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CASE REPORT

Perioperative Management in Parturient with Severe Preeclampsia, Obesity, and COVID-19

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ABSTRACT

The elevated cases of pregnant women infected with COVID-19 who needed to undergo caesarean section is a great challenge to anesthesiologists. Morbid obesity and preeclampsia in pregnancy are also another challenge to medical practice especially when the patient requires caesarean section. To describe the perioperative management of a morbidly obese preeclamptic patient with COVID-19. A pregnant woman with mild case of COVID-19, severe preeclampsia and obesity underwent an emergency caesarean section. Spinal anesthesia was performed using a Whitacre 26G spinal needle with 76 mm length, bupivacaine 0.5% 12.5 mg as spinal anesthesia agent and fentanyl 25 mcg as adjuvant. All operating teams use PPE according to COVID-19 guidelines and standard procedures. The operation went with a good outcome without any transmission to the operating team. The patient underwent treatment without postoperative complications. Spinal anesthesia is considered safe to be a usual technique for parturient with preeclampsia and morbid obesity. A proper COVID-19 surgery protocol is crucial in order to protect health workers handling COVID-19 patients.

Keywords: COVID-19; obesity; perioperative management; severe preeclampsia; spinal anesthesia

INTRODUCTION

Prior evidence suggested that pregnancy happened to increase in women with confirmed SARS-CoV-2 infection[1]. Inflammation occurred in COVID-19 infection may mimic the inflammatory pattern observed in pre-eclampsia, both of which were considered to be the lead causes of systemic inflammation[2]. In addition to preeclampsia, one of the comorbid factors that could aggravate the condition of COVID-19 patients is obesity[3]. Obesity increased the risk for hospitalization, ICU admission, and mortality among patients with COVID-19 infection[4]. Morbid obesity in pregnancy is also another challenge to medical practice especially when the patient is in need of caesarean section[5]. Both pregnancy and obesity are risk factors of impaired airway and anesthesia-related maternal mortality. This problem was exacerbated by the presence of COVID-19 infections which still occured during the pandemic[6]. This condition required the anesthesiologist to choose a safe and approptiate anesthetic technique for both the patient and the health workers. The purpose of this case report is to present additional information of COVID-19 and to give considerations about obese patient who undergo cesarean delivery.

CASE ILLUSTRATION

On June 8th 2021, a 25-year-old pregnant woman with G2P1A0 complained about bloody mucus and a leaked amniotic fluid since one day ago. The patient did not complain of fever, cough, runny nose, shortness of breath, or sore throat. The patient denied any history of asthma, allergies, diabetes, or hypertension.

The patient was fully conscious and had a general examination as follows: blood pressure 150/90 mmHg, pulse 113x/min, respiration rate 20x/min, temperature 36.6^{o}C, oxygen saturation 99% with nasal cannula 2 lpm. The patient had a weight of 92 kg and a height of 160 cm. There were no abnormal findings in thorax and abdominal examination, yet we found bilateral pitting oedema on both legs. Laboratory results and obstetric ultrasound were within normal limits. However, we found proteinuria and a reactive COVID-19 as the antigen swab result. The patient was then transferred to COVID-19 isolation

room in order to prevent the transmissions of infection and was given 6 mg MgSO4 loading dose and 10 mg sublingual nifedipine.

The obstetrician decided to perform an emergency transperitoneal caesarean section and had a coordination with the anesthesiologist. The operating staff wore level III PPE which consisted of ordinary sterile gloves, boots, coverall, N95 mask respirator, medical mask, eye protection/goggles, face shield, impermeable apron, and long sterile gloves were carried out according to the COVID-19 guideline by Indonesian Health Ministry.

Before the surgery, the patient was administered by metoclopramide 10 mg and ranitidine 50 mg as acid aspiration prophylaxis. The surgery was performed using regional anesthesia subarachnoid block, with a puncture at the level of the L4-5 vertebrae. We used a Whitacre 26G spinal needle with 76 mm length, bupivacaine 0.5% 12.5 mg as spinal anesthesia agent and fentanyl 25 mcg as adjuvant. The puncture was done in sitting position. After the patient was anesthetized, a transperitoneal cesarean section was performed in supine position.

During surgery, the bleeding reached 300 cc. Although, the hemodynamic intraoperative was stable: systolic blood pressure 120-130 mmHg and diastolic 80-90 mmHg, pulse 80-90 x/min, saturation 99-100%. The female baby was born in healthy condition with APGAR score of 7-8-9. After the birth, the patient was administered by oxytocin drip 10 IU IV and 0.2 mg methergin as a uterotonic. Furthermore, the patient underwent treatment in an isolation room and was discharged after 14 days of treatment.

