

Anesthetic Management of Patient with Large Atrial Septal Defect for Caesarean Delivery in Resource Limited Setting

Petros Baboker*, Haile Demissie

Department of anesthesia, College of medicine and health science, Wolkite University, Wolkite, Ethiopia.

*Corresponding author: Petros Baboker.

Abstract

Background: Atrial septal defect (ASD) is one of the common cardiac problems in adults most commonly in females. It complicates the management by increasing load on right heart chamber and pulmonary vasculatures. This leads to hypoxemia, hypercarbia, arrhythmias and congestive heart failure.

Case presentation: Here we report successful management of a 27-year-old prim gravida woman at 38 weeks of gestation diagnosed with large ASD with the defect of 16.2mm on Echocardiogram undergoes elective caesarean section. The procedure was done with low dose spinal anesthesia.

Conclusion: No complications were encountered during perioperative period. Spinal anesthesia is safe for patients with atrial septal defect undergoing caesarean delivery.

Keywords: case report atrial septal defect; caesarean section; spinal anesthesia

Introduction

Cardiac diseases in pregnancy have an incidence of 0.3-3.5% and major cause of maternal death. The most common cardiac diseases in pregnancy include rheumatic heart disease, valvular heart disease, and genetic heart disorders [1] There is a prevalence of 1 in 1500 live births, with 6-10% of all congenital heart diseases (2). ASD was classified based on anatomical location as Ostium secundum (85%), Ostium primum (10%), Sinus venosus (5%) and coronary Sinus defects (rare). Defects of less than 3 mm can close spontaneously within 18 months. In total, 80% of patients with defects of 3-8 mm close spontaneously, and defects of more than 8 mm rarely close spontaneously and require surgical repair [3]. Anesthetics may worsen its features by stimulating cardiorespiratory systems in conjugation with surgery.

Case Report

A 27-year-old primi gravida woman of 38 weeks gestational age with known congenital heart disease (ASD) came to the ANC clinic. She has a close ANC follow-up during pregnancy in which everything was smooth. She was diagnosed with ASD four years prior, given unspecified PO medication and told that there was no need for surgery. Currently she has no any sign or symptoms like palpitation, easy fatigability and shortness of breath, unless grade III holistic

murmur best heard at Left lower sternal border (LLSB). Then, she was transferred to the maternity ward and booked for elective Caesarean section. During preoperative evaluation, her vital signs were stable and investigation was within normal ranges. Echocardiographic evaluation shows 25 mm and 16.2 mm septum secundum defects 4 years and 1 month back, respectively. Up on transfer to OR non-invasive monitoring (BP, pulse oxymetry, and ECG) attached and intravenous cannula opened 18G bilaterally. She had stable vital signs with a blood pressure of 117/72mmHg, pulse rate of 82, and oxygen saturation of 97%. After premedication with ampicillin 2g IV, cimetidine 400mg IV, metoclopramide 10mg IV and dexamethasone 8mg IV spinal anesthesia was given with a 23G quincke spinal needle with 2 ml (10 mg) of isobaric bupivacaine between L4 and L5 interspace. Normal saline was infused as colloading and maintenance fluid, and Oxygen 2 liters of oxygen was nasally given throughout the procedure. In the first measurement immediately after spinal Anesthesia the patient blood pressure was dropped 70/30mmHg before skin incision. While we gave IV fluid fast bilaterally the blood pressure returned to low normal range. Otherwise, all other vital sign were within normal range throughout the procedure. A 3.4 kg baby was delivered after 6 minutes of skin incision with Apgar scores of 9 and 10 at 1 minute and 5 minutes, respectively. Oxytocin (10 IU) was given

intramuscularly following delivery of the baby. The procedure takes 45 minutes, and the patient is transferred to the PACU with stable vital signs. After 30 minutes of in the recovery she was transferred to the ward and discharged after five days without any complications.

Discussion

Pregnancy leads to numerous physiological changes, resulting in increased stroke volume, heart rate, cardiac output, and oxygen consumption [3]. These changes are further facilitated by the growth of the fetus and reach its peak during labor and puerperium. ASD has the feature of left to right shunt that puts a load majorly on right atrium, right ventricle, pulmonary arteries and lung. Increased metabolic demands and sympathetic hyperstimulation during labor makes at increased risk [4]. These and other factors necessitate undergoing elective caesarean section in our patient. She has atrial septal defect (ASD) septal secundum of 16.2mm defect. Perioperative management targeted to reduce surgical stress and maintaining hemodynamic stability [5]. Modest reduction in blood pressure doesn't have effect on the left to right shunt rather than improving decreasing the magnitude of shunt and reducing load of right-side heart. We used single shoot spinal anesthesia with low dose 2ml (10mg) isobaric bupivacaine. Low dose local anesthetic reduces the risk of systemic toxicity, vital sign derangement and risk of high spinal and total spinal [3]. Rapid onset, high quality blocks and over all complication makes us to prefer spinal over epidural anesthesia. Associated increased risk of fetal and maternal complications regional block preferred over general anesthesia. To decrease the risk of hypotension cautious colluding and intraoperative fluid loss and maintenance fluid achieved by using normal saline [2]. In addition, dexamethasone 8mg intravenous was used to decrease the extent of blood pressure derangement [6]. There was adequate urine output of 150ml with estimated blood loss of around 400ml.

Conclusion

Managing patient with ASD has a challenging in a resource limited country, as there is no opportunity to access specialized managements. So, it's better to choose the best modalities in their setting. Single shoot spinal anesthesia has an advantage over epidural and general anesthesia even if has its own

adverse effects. It is possible to use either epidural or general anesthesia up on anesthesiologist's expert and preferences with strict hemodynamic management.

Declarations

Source of funding

This study didn't receive any grant from private, governmental and non-governmental organizations.

Author Contribution

Haile Demissie: Contributed to study concept and writing the paper

Petros Baboker: Contributed to data interpretation, writing and reviewing the manuscript.

Declaration of competing interest

None

Ethical approval

Ethical approval doesn't require for case report

Consent for publication

Written informed consent was obtained from the patient for publication of this case report.

Availability of supporting data

The dataset used during the case report is available from the corresponding author upon reasonable request.

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