CASE REPORT

Eastern Journal of Medicine
East J Med 22(4): 218-220, 2017
DOI: 10.5505/ejm.2017.25238

Emergency cesarean in a patient with atrial septal defect

Erol Karaaslan

Malatya State Hospital, Anesthesia and Reanimation Clinic, Malatya

ABSTRACT

It is a common fact that thousands of mothers die because of pregnancy around the world each year. A comprehensive antepartum screening is of prime importance for the reduction of maternal mortality. Heart diseases are a major cause of maternal mortality. Atrial septal defect is the most common acyanotic congenital heart disease.
A 22-year- old primiparous woman at 38 weeks of gestation applied to the gynecology department with palpitations and excessive fatigue. Atrial septal defect was detected in the cardiology outpatient clinic. Due to fetal distress, emergency cesarean section (C-section) was performed under spinal anesthesia. The patient developed acute-onset hypotension and respiratory distress. In this report, we present a case with Atrial septal defekt that underwent emergency C-section due to fetal distress.

Key Words: Atrial septal defect, cesarean, emergency, hypotension

Introduction

Pregnancy leads to numerous physiological changes, resulting in increased stroke volume, heart rate, cardiac output, and oxygen consumption. These changes are further facilitated by the growth of the fetus. Although these changes are well tolerated in healthy pregnancies, they may lead to increased risk of maternal and fetal mortality and morbidity in the pregnancies accompanied by cardiac disease due to additional risk factors (1).

Timely diagnosis and management of antepartum cardiac problems is of prime importance for maternal and fetal health. The cardiac diseases in pregnancy have incidence of 0.3-3.5% and are a major cause of maternal death. Most common cardiac diseases in pregnancy include rheumatic cardiac disease, valvular heart disease, and genetic heart disorders (2).

In this report, we present a case with atrial septal defect (ASD) that underwent emergency cesarean section (C-section).

Case report

A 22-year-old primiparous woman at 38 weeks of gestation presented to our Cardiology polyclinic with the complaints of palpitations and fatigue. Following the detection of ASD on echocardiography, the patient was transferred to our Obstetrics and Gynecology polyclinic. Subsequently, the patient underwent emergency C-section due to intrauterine stress.

In the preoperative evaluation, ASD was revealed on electrocardiography and right bundle branch block (RBBB) was detected on pulmonary artery pressure-electrocardiography. Laboratory parameters were within normal ranges. The patient was monitored in the operation room. A 16G peripheral intravenous catheter was inserted. Lactated Ringer's solution was initiated, which was followed by the injection of ranitidine 50 mg, metoclopramide 10 mg, and intravenous midazolam 1 mg/ml for sedation. The C-section was performed under spinal anesthesia at the request of the patient. Preoperative measurements were as follows: blood pressure, 160/80 mmHg; heart rate, 120/min; and SpO2, 95%. With the patient in the sitting position, the lumbar region was cleansed with iodine solution and then hyperbaric bupivacaine (10 mg) was injected at a single shot with a 25G Quincke needle at the L4-5 interspace. The patient was then placed in the supine position and an oxygen face mask with a flow rate of 3 lt/min was inserted. Surgical procedure was started when the sensory block reached the T6 level.

Five minutes after baby delivery, the mother had

*Corresponding Author: Erol Karaaslan, MD, Malatya State Hospital Anesthesia and Reanimation Clinic Malatya
Tel: +90 (532) 203 48 30, E-mail: erkara44@hotmail.com
Received: 04.01.2017, **Accepted:** 25.01.2017

respiratory distress although the hemodynamic findings were stable. Subsequently, hypotension occurred as a result of the reduction of SpO2 to below 85%. At the 10th minute of the surgery, the blood pressure gradually decreased to 50/30 mmHg and thus intravenous ephedrine 10 mg was given. However, ephedrine 10 mg was given for a second time since no response was received. Due to the continuation of the hypotension, dopamine infusion (10 mcg/kg/min) was started. At the 35th minute of the surgery, the measurements were as follows: blood pressure, 75/52 mmHg; heart rate, 125/min; respiratory rate, 22/min, and SpO2, 91%. The surgery lasted for 50 min. Following the surgery, the patient was transferred to the intensive care unit and the dopamine infusion and nasal oxygen therapy were continued. A repeat electrocardiography that was performed in the intensive care unit indicated ASD (left-right shunt) and a pulmonary arterial pressure of 40 mmHg. After staying in the intensive care unit for two days, the patient was transferred to the general ward since the patient became clinically stable.