DISCUSSION

Pregnancy is a condition with a partial resemblance of immunosuppresant physiological status, which leads to a vulnerability of pregnant woman to get a viral infection[7]. Pregnant women with suspected or confirmed COVID-19 infection should be triaged and assessed about their condition as mild, severe, or critical category. We classified our asymptomatic patient with stable vital signs as a mild case of COVID-19. Our patient was given nasal cannula oxygenation at 2 lpm as supportive therapy.

The principled management of severe preeclampsia is an active management, namely termination of pregnancy as early as possible. Our patient had severe preeclampsia which was characterized by systolic blood pressure > 140 mmHg or diastolic blood pressure > 90 mmHg accompanied by positive proteinuria ++. Based on the Asia Pacific BMI Classification, our patient was also classified as an Obese Grade II.

Patients with pregnancy are considered to have a full stomach because there was not enough fasting period, for this reason, preparations are made with the administration of anti-vomiting. Routine acid aspiration prophylaxis should therefore be administered to all obese parturient who undergo cesarean delivery[8]. Our patient has been given a prokinetic agent, metoclopramide 10 mg IV, and antihistamin-2 blocker such as ranitidine 50 mg.

Considering the patient's condition and the COVID-19 pandemic circumstance, not only anesthesiologist but also all operators involved are obligated to apply COVID-19 surgical procedure, by wearing personal protective equipment (PPE) level III comprising ordinary sterile gloves, boots, cover all, N95 mask respirator, medical mask, eye protection/goggles, face shield, impermeable apron, and a long sterile gloves. This personal protective equipment was worn and removed at a special donning and doffing room in a central surgical installation. All personnel involved in surgical procedures must have undergone special training and read PPE technical guideline of Republic of Indonesia Health Ministry 2020[9]. Each personnel was also accompanied by a partner to ensure that the use of PPE is correct and in line with the guideline.

In this case, spinal anesthesia was chosen because during the pandemic, guidelines recommended the use of neuraxial anesthesia to minimize the risk of aerosols[10]. The diagnosis of COVID-19 itself was not a contraindication to neuraxial anesthesia. Another reason was because, obese patients might be difficult to intubate as a result of the limited mobility of temporomandibular and atlantooccipital joints, a narrowed upper airway, and a shortened distance between the mandible and sternal fat pads. Additionally, spinal anesthesia had

advantages over general anesthesia for caesarean section because it has lower rates of respiratory depression[11].

The puncture was done in sitting position. The flexed sitting position brought the epidural space closer to the skin and therefore the distance from the skin to epidural space was shortened compared to lateral position[12].

There were some considerations which we applied in this obese patient. First, we used a Whitacre or pencil point type spinal needle. The latest study in India concluded that the use of Whitacre needles were associated with a lower incidence of PDPH compared to Quincke spinal needle[13]. Second, we also chose the small and long spinal needle. In obese patients, there was an increase of distance between the skin and epidural space. Therefore, spinal anesthesia in obese patients would be more appropriate to use a longer spinal needle than a standard spinal needle. The use of small size of needle (25-27G) could also decrease the risk of post-dural puncture headache in this patient.

Spinal anesthesia was performed in our patient by injecting bupivacaine 0.5% 12.5 mg and 25 mcg of fentanyl into the subarachnoid space. Bupivacaine has a rapid onset in a rapid duration, greater muscle relaxation and minimum risk of drug toxicity to mother and fetus. Fentanyl is used during fast-track surgery incombination with an inhalation agent or propofol[14]. In addition, adjuvants agents were used to reduce the dose of the local anesthetic agent, bupivacaine, in the patient. Obese patients require less local anesthetic in their epidural and subarachnoid spaces in order to achieve the same level of block compared to non-obese patients[15].

The protocol for handling COVID-19 must include treatment from the admission, during surgery, and when the patient is admitted to an isolation ward until she was discharged from the hospital. Anesthetic techniques should be prioritized in neuraxial techniques which were not an aerosol-generating procedure, taking into account the patient's condition.

CONSLUSION

Spinal anesthesia is considered safe to be a usual technique for parturient with preeclampsia and morbid obesity. All the participating personnel in this

surgery applied a proper COVID-19 surgery protocol which was crucial in order to protect health workers while handling COVID-19 patients.

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