Case Report

Anesthetic challenges in a pregnant patient with post mitral valve replacement, complete heart block, and coagulopathy coming for emergency cesarean section: A case report

ABSTRACT

A 24-year-old primigravida with a history of rheumatic heart disease and prosthetic mitral valve on oral anticoagulation who was lost follow-up during the third trimester presented with premature rupture of membranes. On evaluation, she had new-onset complete heart block. She was temporarily paced but developed cardiac failure. Anesthetic challenges and management of this parturient with post mitral valve replacement, complete heart block, and warfarin-induced coagulopathy for emergency cesarean delivery are discussed in this case report. Ours is the first case report of a pregnant patient with new onset of complete heart block during pregnancy several years after mitral valve replacement.

Key words: Cesarean delivery; coagulopathy; complete heart block; parturient; prosthetic mitral valve; warfarin

Introduction

With advancement in science and technology, we encounter patients suffering from severe rheumatic heart disease with their valves replaced and on oral anticoagulants. The physiological changes of pregnancy and labor may have an impact on such parturients who present unique challenges when they are lost to follow-up and present in an emergency. We discuss one such parturient with prosthetic mitral valve, new onset of complete heart block (CHB), and cardiac failure on temporary pacing, with necessity for correction of warfarin-induced coagulopathy who presented for emergency cesarean delivery.

Case Report

A 24-year-old primigravida, booked case in our hospital, was a known case of rheumatic heart disease (RHD) and had mitral valve replacement (MVR) with a mechanical valve at 19 years of age and was on regular follow-up. During her first trimester, she was switched over from warfarin to low molecular weight heparin (LMWH). During the second trimester, she was restarted on warfarin, her heart rate (HR) was 50/min and electrocardiogram (ECG) revealed sinus rhythm. She was anemic and was treated with oral and parenteral iron. After 30 weeks of gestation she was lost to follow-up. At 37 weeks, she presented with draining per vaginum. Her HR was 36–40/min and blood pressure (BP) was 100/60 mmHg. Though she was asymptomatic, ECG revealed CHB. The cardiologist placed a temporary pacemaker through the right internal jugular vein (IJV) and set the HR at 80/min in VVI (ventricular pacing, ventricular sensing, inhibition

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response) mode. She was posted for emergency cesarean delivery due to nonprogression of labor and cephalo-pelvic disproportion (CPD). On preoperative assessment, she had dyspnea at rest and continuous new-onset cough. Her HR was 80/min paced, BP was 160/100 mmHg, and auscultation revealed bilateral crepitations with fall in room air SpO_2 from 98 to 92%, suggestive of cardiac failure. Presuming that the failure was secondary to HR of 80/min as the patient was asymptomatic with HR 40/min, after discussion with cardiologist, HR was reset at 50/min. She was treated with propped-up position, O_2, IV Frusemide (40 mg). ECG revealed good valvular function, biventricular functions, and moderate pulmonary artery hypertension. Hemoglobin at this stage was 8.6 g%, prothrombin time (PT) with International Normalized Ratio (INR) was 2.9, and other investigations were normal. Though it was an emergency, we had few hours for optimization as the continuous fetal HR monitoring was reassuring. Our anesthetic challenges and concerns were: (1) MVR status; (2) CHB on temporary pacemaker; (3) warfarin-induced coagulopathy; (4) ongoing treatment for cardiac failure; (5) fresh frozen plasma (FFP) and packed red blood cells (PRBC) transfusion may result in further volume overload; (6) temporary pacemaker; and (7) Issues regarding insertion of another central venous catheter when the temporary pacemaker was *in situ*. The patient was optimized over a period of 3 h with 2 units of FFP and IV Frusemide (40 mg) during transfusion. Patient improved symptomatically, and was taken up for cesarean delivery. Preoperatively, she received antiaspiration and infective endocarditis prophylaxes. In the operation theater, she was attached to ASA standard monitors. Pre-induction, left IJV was catheterized under ultrasound guidance with 7-Fr central venous catheter (CVC) [Figure 1] and left radial artery was cannulated. Paced HR was 50/min, CVP was 19 mmHg, and IBP was 106/56 mmHg. She was pre-oxygented with 100% oxygen. Rapid sequence induction was achieved with IV Glycopyrrolate (0.2 mg), thiopentone (250 mg), succinylcholine (100 mg), and she was intubated with 7-mm ID cuffed ETT, confirming with capnography. Anesthesia was maintained with O_2/N_2O/isoflurane/vecuronium/morphine with controlled ventilation. Bipolar diathermy was used. The baby was delivered with APGAR scores of 8/10 and 9/10 at first and fifth minute, respectively. Uterus contracted well with oxytocin infusion. Intraoperative blood loss was 800 ml, 2 units FFP, and 1 unit PRBC were transfused to maintain MAP of 60–70 mmHg. Postoperatively, there was no excessive blood loss and the patient was bridged with therapeutic dose of LMWH 8 h later. She was extubated on first postoperative day. Later permanent pacemaker (PPM) was placed and set in VVI mode (HR, 70/min). She was restarted on oral anticoagulants and was doing well at the time of discharge.

