Anesthetic Challenges in Management of Parturient With Congenitally Corrected Transposition of Great Arteries Complicated With Complete Heart Block and Hypothyroidism for Elective Cesarean Section

Dr. Shweta Joshi* , Dr. Madhu Chavan

Dr. Shweta Joshi* , Dr. Madhu Chavan. Anesthetic Challenges in Management of Parturient With Congenitally Corrected Transposition of Great Arteries Complicated With Complete Heart Block and Hypothyroidism for Elective Cesarean Section . Anaesthesiol Case Rep 2020;3(1):5-7.

We hereby report the clinical journey of a parturient with congenitally corrected transposition of great arteries (CCTGA) associated with hypothyroidism and complete heart block posted for elective caesarean section. Parturient with congenitally corrected transposition of the great arteries (CCTGA) have tendency to develop cardiac dysrhythmias and left ventricular failure during intraoperative and postoperative period.

Successful anesthetic management during perioperative period in a case of parturient with CCTGA posted for elective caesarean section is explained in this case report. We would like to highlight the anesthetic challenges and advantages of epidural anesthesia in maintaining hemodynamic stability during caesarean section.

Key Words: *Anesthetic Challenges, CCTGA, Complete heart block, Hypothyroidism, Elective cesarean section.*

INTRODUCTION

Congenitally corrected transposition of the great arteries is once in a blue moon heart defect in which the heart's lower two chambers and ventricles, are reversed in their positions. Right ventricle (RV) battles to function as the ventricular pump against the substantial systemic vascular resistance. As the age increases, these parturient tend to develop primitive ventricular dysfunction [1]. CCTGA has a prevalence of 0.4–0.6% of all congenital heart disease cases and complete heart block develops in cases of 30% CCTGA [2]. In these parturients the physiological cardiovascular changes of pregnancy may expedite the rate of ventricular failure. We describe anesthetic challenges in management of parturient with CCTGA associated with hypothyroidism and complete heart block posted for elective caesarean section.

CASE REPORT

32 year old antenatally unregistered primigravida with 37 weeks of gestation, body mass index 19.2kg/m2 known case of hypothyroidism on Tab. Eltroxin 25 microgram OD, came to emergency room with complaints of chest pain and shortness of breath [NYHA grade 3].Diuretics and bronchodilators therapy was given for symptomatic relief. Two dimensional (2D) echocardiography showed Ejection fraction of 45% with congenitally corrected transposition of great arteries, severe RV dysfunction, moderate pulmonary artery hypertension(Pulmonary artery pressure of 42 mmHg) and severe AV valve regurgitation.

Cardiologist consultation was taken; they advised elective caesarean section and corrective surgery with permanent pacemaker insertion after one month of delivery and temporary pacing in case of unstable hemodynamics during caesarean section.

Thorough pre anesthetic evaluation done, On examination , Heart rate 42beats/min irregular, low volume, No radio-radial, radio-femoral delay, Blood pressure 100/70mmHg, Respiratory rate 20/min, Saturation on room air 94% .On auscultation a systolic murmur was heard on left of sternum with basal crepitations. Airway and spine examination normal. Laboratory parameters suggestive of: Hemoglobin 11.2gm/dl, platelet count 188000/uL, White blood cell 11,000/Ul, Prothrombin time 14.6sec, INR 1.1, Liver and renal function tests were within normal limits. Thyroid function test showing T3 -2.55 (1.5-4.1)pg/ml, T4-0.87(0.8-1.4)ng/dl and TSH -9.3(0.3-5.5).

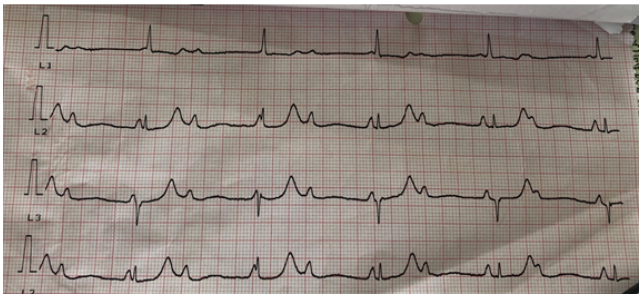

Figure 1) Echocardiogram suggestive of left axis deviation with complete heart block

Patient and relative counselling was done . High risk consent and need of post operative ICU stay was explained. OT preparation was done; emergency drugs, temporary pace maker and defibrillator were kept ready. She was premedicated with anti-aspiration prophylaxis of inj.metoclopramide 10mg iv and inj.ranitidine 50mg iv slowly. For infective endocarditis prophylaxis inj.ceftriaxone 1gm and inj.gentamycin 80mg iv given 30 min prior to surgery. Monitors were attached as per ASA guidelines, electrocardiograms (ECGs), pulse oximetry, temperature probe .For beat to beat measurement of blood pressure Invasive blood pressure monitoring was used and central venous catheter was inserted for emergency transvenous pacing.

