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Anesthetic management of Guillain Barre Syndrome in a pregnant woman

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Abstract
Guillain-Barre syndrome (GBS) is an acute demyelinating polyneuropathy with symmetrical weakness characterized by loss of sensation and reflexes. During pregnancy the morbidity and mortality of GBS is high. GBS patients are prone to acute respiratory failure due to weaknes of respiratory muscles, hypotension associated with autonomic dysfunction, hemodynamic instability such as the development of hypertension and arrhythmia. Patients may need intensive care. The anesthetic technique for pregnant women with Guillain-Barre syndrome requiring cesarean section remains at discretion of the anesthesiologist, who should be guided by the clinical conditions and comorbidities of each patient. Therefore, we aimed to present the anesthetic management of cesarean planned in a GBS case.

Keywords: Guillain Barre Syndrome; Pregnancy; Epidural Anesthesia.

INTRODUCTION

Guillain Barre Syndrome (GBS) is acute demyelinating polyneuropathy, and characterized with symmetric weakness, and loss of sense and reflex. The incidence varies between 1.2-1.9 case/10000. When develops during pregnancy, the morbidity and mortality rates are high (1-7).

Although the exact reason is not defined, the majority of patients have previous respiratory tract or gastrointestinal system infection history. The symptoms typically start from the feet and spreads upwards symmetrically. In some patients, quadriplegia follows motor weakness and sensory block. The patients with GBS are prone to hemodynamic instability developments like acute respiratory insufficiency, hypotension due to autonomic dysfunction, hypertension, and arrhythmia because their respiratory muscles are affected. Mechanic ventilation treatment is necessary in intensive care units in 25-30% of the patients, and 4-15% of the patient are lost (1). For this reason, we aimed to present the anesthetic approach in our GBS case undergoing caesarean section.

CASE REPORT

A-33 year-old pregnant woman that had no additional disease in her history had a complaint of a weakness on her right arm one month before her pregnancy. Then, speech impairment at the 3rd month, and difficulty in walking at the 5th month of her pregnancy was observed. The patient has diagnosed as GBS was referred to our hospital after administration of five dose of intravenous immunoglobulin therapy (IVIG). Numbness and motor weakness were determined on both upper and right lower limb during neurological examination by Department of Neurology. There was evidence supporting the involvement of anterior horn. So, a single dose of IVIG therapy was continued monthly until the operation. The patient was scheduled for elective caesarean section in the 38th week of gestation by the Department of Obstetric. In the preoperative neurologic examination, it was detected that the weakness on her left upper limb was diminished however the weakness of right upper and right lower limb and the speech impairment persist and it was recommended to administer a single dose of IVIG therapy at the postoperative period and then, to continue the IVIG therapy once in three months.

After she was taken to the operation room, ECG, SpO_2, noninvasive blood pressure and routine monitoring were applied. The preoperative values were as follows: heart rate 80 beat/min; SpO_2: 98%; blood pressure: 130/80 mmHg. The vascular access was placed with 18 Gauge intravenous cannula and the patient received 500 mL colloid solution until the preparations were completed. Epidural anesthesia was performed in sitting position via L_{4-5} interspace with 18 Gauge Touhy needle by using loss of resistance method. After epidural anesthesia, immediate simultaneous colloid infusion was applied with the help of blood pump. The epidural catheter was tested with 45 mg lidocaine and 15 µg epinephrine. Following the verification of the place of the catheter, 9

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mL lidocaine and 1 mL sodium bicarbonate was administered through epidural catheter as 5 mL top-ups dosages. In the 10th minute, 5 mL lidocaine bicarbonate combination was given additionally. Since the adequate sensory block level was not achieved with these doses, 5 mL 0.5% bupivacaine was administered at the 15th min. The sensory block level reached T_4 in the 20th minute and the operation was allowed. A healthy baby was delivered 4 min after skin incision. The 1st and 5th min Apgar score of the baby was 8 and 10, respectively. After delivery, intravenous bolus dose of oxytocin 3 units was administered slowly and infusion of 20 IU oxytocin/1000 mL Ringer Lactate was started. A 20% decrease in the systolic blood pressure according to basal was accepted as hypotension, 10 mg ephedrine treatment was planned; however, no ephedrine was needed. Morphine 4 mg with 10 mL 0.125% mL bupivacaine solution was given via epidural catheter as postoperative analgesic. The patient was hemodynamically stable and showed no signs of autonomic nervous system dysfunction throughout the operation.

