Letter to the Editor

Anesthetic management of a pregnant patient with cerebral angioma scheduled for caesarean section

A B S T R A C T

Pregnancy can be rarely complicated with cerebral angioma. Such patients can pose a problem to the anesthesiologist and can present for caesarean section (CS). The main anesthetic challenge is prevention of rupture of angioma and subsequent bleed due to intraoperative surge of blood pressure. Both general anesthesia and regional anesthesia have been used in such patients. Spinal anesthesia has the advantage of safety, less hypertensive surge, and better analgesia as well as less blood loss. We hereby present successful anesthetic management of such a case presented for emergency CS done under spinal anesthesia.

Dear Editor

A 31-year-old 2nd gravida (62 kg weight, 155 cm height) presented at 37 weeks of pregnancy in labor pain. She was a diagnosed case of multiple cerebral cavernous angioma and was not on any regular medicine. Her cerebral angioma was diagnosed by magnetic resonance imaging, which showed six small angiomas and one large (1.5 cm × 1.2 cm) angioma in the left hemisphere. There was no persistent neurological deficit. In her previous pregnancy, she had epidural anesthesia for labor pain and had subsequent lower segment caesarean section (LSCS). Considering the small size of the angiomas the neurologists as well as the obstetrician decided to go for expectant treatment and to prevent straining in labor with the use of epidural analgesia and instrumental delivery. Apart from this, there was no other significant history and her routine preoperative check up and investigations were within normal limits. During her whole pregnancy, she did not have any complaint suggestive of raised intracranial pressure (ICP). She agreed to spinal anesthesia. She was given intravenous ranitidine (50 mg) and oral sodium citrate (0.3M, 30 mL).

She was scheduled for emergency LSCS for non-progress of labor. Two large bore intravenous accesses (18 G) were established in the theatre. Spinal anesthesia was inserted in the L3-4 interspace in the sitting position using a 25 G Whitacre needle (BD, The Danby Building, Edmund Halley Road, Oxford Science Park, Oxford OX4 4DQ, England) and 10 mg of heavy bupivacaine; 100 μg of morphine and 20 μg of fentanyl were injected intrathecally after free flow of cerebrospinal fluid. After that, she was positioned supine and a right hip wedge was placed. She received intravenous cefuroxime (1.5 g) and metronidazole (500 mg). Block was tested and found to be up to T6. LSCS was done uneventfully. Her intraoperative blood loss was 1.2 L and she received 3 L of crystalloids. She received bolus (5 IU) and infusion (40 IU mixed with 500 mL of normal saline at 100 mL/h) of oxytocin after delivery of her baby. Her hemodynamic parameters remained stable throughout without needing any vasopressor. She also received paracetamol (1 g) and diclofenac (100 mg) via the per rectal route at the end of surgery. After the end of surgery, she was transferred to the post-anesthesia care unit. She recovered uneventfully and was transferred to a ward in due course.

Cavernous angioma is a congenital form of arteriovenous malformation typically detected in the 2nd-4th decades of life.1,2 It can present with intracranial hemorrhage (ICH; 41%), convulsion (40–70%), focal neurological defects (35–50%), and headache (10–30%).2 The incidence of ICH in pregnancy is about 1–10/100,000 pregnancies and it is the 3rd important cause of non-obstetrical maternal morbidity and mortality (40%).1,3,4 The majority advises conservative management of nonruptured angioma in pregnant patients.5 Risk of rupture of arteriovenous malformation during pregnancy is 3.5%, which is equal to nonpregnant women.1,5

Perioperative management of such a patient should be done with a multidisciplinary approach.1,4 Anesthetic choice is governed by the fetomaternal safety and hemodynamic control.1,4 The main goal of anesthesia is to maintain hemodynamic stability ensuring adequate uteroplacental perfusion and fetal oxygenation, maintenance of adequate depth of anesthesia, avoidance of surge of ICP and risk of rupture.6 No anesthetic technique has been found to be superior to another.4,5 The most important problem in perioperative management of such patients is rupture of angioma due to hypertensive surge.7 Although general anesthesia has been safely

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used in such patients in emergency LSCS, neuraxial anesthesia has the advantage of avoidance of hemodynamic response to intubation, extubation, lesser risk of aspiration, better analgesia, and lesser incidences of nausea and vomiting, thus avoiding a sudden rise in ICP apart from the feasibility of monitoring of sensorium in awake patients and lesser intraoperative blood loss.\textsuperscript{1,3,4} By contrast, neuraxial anesthesia induced sympathetic blockade can lead to a precipitous fall of blood pressure, which can compromise cerebral perfusion and may lead to nausea and vomiting and a subsequent rise in ICP.\textsuperscript{4} Epidural analgesia has the advantages of avoidance of postdural puncture headache if accidental dural puncture can be avoided and thus lesser risk of ICH due to cerebrospinal fluid leak\textsuperscript{4}; however, it can lead to a rise in epidural pressure.\textsuperscript{5} The patient presented to us in active labor and considering her stage, the obstetrician decided to perform a CS immediately; thus, there was no time for management of labor pain. We decided to perform spinal anesthesia as it was an emergency surgery and it has the above-mentioned advantages over general anesthesia. It is our routine institutional practice to combine a short acting lipophilic opioid like fentanyl for immediate onset analgesia and a long acting hydrophilic opioid like morphine to give long lasting analgesia for 20–24 hours. However, morphine has a longer time of onset, thus fentanyl is added to give immediate analgesia and morphine for longer analgesia. Both opioids are combined to reduce the requirement of a local anesthetic and thus the side effects, namely hypotension.

\textbf{Conflict of interest}

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