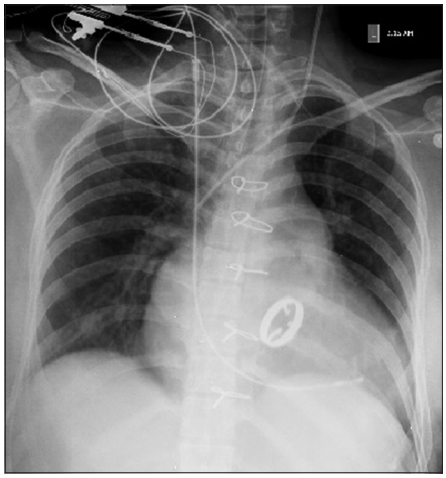

Figure 1: Chest Xray showing Temporary pacemaker , Artificial Mechanical Mitral Valve and Triple lumen central line from the Left internal jugular vein

Discussion

Our main concerns in these parturients with prosthetic valves would be maintaining valve function by keeping them in hypocoagulable state and preventing infective endocarditis. As soon as the pregnancy is confirmed, patients should be started on LMWH to prevent the teratogenic effect of warfarin. During the second trimester, warfarin can be restarted and continued till term. Once again at term, patient should be switched over to LMWH to prevent warfarin-induced excessive bleeding.[1,2] Our patient was lost to follow-up after 30 weeks and we could not bridge with LMWH during term resulting in warfarin-induced coagulopathy posing threat for excessive blood loss during vaginal/cesarean delivery.

The incidence of CHB following cardiac surgeries are 1.5%.[3] The requirement for PPM implantation is more frequent after valve surgery (ranging 3%–6%) than that after isolated coronary artery bypass grafting (0.8%).[4] CHB following MVR usually manifests in the immediate first 2 weeks postoperatively. The isolated CHB diagnosed for the first time during pregnancy are also reported.[5] On reviewing our patient's old records, we noted that she had normal sinus rhythm until second trimester of pregnancy, that is almost 4 years post MVR. Other causes for CHB such as drugs and electrolyte imbalance were ruled out by history, clinical records, and laboratory investigations. The cause for her CHB could be attributed to the physiological changes of pregnancy post MVR status. Because our patient was asymptomatic even with HR of 40/min, increasing the HR to 80/min after pacing precipitated cardiac failure.

To reverse warfarin-induced coagulopathy acutely, prothrombin complex concentrate (PCC) transfusion is the most effective

way. Advantages of PCC over FFP includes potentially more complete correction and absence of volume overload.[6] Due to nonavailability of PCC in our center, we transfused FFP to our patient. Ours is the first case report of a parturient with new onset of CHB during pregnancy several years after MVR.

Conclusion

In patients with asymptomatic CHB, we recommend that the paced HR should be stepped up incrementally to avoid congestive heart failure. Vigilance to detect heart blocks during pregnancy in parturients with prosthetic valves would help in their safe management.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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