The heart rate: 72 beat/min, SpO_2: 100%, blood pressure: 112/76 mmHg were recorded in the recovery room. Patient was discharged to Obstetric and Gynecology department, and no hemodynamic and respiratory instability were observed during postoperative period. At the first postoperative day IVIG therapy was administered. The patient was discharged home at the second postoperative day due to no exacerbation in the neurological signs.

DISCUSSION

The selection of labor analgesia and caesarean anesthesia methods in GBS is very important. Some cases that were given general anesthesia were reported in the literature (5, 8). However, the muscle relaxants used in general anesthesia may deteriorate GBS syndrome. Non-depolarizing muscle relaxants cause extended neuromuscular block and may require postoperative ventilator support, and therefore must be used very carefully. The use of succinylcholine as muscle relaxant must be avoided due to risk of hyperkalemia in patients that autonomous nerve system is involved (2). There is an increased risk of difficult intubation and aspiration during the caesarean section under general anesthesia (9). For this reason, we did not want to apply general anesthesia to our case.

Regional anesthesia ensures protection from potential depressant effects of muscle relaxants in patients with respiratory depression (2). However, after regional anesthesia, there were reviews mentioning that the GBS was triggered or the neurological findings of existing GBS deteriorated (2,4). Wiertlewski et al. applied epidural anesthesia for their case for labor analgesia, and observed that the symptoms deteriorated in the case afterwards. The epidural anesthesia was performed to the patients who had ascending GBS before the symptoms were completely recovered. In our case, the disease had a descending progression and this may be the reason for us not having experienced any complications after epidural anesthesia. Since the recommended level of sensory block for caesarean section was $T_{4\text{-}6}$, we established high block level. However, we did not encounter intraoperative respiratory and hemodynamic instability as intermittent and incremental doses of local anesthetics were given epidurally.

There were case reports in the literature in which spinal anesthesia were applied for caesarean without any complications (2,10). There was a GBS case reported in the literature (4) that was applied spinal anesthesia with 2.5 mL hyperbaric bupivacaine and after surgery motor functions did not return within 12 hours and the patient had muscle weakness in four extremities. So, we did not preferred spinal anesthesia in our case.

These cases are not strong evidence for epidural anesthesia to trigger GBS or deteriorate GBS (2). There are many patients in whom epidural and spinal anesthesia were achieved successfully (2,11).

Alici et al. (12) reported a case with GBS that was performed recurrent epidural anesthesia before caesarean. When the case was first accepted, 15 mL %2 lidocaine, 100 µg fentanyl, 2 mL sodium bicarbonate and 1 mL 1/200.000'lik epinephrine were administered as total 20 mL solution, with 5 minutes interval in 5 mL volumes, and no hemodynamic changes were experienced. 3 mg morphine and 50µg fentanyl were administered in 15 mL volume for postoperative pain to the case, and was taken to surgery for a second time by repeating the same protocol. Neurological complications did not develop in the patient, and was discharged on 3rd day. Alkalinized lidocaine solution was used as local anesthetics, which was similar to our case, and no hemodynamic instability was experienced.

Kocabas et al. (11) administered 18 mL %0.5 ropivacaine as the first dosage in epidural anesthesia and then ropivacaine dosages with 5 mL intervals. No neurological complications developed in the patient in the postpartum period and the patient was discharged home.

Vassiliev et al. (13) made combined spinal epidural anesthesia (CSEA) in a patient with GBS as labor analgesics and did not experience any neurological complications. CSEA anesthesia was performed after the symptoms were recovered in that patient.

CONCLUSION

As a conclusion, the management of anesthesia should be considered on individual basis and the profit and loss ratio must be assesses in regional and general anesthesia. We are in favor of the opinion that epidural anesthesia, a technique of the regional anesthesia, can be applied successfully for caesarean in pregnant women with GBS.

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2017;24(1):72-4
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