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Case Report
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Use of Isobaric Bupivacaine in an Ultra-Morbid Obese Pregnant

Erel K.V[1] and Kurum S[2]*

[1]Erel Varlik K, Assistant Professor, Department of Anaesthesiology and Reanimation, Adnan Menderes University Faculty of Medicine, Aydin, Turkey

[2]Kurum Simge, Anesthesia Resident, Department of Anaesthesiology and Reanimation, Adnan Menderes University Faculty of Medicine, Aydin, Turkey

Abstract

Morbid obesity is rapidly increasing in reproductive-age-women. A ultra-morbid obese pregnant with preeclampsia, was applied one by one epidural and spinal anesthesia for ceserean. It was reached at 10 and 12 cm both the epidural and the subarachnoid area by compressing skin because of insufficiency of spinal needle length. Spinal anesthesia of patient with epidural catheter was provided with 2 ml of isobaric bupivacaine. All parameters were stable. It shouldn't be forgotten that needle length cannot be enough and spinal anesthesia with isobaric bupivacaine can provide more hemodynamic stability and better sensory-motor blockade for cesereans in morbid obesity.

Keywords: Isobaric bupivacaine; Ultra-morbid obese pregnant ; Combined Spinal Epidural Anesthesia

Introduction

Obesity is a serious health problem and has a rapidly rising prevalence. The World Health Organization (WHO) defines obesity prevalence as a pandemic problem, but is more common in women [1]. Moreover, it is rapidly increasing in the reproductive-age-women population [2]. Morbid obesity is the situation that body mass index is greater than fourty [3]. If the body mass index is over 50, it is named as super; and over 60-70 is called as ultra-mega morbid obese [4]. An anesthesiologist confronts many problems in morbid obese patients and in case of pregnancy, the situation becomes more risky [1]. Moreover, the cesarean rate of these patients is higher due to the difficulty of vaginal birth [2]. Because of increasing rate of morbid obesity, we aimed to present a morbid obese pregnant patient having caesarean section to call attention to this important health issue.

Oral and written informed consent was obtained for both anesthesia and publication during consultation by anesthetist

Case Description

Preeclamptic, diabetic and ultra-morbid obese 34 year-old woman, at 38 week-sixth day of her pregnancy, whose weight was 176kg and height was 165cm (BMI=64.7 kgm^{-2}) gravida 1, para 1, with hypertension and diabetes for 4 years, was brought to the operation room due to emergency caesarean section indication.

In the first examination, the patient seemed uncomfortable in the supine position. She had dry mucous membranes and pallor skin. Airway examination revealed Mallampati grade II, mouth opening was larger than 3 cm, and thyromental distance was greater than 6cm. Neck flexion and extension were limited. She had gigantic apron abdomen and pelvic region. Laboratory tests were 9.6 g/dl hemoglobin, 14.51 10^9/L WBC, 286000mm^3 platelets, INR 0.87.

The patient was informed that she would undergo combined spinal-epidural anesthesia, about the possible risks and an informed consent was obtained.

Due to possible length insufficiency of the routinely used spinal needle (90mm), one by one epidural and spinal anesthesia was planned instead of needle-through-needle technique. Therefore, 25G, 120mm pencil point spinal needle and 18G, 12cm touhy epidural needle and catheter were supplied as backup.

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**Correspondence:*
Varlik K. Erel, Department of Anaesthesiology and Reanimation, Adnan Menderes University, Faculty of Medicine, 09100 Aytepe/Aydin, Turkey.
Tel: *+90 256 444 1 256/2117*
E-mail: *varlik.erel@gmail.com*

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The preoperative arterial blood pressure was 140/70 mmHg, the heart rate was 105/min and SPO2 was 94%. Intravenous catheters (16G and18G) were attached to the patient. Approximately 500mLs of 09% NaCl were applied rapidly.

The patient was brought to sitting position. After physical examination, L3-L4 area was anesthetized with 60 mgs of local 2% lidocaine. Then, because the needle size was not enough, by skin was compression approximately 1-2cm, the epidural area was reached at 10 cm with ultrasound-guided 18G touhy epidural needle using pressure loss technique.

The epidural catheter was pushed 5cm forward through the epidural space. There was no problem during catheter placement. Test was performed with two mls of 2% lidocaine and the location of the epidural catheter was confirmed.

At the same level, a pencil point spinal needle (25G, 120mm) was applied and the subarachnoid space was reached at 12cm. After clear cerebrospinal fluid flow was seen, two mls of isobaric 0.5% bupivacaine were administered. The epidural catheter was then fixed and the patient was given appropriate position for the operation.

