ambulation, younger age, and the difference in cranial morphology based on gender (2).

The presentation of ISH can be acute (within 48-72 hours), sub-acute (3-20 days), and chronic (after three weeks) based on the time lapse between the time of spinal anesthesia and onset of symptoms (7). Symptoms may include severe headaches, diplopia, vertigo, convulsions, altered consciousness, hemiparesis, cranial nerve palsy, motor deficit, and dilation of the pupil ipsilateral to

the hematoma (2). Diagnosis is made using a CT scan of the head or brain MRI. Conservative or surgical intervention is the treatment modality of choice depending on the severity of symptoms and thickness of the hematoma. Conservative management (clinical observation with possible intracranial pressure monitoring) is recommended for patients with chronic subdural hematoma without neurological compromise. In acute hematoma and neurologically compromised cases, surgical evacuation by burr hole craniotomy is recommended (5). Besides neurological compromise, surgery is also indicated if there is a midline shift of more than 5mm or the hematoma is greater than 10mm in thickness. Epidural dural patching may be considered in cases where ISH has been established due to punctured dura, resulting in long-standing leakage of cerebrospinal fluid (8). In this case, the patient was managed surgically given that she had presented with severe headache with signs of raised intracranial pressure of dizziness and vomiting during the first presentation and convulsions in the second presentation. There is no benefit in outcome for routine follow-up brain CT after the evacuation of chronic subdural hematoma compared to brain CT performed in patients with persisting neurological deficits or deteriorating clinical conditions (9). Differential diagnoses of ISH include cluster headaches, migraines, preeclampsia, and eclampsia-associated headaches, PDPH, cerebral venous thrombosis, meningitis, cerebral vasoconstriction syndrome, pituitary hemorrhage, or drug-induced headaches (2,8).

Conclusion

A high index of suspicion for ISH should be indicated in patients with severe and persistent headaches after spinal anesthesia not relieved by conservative treatment, especially with the onset of other neurological symptoms.

Consent for publication

Informed consent for publication was obtained from the patient.

Acknowledgement

The authors acknowledge the patient for consenting to the publication of this case report.

Declarations

Conflict of interests

The authors declare no conflicts of interest.

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