A 34-year-old lady in the 19th week of gestation was referred for emergency evacuation of products of conception, following intrauterine fetal death and persistent vaginal bleeding. She was suffering from complete heart block with a heart rate of 42 beats per minute. A temporary pacemaker was implanted and she was taken up for surgery. She developed an acute bronchospasm just before induction of anesthesia, which was successfully managed, without delaying the operative procedure. Her anesthetic management is discussed in detail in this paper. She was discharged on the 8th postoperative day after implanting a permanent pacemaker. Cause of her complete heart block was found to be systemic lupus erythematosus.

**Keywords:** Bronchospasm, Complete heart block, IUFD, Pregnancy.

**CASE DESCRIPTION**

A 34-year-old fourth gravida at the 19th week of gestation presented with chest pain and dizziness for four days and vaginal bleeding for two days. Chest pain was non-anginal and intermittent. Dizziness was concurrent with chest discomfort and non-postural. She gave no history of fever, loss of consciousness, headache, and swelling of legs or face. There was no past history of asthma and allergy to any medication. Family history had nil relevance.

She had a full-term vaginal delivery 6 years back followed by two mid-trimester spontaneous abortions and had not undergone any antenatal checkup for the present pregnancy till date.

On examination, the patient was conscious, cooperative, oriented, afebrile, pale with a heart rate (HR) of 42 beats/minute, a blood pressure of 130/70 mm Hg, and a respiratory rate of 20/minute. Auscultation of lungs revealed bilaterally equal air entry without adventitious sounds. Cardiovascular examination was normal apart from bradycardia. Airway examination showed adequate mouth opening, neck extension, Mallampati Grade II. She had taken her last meal four hours earlier. Obstetrical examination revealed the 18th-week uterus with blood clots and prolapsed cord in the vagina.

Investigation showed Hb 9.7 g/dL; total leukocyte count (TLC) 19,280/mm³; differential count neutrophils 90, lymphocytes 7, and eosinophils 3; platelets 3.2 lakhs; troethrombin time 14.09 seconds with international normalized ratio (INR) 1.05. aPTT was 33.5 and D-dimer 3259.30 ng/mL. Serum electrolytes, blood glucose, cardiac enzymes, and thyroid function test were within normal limits. Arterial blood gas analysis revealed pH 7.42, pCO₂ 16 mm Hg, pO₂ 77 mm Hg, and serum lactate 4.7 mmol/L. ECG showed CHB, while 2D echocardiography and chest radiography were within normal limits (Fig. 1). Ultrasonography and Doppler study documented an absence of fetal cardiac activity with reversal of flow in the uteroplacental bed, implying intrauterine fetal death. Bilateral lower limb Doppler showed normal flow in deep veins. After counseling and obtaining written informed consent, she was accepted as ASA IIIE. Intra-arterial cannulation for hemodynamic monitoring in addition to intravenous cannulation with a 16 G cannula for maintenance of the administration of fluids was carried out. Two units of packed red blood cells were cross-matched. Temporary pacemaker implantation (TPI) was done in the cath lab and set at VVI mode with a rate of 70 bpm, an output of 5 mA, and a sensitivity of 5 mV (Fig. 2). She was premedicated with Inj. metoclopramide 10 mg IM and Inj. ranitidine 50 mg IV.

**ABSTRACT**

A 34-year-old lady in the 19th week of gestation was referred for emergency evacuation of products of conception, following intrauterine fetal death and persistent vaginal bleeding. She was suffering from complete heart block with a heart rate of 42 beats per minute. A temporary pacemaker was implanted and she was taken up for surgery. She developed an acute bronchospasm just before induction of anesthesia, which was successfully managed, without delaying the operative procedure. Her anesthetic management is discussed in detail in this paper. She was discharged on the 8th postoperative day after implanting a permanent pacemaker. Cause of her complete heart block was found to be systemic lupus erythematosus.