Discussion

ASD is the most common acyanotic congenital heart defect (10%). ASD is more common in women with a ratio of 1/2 and is often well tolerated during pregnancy (3). ASD mostly remains asymptomatic in children and often presents symptoms after 40 years of age. Almost 90% of untreated patients present with effort dyspnea, fatigue, palpitations, or arrhythmia (4). In later stages, ASD may manifest as pulmonary arterial hypertension, right heart failure, atrial fibrillation-flutter, stroke, and Eisenmenger syndrome (3,5).

ASD has three types. The first type is ostium primum, which is located below the foramen ovale and is seen in 20% of the cases. The second case is ostium secundum, which is the most common type of ASD and is seen in almost 70% of the cases. The third type is sinus venosus, which is located in the upper section of the interatrial septum close to the vena cava superior and is seen in 6-14% of the cases. The third type may lead to a number of conditions including resistive pulmonary arterial hypertension, cardiomyomegaly, and arrhythmia, ultimately resulting in myocardial ischemia. Pulmonary hypertension is divided into three grades depending on severity: mild (36-49 mmHg), moderate (50-59 mmHg), and severe (60 mmHg) (6). Our patient had mild pulmonary hypertension (40 mmHg).

Knowledge of the presence of ASD in the patient history is highly important for the correct diagnosis and the treatment of the patient. In the ASD patients with stage 3-4 heart failure that are planned for elective surgery, central venous pressure (CVP), pulmonary arterial, and arterial monitorization may be needed (7).

Prompt diagnosis and repair of antepartum cardiac problems is of prime importance for maternal and fetal health. Yap et al. (2) found that the women with an unrepaired ASD, compared to the general population, had higher risks of pre-eclampsia (3.54%), small-for-gestational-age births (1.95%), and fetal mortality (5.55%). However, the authors found no differences between the women with a repaired ASD and controls.

The common risks of general anesthesia such as aspiration, tachycardia caused by intubation, and hypertension should be kept in mind in pregnant women with congenital heart disease. In patients with ASD, general anesthesia may lead to dysrhythmia (5-10%), heart block, cardiac failure, and infective endocarditis. Moreover, hypotension, hypoxemia, hypercarbia, and hypothermia should be avoided during the surgery; otherwise the shunt may reverse (Eisenmenger syndrome) (3).

Previous studies have indicated that regional anesthesia is the most common type of anesthesia (5,8). However, during the surgery, intracardiac shunt may reverse due to acute-onset, uncontrolled hypotension and hemodynamic instability (1). In our patient, although low-dose spinal anesthesia was performed, the patient had acute-onset hypotension and respiratory distress but no chest pain. These conditions led to inotropic requirements. Accordingly, it is of prime importance to have supplementation units for intraoperative complications. In our patient, thoracic computed tomography (CT), which has a key role in the laboratory parameters assessed during the follow-up period in the intensive care unit and in the diagnosis of pulmonary emboli, found no significant signs suggestive of pulmonary emboli (9).

In conclusion, ASD, which is the most common acyanotic congenital heart defect, is an important risk factor in pregnancy. ASD leads to increased risk of maternal and fetal mortality and morbidity. In the ASD patients planned for C-section, the most ideal anesthetic method that would best enable hemodynamic stability should be selected

by considering elective and emergency conditions and relevant parameters.

References

1. Leary PJ, Leary SE, Stout KK, Schwartz SM, Easterling TR. Maternal, perinatal and postneonatal outcomes in women with chronic heart disease in Washington state. Obstet Gynecol 2012; 120: 1283-1290.
2. Yap SC, Drenthen W, Meijboom FJ, et al. Comparison of pregnancy outcomes in women with repaired versus unrepaired atrial septal defect. BJOG 2009; 116: 1593-1601.
3. Balint OH, Samman A, Haberer K, et al. Outcomes in patients with pulmonary hypertension undergoing percutaneous atrial septal defect closure. Heart 2008; 94: 1189-1193.
4. Saxena A, Divekar A, Soni NR. Natural history of secundum atrial septal defect revisited in the era of transcatheter closure. Indian Heart J 2005; 57: 35-38.
5. Hidano G, Uezono S, Terui K. A retrospective survey of adverse maternal and neonatal outcomes for parturients with congenital heart disease. Int J Obs Anesthesia 2011; 20: 229-235.
6. Roy R, Prasad A. Anaesthesia management of a patient with large atrial septal defect with moderate pulmonary hypertension for total abdominal hysterectomy. J Anesth Crit Care Open Access 2015; 2: 00075.
7. Akpınar O. Pregnancy and heart valve disease. Anadolu Kardiyol Derg 2009; 9: 25-34.
8. Goldszmidt E, Macarthur A, Silversides C, et al. Anesthetic management of a consecutive cohort of women with heart disease for labor and delivery. Int J Obstet Anesth 2010; 19: 15-42.
9. Shapiro JM. Venous thromboembolism in pregnancy. J Intensive Care Med 2001; 16: 22-28.