Anesthetic management of a patient with Sheehan’s syndrome and twin pregnancy while undergoing a cesarean section

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ABSTRACT
Sheehan’s syndrome (SS) is caused by infarction of the pituitary gland usually precipitated by hypotension due to massive uterine hemorrhage during the peripartum period. Once SS develops, it becomes a major comorbidity for the young females and predisposes them to further medical, obstetric, and anesthetic complications. Herein, we report the perioperative anesthetic management of a 28-year-old female, already diagnosed with SS precipitated by urosepsis and septicemic shock in a previous pregnancy, now presenting with twin pregnancy for elective cesarean section. Her magnetic resonance imaging brain revealed pituitary apoplexy and she had hypothyroidism with gestational diabetes mellitus. The overall successful perioperative management of the patient is described along with an emphasis on aggressive management of hypotension due to any cause in the peripartum period to prevent infarction/necrosis of anterior pituitary gland.

KEY WORDS: Anesthesia, hypopituitarism, obstetrical, postpartum, Sheehan syndrome

Introduction

The anterior pituitary gland in the human body gets necrosed due to hypovolemia and hypotension, usually during postpartum hemorrhage, leading to Sheehan syndrome (SS) which is a major cause of hypopituitarism in underdeveloped and developing nations. Patients who get affected are usually young females who are at high risk of further medical, obstetric, and anesthetic complications. We report successful anesthetic management of a 28-year-old female with a twin pregnancy and SS undergoing elective lower segment cesarean section (LSCS).

Case Report

A gravida 2 and live 0, 28-year-old female patient was admitted in our institute at 34 weeks of period of gestation (POG) for safe confinement. During her previous pregnancy 2 years back, she had suffered from pyrexia due to pyonephritis, severe hyperglycemia, metabolic acidosis, pyrexia, acute kidney injury, septicemic shock, bilateral pleural effusion, and respiratory distress leading to loss of the fetus. During previous hospitalization, she was managed with drainage of pus, broad-spectrum antibiotics, and even required two cycles of hemodialysis.

Later, she underwent complete hormonal workup for the inability to conceive and was diagnosed to have hypothyroidism with serum cortisol levels in equivocal range. Magnetic resonance imaging (MRI) of the brain was suggestive of pituitary apoplexy and diagnosis of SS was established. She was started on tablet hydrocortisone 10 mg/day along with tablet thyroxine 88 mcg once a day. After few months, she conceived via intrauterine insemination (IUI) and had diamniotic monochorionic twins. She also had gestational diabetes mellitus (GDM) during this pregnancy in addition to SS. In view of multiple metabolic derangements and intrauterine growth retardation of fetuses, an elective LSCS
was planned at 36th week of gestation. The patient was co-operative, conscious, and her vitals were stable. Her height was 152 cm and she weighed 65 kg.

As the patient had twin pregnancy with multiple metabolic and endocrinological issues, subarachnoid block with adjuvant, added to a local anesthetic drug with invasive blood pressure monitoring and perioperative intravenous hydrocortisone supplementation was planned for her and she was counseled for the same. She was kept nil per oral 8 h prior to surgery, advised to take tablet thyroxine, tablet ranitidine 150 mg and tablet metoclopramide 10 mg on the morning of surgery, 2 h prior to shifting to the operating room with sips of water. Her fasting blood sugar was 124 mg/dL and the morning dose of insulin was withheld. She was shifted to the operating room in the left lateral position.

Injection hydrocortisone 100 mg intravenously (i/v) was administered in the operating room followed by an infusion of 4 mg/h till oral intake started postoperatively. Though the surgery was planned under the subarachnoid block, a backup for general anesthesia in case of any emergency of block failure was also kept ready with appropriate preparations to manage the airway in a term pregnant patient. After applying electrocardiogram, pulse oximetry, and noninvasive blood pressure monitoring; two wide bores i/v cannulae were inserted. A 20-gauge arterial cannula was placed in the left radial artery under local anesthesia (0.5 mL of 2% lignocaine) for invasive blood pressure monitoring. Supplemental oxygen was given via venturi mask with FiO2 of 0.4% and oxygen flow of 8 L/min. Subarachnoid block was administered at L4-L5 intervertebral disc space using 26-gauge Quincke spinal needle with the patient in the left lateral position and drug 1.5 mL (7.5 mg) of hyperbaric, 0.5% bupivacaine, and 20 µg fentanyl (0.4 mL) was placed intrathecally. The patient was made supine and a wedge was placed for left lateral tilt. The surgery commenced when the level of the block was achieved until T4. A lower segment cesarean section was conducted with adequate hemostasis achieved at the end of the surgery. Intraoperatively, three episodes of hypotension (defined as a 20% decrease from baseline) about 6 min after subarachnoid block were managed with bolus dosing of injection phenylephrine 50 mcg. Patient delivered two live male babies with APGAR scores of 7/10 and 8/10 at 1 min, weighing 1.8 kg and 2.0 kg. The babies had no major complication nor required supplemental oxygen. They were shifted to the neonatal intensive care unit and kept under observation. Injection oxytocin infusion was started after delivery of the second baby. The intraoperative blood loss was about 800 mL and the duration of surgery was 60 min. Intraoperative arterial blood gas analysis (ABG) and blood sugar levels were within normal limits.

