

Post Dural Puncture Headache following Spinal Anaesthesia for Caesarean Section

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DEAR EDITOR,

After undergoing caesarean section with spinal anaesthesia, post partal mothers may develop spinal headache likely due to the leakage of cerebrospinal fluid (CSF) at the puncture site leading to traction on the cranial contents giving rise to reflex cerebral vasodilatation. This type of headache is mild and self-limiting but may be persistent and severe at times as is described below.

A 26-year-old Primipara (58 kg, 156 cm) got admitted at 40 weeks of gestation for safe confinement. The medical history and laboratory examinations were unremarkable with no recordings of arterial hypertension or neurologic complaints. She was induced with cerviprime following which there were good uterine contractions and cervical dilatation up to 5 cm beyond which there was no further progression. With the indication of failure to progress, decision for CS was taken.

In the operation theatre (OT) she was positioned supine with left lateral displacement by putting a wedge under the right hip. A 3-lead ECG monitor, pulse oximeter and an automated non-invasive arterial blood pressure monitor was applied. Baseline systolic, diastolic and mean arterial pressures were noted. After an initial IV preload of lactated Ringer's solution (800 mL), a spinal block was performed with 27-gauge Quincke needle at L3-4 level, using a midline approach. On first attempt, clear CSF was obtained, followed by slow injection of 12 mg 0.5% hyperbaric bupivacaine to achieve a T-4 sensory level for surgery, which proceeded uneventfully with stable vital signs. She was then positioned supine with the wedge under the right hip, and oxygen was given at a rate of 5L/min via a facemask.

A healthy male baby (2.74 kg; Apgar score, 8/10, 9/10) was delivered and removal of placenta and membranes were done. The baby had two loops of tight cord around the neck.

Vital signs were normal in the postoperative care unit; motor and sensory block had totally worn off 3 hours after spinal anesthesia. Two days postoperatively, she developed severe frontal headache particularly, when in an erect position that got relieved on supine position (Visual Analog Pain Scale, VAPS reading of 8/10). On the following day, headache worsened to severe throbbing pain (VAPS, 10/10) over the occipital area with the development of neck stiffness, nausea, vomiting and dizziness. Arterial blood pressure was 130 mm Hg (systolic) over 75 mm Hg (diastolic). After 4 days of supportive therapy, including oral analgesics (acetaminophen, 2 g/d), aggressive intravascular hydration (lactated Ringer's solution, 3000 ml/d) and bed rest with the foot end elevated, headache subsided (VAPS, 2/10). Routine hematologic biochemical tests as well as echocardiogram were normal. During this period of hospitalization, no episode of marked hypertension was noted; the patient's arterial blood pressure was within the range of 110-140 mm Hg (systolic) over 60-80 mm Hg (diastolic) before and throughout the development of clinical symptoms. Headache and dizziness completely subsided on 5th postoperative day and neurologic examination was normal, so discharged with normal follow up visit a month later.

Post Dural Puncture Headache (PDPH) also called spinal headache is a characteristic headache that begins within 12-24 hours and may last a week or more. It is postural, being made worse by raising the head and relieved by lying

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down. It is often occipital and may be associated with a stiff neck. It is frequently accompanied by nausea, vomiting, dizziness, tinnitus, vertigo, hearing loss, visual disturbances such as photophobia, diplopia or cortical blindness and paraesthesia of the scalp, and upper and lower limb pain.

It is said to be more common in the younger women having incidence of 0.5-1%, undergoing CS and frequently met in teaching hospitals compared to non-teaching hospitals.¹

Refinements in lumbar needle size and shape as well as procedural techniques have reduced the tissue trauma that predisposed headache. The extradural pressure increase is variable with different type of needle. As the needle pierces dura CSF leaks out from the sub-arachnoid space to epidural space, dropping the pressure inside the dura creating imbalance in the pressures between CSF and spinal fluid. This simultaneously decreases the cushioning effect of the fluid thus such that the tension is directly applied to the nerves. The degree of pressure imbalance determines the degree of the headache and smaller needle causing smaller leak is proven to be better [16, 20, 25 gauge needle is responsible in causing pain in 75, 15 and 3%]. It is widely considered that pencil-point needles (Whiteacre or Sprotte) that make a smaller hole in the dura are better than conventional cutting-edged needles (Quincke).² A study done to investigate whether the Sprotte needle causes less leakage of CSF than the Quincke needle showed that the decrease in intradural pressure was 9.7 ± 1.8 mm H₂O with the Sprotte needle and 20.5 ± 2.7 mm H₂O with the Quincke needle ($P < 0.05$). The volume of leakage of CSF was 2.0 ± 0.3 ml.

Very few complication of PDPH is known to follow SA for CS. Three of 120 who developed PDPH were young women who were exposed to more than one attempt at spinal block during CS.² EBP has been performed aseptically

by injecting 15-20ml of the patient's own blood into the epidural space with the view that the injected blood clots thereby sealing the rent thus preventing further leakage of CSF. EBP has been applied in 0.4% (1:251) for PDPH.³

In 48 women with EBP only 33% obtained complete relief, 50% partial relief and 12% no relief; 29% required a second EBP of which 50% were completely successful, 36% were partially successful and 14% gave no relief. A possibility to determine for estimating the optimal volume of autologous blood necessary to be injected for epidural blood patch (EBP) for the treatment of PDPH after CS with spinal anaesthesia using USG has come into recent practice.⁴ A number of interventions, such as bed rest, hydration, caffeine administration, abdominal binding and epidural blood patch have been suggested to prevent and relieve the headaches that follow spinal anaesthesia so that discomfort to the post natal breastfeeding mother from Post-dural puncture headache is reduced, to address to the best of neonatal care and benefit.

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