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CORRESPONDENCE ANESTHESIA & CONCURRENT DISEASE

Peripartum cardiomyopathy in the immediate post-operative period

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Peripartum cardiomyopathy (PPCM) has a reported incidence of about 10.3 patients per 10,000 live births.[1] In India, an incidence of 1 per 1374 live births has been reported.[2] PPCM usually presents as left ventricular dysfunction in late pregnancy and immediately after delivery. Symptoms are often confused with that of normal pregnancy. Delay in diagnosis often contributes to poor outcomes. Our case was unique as, although the patient presented during the immediate postoperative period, but there were no symptoms, other than heart rate variation. If echo had not been done, the patient may had landed into heat failure.

A 26-year-old female of G2P1L1 at a gestational age of 37 weeks + 5 days was admitted to a teaching hospital with labor pains. Her first and second trimesters were uneventful. Antenatal ultrasound scans were normal. In eighth month of pregnancy, she had low blood pressure at 80/50 mmHg and hence, underwent an echocardiogram, which showed normal values (EF - 72%, fractional shortening - 42%, left ventricular internal diameter - 40 mm). Afterwards,

Emergency cesarean section (CS) was planned at term for current pregnancy due to abdominal pain (Category-1; previous CS in labor). Informed consent was obtained. Aspiration prophylaxis was given. The patient was shifted to operation theatre in the left lateral position and standard monitors e.g., non-invasive blood pressure, pulse oximetry, three lead electrocardiography, were connected. Baseline vital signs were recorded as pulse rate -101/min, BP - 100/60 mmHg, SpO_2 - 99% on room air. Intravenous access was secured and co-loading of Ringer lactate 20 ml/kg fluid was started. The patient was kept in left lateral position. Under aseptic precautions, L2 - L3 space identified, 23G spinal needle was inserted and 2 ml of inj. bupivacaine heavy 0.5% was injected intrathecally. Once the T6 sensory level was achieved the surgery was started. Blood pressure was monitored every minute till baby was delivered, after which three-minute cycles were used. She had an episode of hypotension (80/50 mmHg) which responded to 12 mg of ephedrine. Oxytocin 10 IU were given. A baby of 3.23kg was delivered with APGAR scores of 8/10 and 9/10 at 1 and 5 min respectively. Inj tramadol 50 mg IM was given for postoperative analgesia. Intraoperative blood loss was about 500 ml. After completion of surgery the patient was shifted to the recovery room with stable vital signs. 15 min after shifting she had bradycardia of 42 beats/min for which inj. atropine 0.6 mg IV stat was given, which improved the heart rate to 70-80 beats/minute. The patient was conscious, comfortable and was shifted to the postoperative ward after 1 hour. Her spinal sensory level was T10. The patient developed gradual onset of tachycardia of 130-140 beats/min after one hour of shifting. BP was 130/90. She was comfortable and pain free (VAS 3/10) and had adequate urine output. Tachycardia persisted after a fluid bolus of 250 ml and additional analgesia with fentanyl 50 µg IV. The unexplained tachycardia was evaluated with a 12 lead

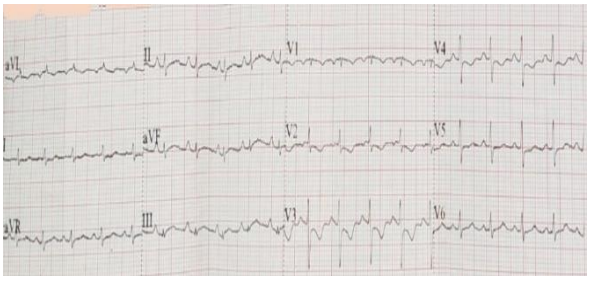

Figure 1: Postoperative electrocardiogram

ECG and it showed poor R-wave progression, T wave inversion in V2 to V5, ST depression in V4, V5, and sinus tachycardia (Figure 1).

Cardiology opinion was sought and bedside echocardiography revealed the presence of regional

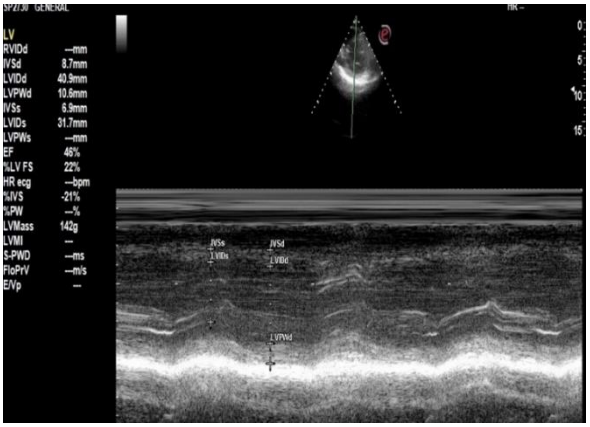

Figure 2: Postoperative echocardiogram

wall motion abnormality, hypokinetic inferior wall and septum, mild mitral regurgitation (MR), mild LV dysfunction, EF- 46%, good RV function, left ventricular fractional shortening - 22%, end-diastole dimension 40.4 mm. A diagnosis of possible PPCM was made (Figure 2).

