

Spontaneous Subarachnoid Haemorrhage in an Obstetric Patient Post Spinal Anaesthesia

Sir,
Spontaneous subarachnoid haemorrhage (SAH) is a rare and serious aetiology of headache. Only few cases have been reported showing SAH as one of the complications of dural puncture.^[1-3] It is a serious and catastrophic complication. It

should be considered when assessing patients with prolonged and non-postural post-dural puncture headache (PDPH). The annual incidence of SAH ranges from 2 to 25 per 100,000 people. Most common causes of SAH are intracranial aneurysm (51–80%), hypertensive diseases (15%) followed

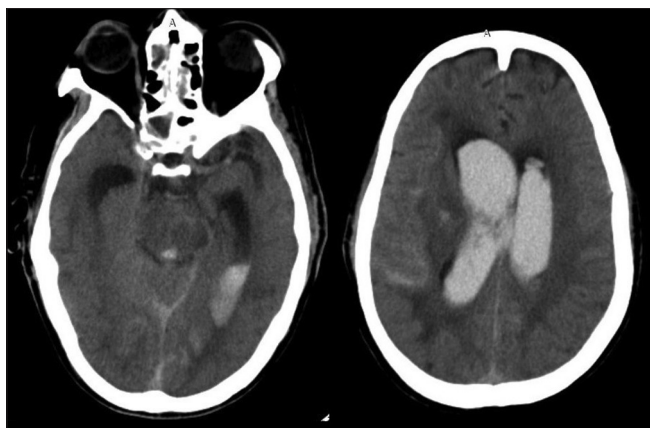


Figure 1: Subarachnoid haemorrhage with intraventricular extension

by arteriovenous malformations (AVMs) (5–10%). Other rare causes are intracranial infections, intracranial tumour, blood coagulopathies and dyscrasias. However, no cause could be identified in 5–10% cases.^[4] The incidence of spontaneous SAH in pregnancy increases by 5-fold, mostly attributable to increase in higher risk of aneurysmal rupture and re-bleed in AVM during pregnancy.^[5]

A 25-year-old female (gravida 4, para 3) was presented to our hospital with severe headache for 1 day. A day prior, patient had history of lower segment caesarean section (LSCS) in a peripheral hospital in view of foetal distress. She had three normal vaginal deliveries. There was no significant medical/personal history. According to the notes received, she had uneventful antepartum period. During the operation, patient was given spinal anaesthesia in left lateral position at the level of L3/L4 intervertebral space. The procedure was performed using a 24 G spinal needle. Strict asepsis was maintained. Clear cerebrospinal fluid (CSF) was obtained in the first attempt. A 2.5 mL of heavy bupivacaine was slowly injected. A sensory blockade at the level of T6 was achieved within 10 min. She delivered a healthy baby of 2.7 kg. Vitals were stable throughout the operation with blood pressure ranging between 110/70 and 132/82 while the heart rate ranged between 68 bpm and 84 bpm.

30 min after the operation, patient started complaining of severe headache, throbbing in nature with multiple episodes of vomiting. Symptoms were not relieved by conservative measures, IV fluids and analgesics. Patient was referred to our hospital for further management. She was received with complaints of persistent severe headache with vomiting for 1 day. There was no history of loss of consciousness, abnormal body movements, weakness or loss of sensation in any part of body, fever, double vision, postural variation of headache, head trauma or similar complaints in past. On examination, vitals were normal with blood pressure of 126/84 and pulse 70 bpm, respiratory rate of 14 per min and temperature of 98.8°F.

Glasgow coma score was 15/15 with no signs of meningeal irritation. Neurological examination and rest of systemic examination was also normal.

All routine investigations were within normal limits. Electrocardiogram and 2-dimensional echocardiography were also normal. Cranial computed tomography (CT) showed SAH with intraventricular extension into bilateral lateral and fourth ventricles [Figure 1]. Digital subtracted angiography (DSA) was done to rule out aneurysm or other vascular anomalies. The result was normal with no evidence of any intracranial vascular abnormality. After a Neurosurgery consult—patient was managed conservatively with intravenous injection of mannitol 100 cc 8 hourly, nimodipine tablet 60 mg 6 hourly and intravenous injection of furosemide 20 mg 12 hourly. Repeat CT-head and MRI-head showed resolving subarachnoid haemorrhage. Patient improved symptomatically and was discharged after 4 days. She has been asymptomatic in follow-up visits.

Following differential diagnosis of sudden severe headache post-LSCS under spinal anaesthesia were considered initially – PDPH, pre-eclampsia, migraine, intra cranial vascular event, venous sinus thrombosis and post-partum cerebral angiopathy.

However, in our case PDPH was less likely as it usually occurs after 12 hours. Pre-eclampsia was ruled out in view of normal blood pressure records and no evidence of proteinuria. Migraine was less likely as patient had no history of similar headache in past. Intracranial vascular event could have been considered in view of sudden and severe headache, but neurological examination was normal.

Very few studies have described intracranial haemorrhage after lumbar puncture especially in obstetric patients. Most of these studies showed a subdural hematoma,^[6,7] a few described intra-parenchymal bleed.^[8] There are only few similar case reports which describe the occurrence of SAH after spinal anaesthesia with bupivacaine in obstetric patient [Table 1].^[1-3] In one of the German case reports by Böttiger *et al.*, it was postulated that a CSF leak may lead to decreased intracranial tension. This can result in increased transmural pressure across the artery, causing rupture leading to haemorrhage.^[9] Substantiating this theory, spinal and epidural anaesthesia have been contraindicated in patients with persisting low pressure in the CSF system or known intracranial vascular malformations.^[10]

All the common causes of SAH were excluded in the patient. In absence of any risk factor the occurrence of SAH immediately after bupivacaine induced spinal anaesthesia points towards a causal relationship. However, we cannot comfortably ascribe it to either procedure or drug related, and more studies need to be done to confirm the same.

Prolonged and non-postural PDPH with spinal anaesthesia should be regarded as a warning sign of SAH. Physicians

Table 1: Case reports of spontaneous subarachnoid haemorrhage in obstetric patients post spinal anaesthesia

Number	Title of case report	Author(s) and year of publication	Case summary
CASE 1	Subarachnoid haemorrhage following spinal anaesthesia for caesarean sections.	Shay A, Liu L, Chu A, Theil F, Divon M from Lenox Hill hospital NY, 2016.	26-year-old multigravida developed sudden severe headache immediately after spinal anaesthesia with bupivacaine.
CASE 2	Subarachnoid haemorrhage after central neuroaxial blockade: An accidental finding.	N Ratan Singh, T Hemjit Singh, M Rameshwar Singh1, Laithangbam PKS from Regional Institute of Medical Sciences, India, 2013.	27-year-old primigravida with LSCS developed sudden severe headache 90 min after spinal anaesthesia with bupivacaine.
CASE 2	Subarachnoid haemorrhage following spinal anaesthesia in an obstetric patient.	Eggert SM, Eggers KA from Wales Hospital UK, 2001.	29-year-old multigravida women developed sudden severe headache with vomiting 5 min after spinal anaesthesia with bupivacaine.

should be aware of this rare and dreadful presentation and complication of post dural puncture especially when bupivacaine is used.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published, and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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