

Intracranial hypotension with subdural hematoma after spinal anesthesia in obstetric patient: A rare but fatal complication

ABSTRACT

Intracranial bleed in the form of subdural hematoma (SDH) with intracranial hypotension after spinal anesthesia for cesarean section is a rare condition with an incidence of around 1 in 5,00,000 obstetric populations. As its presentation is similar to post-dural puncture headache (PDPH), it can be misdiagnosed sometimes. Persistent headache for more than 5 days, vomiting, blurring of vision, and convulsion can guide the diagnosis of intracranial bleed. Magnetic resonance imaging (MRI) helps to diagnose the location, size, and other abnormalities of bleed in such patients. The management ranges from conservative to surgical management in the form of craniotomy. Here, we present a case of a 19-year-old woman, who operated on for cesarean section under spinal anesthesia presented with SDH and intracranial hypotension on postoperative day (POD) 6. She was managed conservatively with plenty of intravenous (IV) fluids, bed rest, low head position, analgesics, and antiepileptics. A repeat computed tomography (CT) scan was performed after 14 days, which showed resolved SDH, and the patient was discharged.

Key words: Intracranial hypotension, LSCS, postspinal SDH, spinal anesthesia, subdural hemorrhage

Introduction

Intracranial bleeding with subdural hematoma (SDH) after spinal anesthesia is a rare and fatal complication with a reported incidence of 1 in 500000 obstetric populations.^[1] A cerebrospinal fluid (CSF) leak from the puncture site causes intracranial hypotension and pulling of brain matter, which can lead to persistent headache and SDH formation. Adequate analgesia with plenty of fluid helps in the management of these patients. In some patients, an emergency craniotomy may also be required.

Here, we present a case of SDH formation with intracranial hypotension after spinal anesthesia for cesarean section,

which was managed conservatively with a multidisciplinary approach. A repeat computed tomography (CT) scan showed resolved SDH, and the patient was discharged.

Case Details

A 19-year-old female primigravida was operated on for an emergency cesarean section (lower segment cesarean section (LSCS)) for meconium-stained liquor in another government hospital under spinal anesthesia. The patient was registered, and the antenatal course was uneventful as seen in her medical records. On postoperative day 6 (POD 6),

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How to cite this article: Kshirsagar SJ, Pande AH, Naik SV, Kamble NM. Intracranial hypotension with subdural hematoma after spinal anesthesia in obstetric patient: A rare but fatal complication. Saudi J Anaesth 2024;18:114-6.

Access this article online	
Website: https://journals.lww.com/sjan	Quick Response Code 
DOI: 10.4103/sja.sja_356_23	

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Submitted: 29-Apr-2023, **Accepted:** 30-Apr-2023, **Published:** 02-Jan-2024

she presented to the casualty with complaints of a frontal headache for 2 days, which was sudden in onset, generalized, aggravated in a sitting position, associated with vomiting, not associated with photophobia, and radiating to the neck, which was non-episodic and was getting relieved after lying down. She had an episode of vomiting in the morning, which was non-projectile in nature. There was no complaint of any neurological deficit, decreased movement of limbs, convulsion, blurring of vision, loss of consciousness, no history of trauma, or any coagulation disorder. On examination, the patient was afebrile, conscious, and oriented to time, place, and person. Heart rate was 78/min, blood pressure was 102/62 mm Hg, and saturation was 99% in room air. The medical history was nonsignificant, and there was no history of any surgery in the past. The biochemical investigations were normal in the preoperative and postoperative periods (hemoglobin: 11.2 mg/dl, total leukocyte count: 9.2 mg/dl, platelet count: 355, creatinine: 0.75 mg/dl, serum sodium: 131.67 mmol/l, serum potassium: 3.41 mmol/l, prothrombin time (PT)/international normalized ratio (INR): 15.5/1.19).

Spinal anesthesia was given for LSCS by 25G Quincke's spinal needle, and 8 mg of hyperbaric bupivacaine was used. A total of three attempts were taken for dural puncture. On POD 1, the patient started complaining of a headache in the occipital region, which was aggravated in a sitting position and was relieved by lying down and analgesics. The patient was diagnosed to have post-dural puncture headache (PDPH), which was managed with analgesics (caffeine plus paracetamol) and intravenous (IV) fluids. PDPH was resolved, and the patient was discharged on POD 3. On POD 6, the patient started having a frontal headache and had an episode of vomiting. MRI brain was performed, and it showed having thin early acute SDH in bilateral frontal, parietal, and temporal lobes of 3.4 mm