Inj. fondaparinux 2.5 mg S/C was started by the cardiologist. After 12 h the patient was stable with normal hemodynamic variables. After 5 days of injectable anticoagulant, the patient was started on tablet nicoumalone 2 mg 0–0–1, tablet frusemide 20 mg, spironolactone 50 mg ½–0–0, isosorbide dinitrate 20 mg, hydralazine 37.5 mg 1-0-1 and ivabradine 5 mg ½–0–½. After 8 days, the patient was discharged and advised review after one month. Follow up was done through phone calls. The patient was comfortable without any complaints.

PPCM patients usually present with symptoms and signs of left and right heart failure. PPCM is categorized into early, traditional and late (presenting between first to ninth months, last month to fifth month post-delivery, and sixth to twelfth month post-delivery respectively).[3] Various risk factors like advanced maternal age, pre-eclampsia, hypertension, multiple gestation pregnancy, autoimmune disease, substance abuse, asthma have been identified for PPCM. Our patient did not have any risk factors.

Our patient underwent echocardiography for low BP at the eighth month of the antenatal period which was normal. This is unique as she presented with heart rate variations in the immediate postoperative period. Common causes of postoperative tachycardia, such as pain, hypovolemia, hypoxia, shivering and autonomic dysreflexia were ruled out in this patient. The ECG and echo helped in diagnosing PPCM. Our patient perfectly exhibited the diagnostic criteria suggested for PPCM, e.g., left ventricular ejection fraction (LVEF) < 0.45 or M-mode fractional shortening < 30% (or both) and end-diastolic dimension > 2.7 cm/m^2. [4] Several cases of successful PPCM management have been published.[5]

Bedside echocardiography of our patient revealed the presence of regional wall motion abnormality, hypokinetic inferior wall and septum, mild mitral regurgitation, mild LV dysfunction, EF- 46%, good RV function with left ventricular fractional shortening - 22% and end-diastole dimension 40.4 mm, which satisfy the diagnostic criteria of PPCM (Figure 2).

Management of PPCM includes ionotropic support, diuretics, vasodilators, ACE inhibitors and prophylactic anticoagulants. Regional anesthesia can be tried in case of compensated heart failure with stable vitals. Epidural analgesia helps to mitigate hemodynamic response. Patients with decompensated heart failure are managed under general anesthesia. Emergency airway cart for intubation and defibrillator with all the emergency ionotropic drugs should be kept ready in all PPCM suspected cases.

PPCM has varying presentations and is associated with many life-threatening complications like cardiogenic shock, unstable arrhythmias and thromboembolism.[6] Hence it is important to anticipate PPCM in patients showing varying hemodynamic parameters like unstable heart rate and blood pressure in the postoperative period even though they are asymptomatic.

We managed the patient with inotropes, ivabradine and low molecular weight heparin, which helped in improving her vital parameters and prevented further life-threatening complications. PPCM patients have a high chance of relapse in subsequent pregnancy. Clinicians should be vigilant to rule out deadly complications.

References

1. Kolte D, Khera S, Aronow WS, Palaniswamy C, Mujib M, Ahn C, et al. Temporal trends in incidence and outcomes of peripartum cardiomyopathy in the United States: a nationwide population-based study. J Am Heart Assoc. 2014 Jun 4;3(3):e001056. doi: 10.1161/JAHA.114.001056. PMID: 24901108; PMCID: PMC4309108
2. Pandit V, Shetty S, Kumar A, Sagir A. Incidence and outcome of peripartum cardiomyopathy from a tertiary hospital in South India. Trop Doct. 2009 Jul;39(3):168-9. [PubMed] DOI: 10.1258/td.2008.080353
3. Honigberg MC, Givertz MM. Peripartum cardiomyopathy. BMJ. 2019 Jan 30;364:k5287. [PubMed] DOI: 10.1136/bmj.k5287
4. Wu VC, Chen TH, Yeh JK, Wu M, Lu CH, Chen SW, et al. Clinical outcomes of peripartum cardiomyopathy: a 15-year nationwide population-based study in Asia. Medicine (Baltimore). 2017 Oct;96(43):e8374. [PubMed] DOI: 10.1097/MD.0000000000008374
5. Bauersachs J, König T, van der Meer P, Petrie MC, Hilfiker-Kleiner D, Mbakwem A, et al. Pathophysiology, diagnosis and management of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Study Group on peripartum cardiomyopathy. Eur J Heart Fail. 2019 Jul;21(7):827-843. [PubMed] DOI: 10.1002/ejhf.1493
6. Triebel J, Clapp C, Martínez de la Escalera G, Bertsch T. Remarks on the prolactin hypothesis of peripartum cardiomyopathy. Front Endocrinol (Lausanne). 2017 Apr 11;8:77. [PubMed] DOI: 10.3389/fendo.2017.00077