Patient was anaesthetized uneventfully with epidural anesthesia. Epidural catheter was placed in L3-4 space with all aseptic precautions. Test dose of

Department of Anesthesiology and Critical Care, Bjgmc and Sasoon Hospital, Pune, India

*Correspondence: *Shweta Joshi, Department of Anesthesiology and Critical Care, Bjgmc and Sasoon Hospital, Pune, Maharashtra, India; E-mail: joshishweta29@gmail.com*

Received date: April 21, 2020; Accepted date: April 23, 2020; Published date: May 14, 2020

Lignocaine 2% 3cc given. Patient was turned to supine position, with a wedge placed under the right hip. Patient continued to receive supplemental oxygen at 4L/min by ventimask. After 3min lignocaine 2% 4cc followed by hyperbaric bupivacaine 5% 6cc was given and T6 level was achieved. Four episodes of severe hypotension were listed intraoperatively, which were managed with injection phenylephrine 40 mcg IV boluses. Slow iv infusion of inj. Oxytocin 20 units was started immediately after delivery of baby. Intraoperatively judicious fluid management was done with ringer lactate. Urine output was 50 ml in the first hour but subsequently increased to 200 ml after administration of IV inj. furosemide 20 mg. Epidural infusion of 0.125% bupivacaine with fentanyl was given for post-operative analgesia. Post operatively patient was shifted to critical cardiac care unit for close monitoring and had uneventful recovery period.

She was prescribed tab. lasilactone50mgOD and tab.eltroxin25ug OD .For further management cardiologist was consulted and she was discharged from the hospital on the 8th day postpartum.

DISCUSSION

Congenitally corrected transposition of the great arteries (CC-TGA) is once in a blue moon defect. It is non-cyanotic congenital heart defect characterized by ventricular inversion resulting in a amalgamation of atrioventricular (AV) discordance in which the right atrium(RA) corresponds with the mitral valve(MV) and left ventricle (LV) and the left atrium(LA) corresponds with the tricuspid valve(TV) and right ventricle (RV) and ventriculoarterial discordance in which the pulmonary artery originates from the left ventricle(LV) and aorta originates from the right ventricle(RV)[3-5]. [Figure 2]

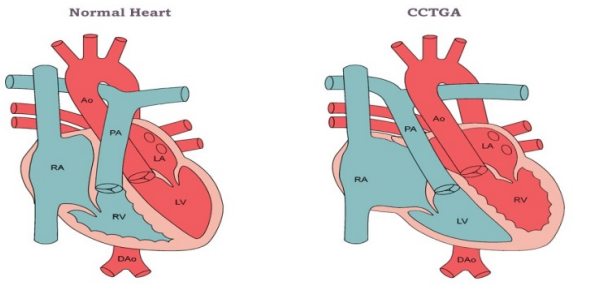

Figure 2) Anesthetic management of parturient with CCTGA associated with hypothyroidism and complete heart block requires discerning of its physiological adaptations and drugs that can change magnitude of ventricular function

ANESTHETIC CONCERNS

proclivity to arrhythmias

liability to develop ventricular failure

conduction abnormalities

risks associated with pacemaker insertion

ANESTHETIC GOALS

Judicious fluid therapy

maintain pulmonary vascular resistance

maintain afterload

avoid hypoxia and hypothermia

Avoid hyper carbia and acidosis. [7]

ANAESTHESIA MANAGEMENT

The cardiovascular changes associated with labor and vaginal delivery, including a further increase in cardiac workload and oxygen consumption were thought to be too hazardous to attempt induction of labor. So, Elective caesarean section was planned with Epidural anesthesia.

Epidural anesthesia helped to accomplish these goals. The more gradual sympathetic blockade helped to maintain preload and venous return. Spontaneous respiration helped in maintaining venous return and pulmonary pressure.

Advantages of epidural anesthesia over general anesthesia to avoid the pressor response during tracheal intubation, avoid polypharmacy and the myocardial depressant effects of anesthetic drugs.

CONCLUSION

Before planning anesthetic management in a parturient with coexisting intracardiac lesions, dysrhythmias and ventricular dysfunctions are the main concerns.

In our case report we portrayed anesthetic challenges and management in case of primigravida with CCTGA associated with hypothyroidism and completes heart block with good maternal and fetal outcome.

REFERENCES

1. Dimas AP, Moodie DS, Sterba R, et al. Long-term function of the morphologic right ventricle in adult patients with corrected transposition of the great arteries. Am Heart J. 1989; 118(3):526-30.
2. Paterick, T.E., Schmidt, M., Jan, M.F, et al. Congenitally Corrected Transposition of the Great Arteries with Anomalous Inferior Vena Cava Drainage: Multimodality Imaging. Echocardiography. 2012; 29(1): 16-19.
3. Warnes CA. Transposition of the great arteries. Circulation. 2006; 114: 2699–709.
4. Dob DP, Naguib MA, Gatzoulis MA. A functional understanding of moderate to complex congenital heart disease and the impact of pregnancy. Part I: The transposition complexes. Int J Obstet Anesth. 2010; 19(3): 298–305.
5. Cordone M, Wolfson A, Wolfson N, et al. Anesthetic management of labor in a patient with congenitally corrected transposition of the great arteries. Int J Obstet Anesth. 2008; 17(1):57–60.
6. Arendt KW, Connolly HM, Warnes CA et al. Anesthetic management of parturients with congenitally corrected transposition of the great arteries: Three cases and review of literature. Anesth Analg. 2008; 107(6):1973–77.
7. Joubert IA, Dyer RA. Anaesthesia for the pregnant patient with acquired valvular heart disease. Update in Anesth. 2005; 19:15–19.