Cesarean section of the patient, who had full motor block at the first few minutes, was started. Approximately 10 minutes later, motor block level reached to bromage 3 and sensory block to level T4. No sudden arterial pressure change occurred during this period. Approximately 20 minutes after the beginning of the cesarean section, a baby girl (3370g) was delivered who had apgar score 8 at the first minute and 10 at the fifth minute. It was no nause and vomiting along anesthesia.

After 80 minutes, the operation ended up without any problem. The patient was followed up postoperatively in PACU and the first motor block and sensory block levels were bromage 1 and T4 while in there. For avoiding postoperative pain, 1 mg morphine, 12.5mg bupivacaine and 25mcg fentanyl were given from the epidural catheter. At the first day, there was no pain. At the second day, the patient had postoperative pain and was treated with 1mg morphine, 12.5mg bupivacaine and 25mcg fentanyl. Epidural catheter was withdrawn at the third day and the patient was followed up in the obstetrics and gynecology department and was discharged without any problem.

Conclusion

The incidence of morbid obesity increases rapidly in the general population, especially in women of childbearing age. Obesity can lead to perinatal and neonatal problems as well as preparing the ground for diabetes and hypertension in pregnancies [5]. Neonatal morbidity and mortality increase in infants of morbid obese pregnant [4]. In obese and morbid obese patients, birth weight is generally more than 4500 grams comparing to the control group [6].

Our patient also had diabetes and hypertension. During the pregnancy, follow-ups were performed regularly and the treatments were arranged. The birth weight of the baby was less than 4500 grams despite morbid obese mother. No definite evidence can be found in the literature that morbid obese pregnancies will surely lead to a high birth weight, as there are several other factors that may influence the birth weight.

There is little literature-based evidence about which way of delivery, vaginal or cesarean, would be safer for morbid obese mothers. In a study conducted by Weiss et al [7]. cesarean section was found more frequent in morbid obese nulliparous women comparing control group.

Hood et al [8]. found emergency cesarean rate as 50% in morbid obese pregnancies, while 9% in the control group. In our case, caesarean section was decided as preeclampsia was detected and cephalo-pelvic distortion was considered.

Choosing an anesthetic method for morbid obesity is a difficult issue for the anesthetist. The application of neuroaxial blockade is particularly difficult because of the concealment of the anatomic markers by the fatty tissue [5].

In a study conducted by Brodsky et al. [9], increased success rates and reduced side effects were reported with epidural anesthesia through ultrasonography. However, we did not find ultrasound very effective in a morbid obese patient.

In another study, cerebrospinal fluid in obese patients was shown to be less than in non-obese patients and therefore, it can be concluded that adequate spinal anesthesia could be achieved with lower doses local anesthetic [6,10,11]. Two ml dose of 0.5% isobaric bupivacaine may be considered as low because of ultra-morbid obesity and it could provide enough motor and sensory block in the our patient. Side effects, such as nausea, vomiting and hypotension, were not observed during operation and the levels did not rise.

As isobaric bupivacaine is associated with more hemodynamic stability and shorter sensory and motor blockade in mothers under spinal anesthesia for C/S in some literatures same as our clinic experience [12-14]. We concluded that isobaric bupivacaine was appropriate for this case and we applied. Eventually, no problem occurred neither in mother nor baby from the beginning of anesthesia till discharge.

Even it was difficult, we did not need long touhy needles because we could reach 10cm in the epidural space via squeezing the skin, but still, considering that morbid obesity is an increasing problem, it will be useful to supply them in the clinics.

Other problem in our case was infant-delivery time which was the 20th minutes. This is a condition that should be considered in terms of obstetric and infant complications in morbid obese pregnancies especially with apron abdomen. Because of this possibility the choice of combined spinal epidural anesthesia or neuroaxial blocks should be chosen even for the newborn with high APGAR score.

In conclusion, long spinal and epidural needles may be needed for ultra and mega morbid obese pregnancies. In addition, appropriate and low dose of isobaric bupivacaine can provide a stable anesthesia without any complication in morbid obese patients.

Contribution of Authors

Erel Varlik K, MD: This author helped design the study, conduct the study, analyze the data, and write the manuscript.

Kurum Simge, MD: This author helped design the study, conduct the study, analyze the data, and write the manuscript.

Ethical Approval

All procedures performed in studies involving human participant were in accordance with the ethical standards of the Adnan Menderes University Research Committee and with the 1964

Helsinki declaration and its later amendments or comparable ethical standards. Oral and written informed consent was obtained for both anesthesia and publication during consultation by anesthetist.

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