The level of sensory block regressed to T10 within 2 h of the subarachnoid block. In the postoperative period, the patient was managed in high dependency unit for first 48 h and she received injection paracetamol 1 g i/v six hourly for postoperative pain relief. The patient and the babies were followed for 7 days and the postoperative period remained uneventful.

**Discussion**

A patient with Sheehan syndrome being presented for surgery poses a big challenge to the anesthetist as well as the surgical team. Our patient was posted for elective LSCS in view of IUGR in both fetuses and multiple endocrinologic issues. As per literature, a second pregnancy is possible in a patient with SS if there is no atrophy of the genital tract. However, our patient had difficulty in conceiving for the second time, hence underwent IUI. It has also been described that second pregnancy can lead to improvement of the condition and eventually cure, provided the peripartum period is uneventful. This could be due to the stimulation of maternal pituitary during pregnancy or due to fetal or placental hormones. Moreover, the clinical improvement in subsequent pregnancy masks the characteristic signs and symptoms of SS in a gravid patient.\(^{[5-3]}\)

An extensive literature search by Matsuzaki et al. revealed that anemia, hypotension, and postpartum hemorrhage are the three leading causes which predispose young women to SS.\(^{[4-6]}\) Our patient had sepsis and hypotension during her previous pregnancy. Hypotension due to any cause must be aggressively managed in the peripartum period as these young survivors are at risk of developing SS, which itself becomes a major comorbid condition.

We chose subarachnoid block in our patient as it avoided the risks of general anesthesia for a pregnant woman with a twin pregnancy. Moreover, invasive arterial blood pressure recording helped ascertain beat-to-beat blood pressure accurately for better hemodynamic monitoring. The addition of fentanyl (0.4 mL) to 1.5 mL of bupivacaine helped achieve sensory blockade till T4. Using bupivacaine in a low dose of <2 mL prevented precipitation of severe hypotension. Perioperative intravenous steroid administration was continued since the patient had been taking oral steroids during the preoperative period.

Kubler and colleagues have even reported an increased incidence of obstetric complications in patients with SS. In 27 cases out of a total of 31, they found a peripartum obstetric complication.\(^{[3]}\) Our patient suffered from GDM during the peripartum period and required insulin therapy. Moreover, she required intrauterine insemination to conceive.

The anesthetic complications in a patient with SS include hypotension not responding to the standard regimen, decrease in core body temperature, less anesthetic drug requirement due to reduced metabolism, higher incidence of postoperative gastrointestinal and neuropsychiatric complications, electrolyte and coagulation disturbances, delayed emergence from anesthesia, perioperative stress management, and steroid management.\(^{[6]}\) Considering all these issues, we planned surgery under the subarachnoid block with a reduced amount of local anesthetic agent. However, we did establish invasive blood pressure monitoring for beat-to-beat monitoring of hemodynamics. No sedatives were used, and the patient had early recovery and ambulation after surgery.

In a case report of a patient with hypopituitarism undergoing epigastric hernioplasty, the authors reported delayed awakening
and residual neuromuscular blockade for which the patient required postoperative mechanical ventilation for a day despite preoperative optimization. They also used depth of anesthesia as well as neuromuscular monitoring during surgery but the patient experienced hypotension requiring inotropes, had delayed awakening from general anesthesia and required postoperative mechanical ventilation.[7] Thus, whenever these patients are taken up for surgery, a possibility of postoperative mechanical ventilation must be anticipated.

An extensive review of the literature does not reveal any consensus, guideline, or randomized trial for safe anesthetic management of patients with SS. Thus, the perioperative management of these patients requires extreme vigilance along with overall successful management based on close communication between the endocrinologist, surgeon, and anesthetist.

Declaration of patient consent
The authors certify that appropriate patient consent was obtained.

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Conflicts of interest
There are no conflicts of interest.

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