thickness [Figures 1 and 2]. Congestion of superior sagittal sinus, straight sinus, right transverse and sigmoid sinuses, and vein of Galen was also seen. Dural or cerebral venous sinus thrombosis was not seen. A neurosurgery opinion was taken, and conservative management was advised with antiepileptics (injection of levetiracetam 1 gm stat followed by 500 mg twice a day) for 15 days. Adequate analgesics (injection of paracetamol 1 gm thrice a day, injection of diclofenac sodium 75 mg twice a day, and injection of tramadol 50 mg sos) were given with adequate IV fluids and oral fluids. The patient was discharged after 3 days and was advised to repeat the CT scan after 15 days, which showed resolved SDH. The antiepileptic was stopped, and the patient's complaints were resolved.

Discussion

Spinal anesthesia is a safe and popular anesthesia technique for cesarean section in elective and emergency indications. Though considered safe, it can cause rare but fatal complications such as intracranial bleeding with intracranial hypotension or hypertension.^[2-4] A CSF leak from the puncture site is the cause of all the manifestations.^[5]

A common presenting feature of SDH is severe headache, and nausea and vomiting with decreased consciousness may be seen in large hematoma cases. The headache is due to the descent of the brain, which causes traction on the meninges and cervical nerve roots. It may also be due to dilation of intracerebral vessels due to changes in vascular tone and CSF leak. A CSF leak is due to cell diapedesis and protein leakage.^[6,7]

Hematoma formation is due to traction on the cerebral and cerebellar veins due to decreased intracranial pressure

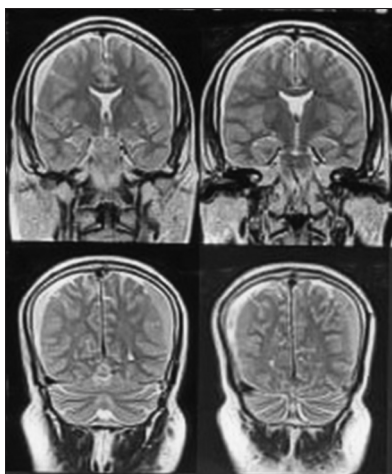


Figure 1: T2 coronal sections reveal thin concavo-convex SDH (T2 hyperintense collection) along bilateral fronto parietal regions

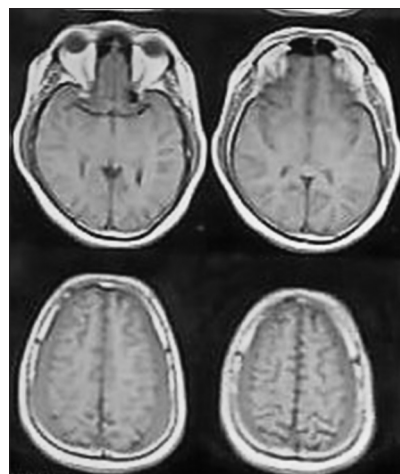


Figure 2: T1 axial reveal thin concavo-convex SDH (T1 hypointense collection) along bilateral fronto parietal regions

(ICP).^[6,8,9] When ICP was measured in some patients, it was found to be around 6 cm of H₂O (normal levels are 10 to 15 cm of H₂O),^[10] but it is an invasive procedure, which can further decrease the ICP. Also, when MRI is available invasive procedures are not indicated. MRI can show intracranial bleed and its locations, and also, thickening of meninges can be seen. A most common cause of SDH is traumatic brain injury in patients on anticoagulants. In our patient, a history of trauma and anticoagulant was absent. She had undergone spinal anesthesia for a cesarean section, which can be the cause of CSF leak leading to traction on cerebral veins and hematoma formation.

Management of these patients differs depending on the symptoms, size, location of the hematoma, and midline shift of the patient. It ranges from conservative management to surgical intervention in the form of craniotomy. Initial management starts with plenty of IV fluids to replace the CSF lost and compensate for the dilated veins. A low head position along with complete bed rest is advised. Analgesics such as paracetamol with caffeine and tramadol form the mainstay of treatment. In severe cases not responding to analgesics, an epidural blood patch for CSF leak is suggested.^[11] Continuous infusion of saline through epidural is tried in some cases.^[12] If there is a decrease in patients' Glasgow Coma Scale (GCS) or an increase in the size of hematoma or large hematoma, craniotomy is advised with a neurosurgery opinion.^[13]

Even though it is a rare cause, intracranial bleed should be suspected in patients with persistent headache and multidisciplinary approach with early diagnosis and treatment helps in improving the outcome of the patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published

and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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