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After attaching standard ASA monitors in OT, she suddenly developed tachypnea and air hunger with RR 44 per minute, HR 148 bpm, BP 170/90 mm Hg, inadequate air entry with bilateral wheeze and rhonchi, desaturated to 73–68% even with a non-rebreathing oxygen mask delivering 10 L/minute. Bronchospasm was diagnosed and the procedure was withheld till the patient stabilized. She was propped up to 60°, administered humidified O₂, nebulized with 2.5 mg salbutamol every 15 minutes and injected with hydrocortisone 200 mg IV. After 45 minutes, HR settled down to 96/minute, RR 28/minute, BP 130/90 mm Hg with SpO₂ 93% on 6 L/minute oxygen supplementation by a face mask.

General anesthesia (GA) was administered by a rapid sequence induction with an injection of ketamine (2 mg/kg) and an injection of succinylcholine (1.5 mg/kg). Endotracheal intubation is followed with 7 mm ID cuffed ET Tube and anesthesia is maintained using sevoflurane (2%) with oxygen:air (50:50) and titrated the dose of injection vecuronium and injection fentanyl. She was ventilated in intermittent positive pressure ventilation (PCV mode, peak airway pressure 30 cm H₂O and I:E 1:2). Intraoperatively patient remained hemodynamically stable and ABG showed pH 7.45, pCO₂ 16 mm Hg, pO₂ 87 mm Hg with cLactate 2.8 mmol/L; however, there were bilateral scattered rhonchi and basal crepitations. She underwent
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elective postoperative ventilation and was extubated 36 hours later. A permanent pacemaker was implanted before discharge on 8th postoperative day. Follow-up investigation after 6 weeks reported raised Anti-ds DNA antibody titre 1:320 (significant > 1:80) and Anti-Sm antibody titre 1:160 (significant > 1:40).

**DISCUSSION**

The positive findings in our patient were the history of two mid-trimester abortions, symptomatic CHB, IUFD, anemia, raised total leucocyte count, and D-dimers levels complicated with an immediate preoperative bronchospasm.

CHB associated with pregnancy is rare. Our patient did not manifest similar symptoms in her previous three pregnancies, which included one full-term delivery of a healthy baby and two mid-trimester spontaneous abortions, thus confirming that a CHB was acquired. The common causes of an acquired CHB are coronary artery disease, dyselectrolytemia, autoimmune disorders, and infections such as viral myocarditis and physiological changes of pregnancy themselves. Normal cardiac enzyme levels and echocardiography ruled out an acute coronary event and infective myocarditis.

The cause of anemia, neutrophilia, and raised serum lactates can be attributed to the pregnancy state itself and also to degenerated circulating fetal products as a sequelae of IUFD. D-Dimer concentration increases above normal (500 ng/L) in pregnancy owing to increased fibrinogen levels, with the mean values being 409 ng/L and 690 ng/L in the second and third trimester respectively. A significantly raised value of D-dimer (3259.60 ng/L) in our patient implied that the underlying hypercoagulable state is related to a reason other than pregnancy. American College of Cardiology (ACC) and American Heart Association (AHA) guidelines advise Temporary Pacemaker Implantation (TPI) in CHB associated with symptomatic bradycardia, which we carried out in this case and took her up for uterine evacuation in view of active vaginal bleeding as ASA IIIe. The patient experienced an episode of bronchospasm in the immediate preoperative period. We deferred the procedure and treated the bronchospasm. The cause of spasm could be due to the circulating products of the two-day-old IUFD, pre-operative administration of prostaglandin E2, vaginal suppository or some other cause. Hyper-reactive airway as a cause of bronchospasm was unlikely, as there was no past history of asthma, atopy, allergy, or hypersensitivity reactions.

Since our patient had a full stomach, a rapid sequence induction was done and elective postoperative ventilation was planned due to persisting bronchospasm.

CHB was persistent as was evident in the Holter monitoring postoperatively. A dual-chamber permanent pacemaker was implanted prior to discharge on the 8th postoperative day. At follow-up, six weeks after surgery, serum levels of Anti ds DNA antibodies and Anti Sm Antibodies 1:120 were tested. Both were significantly raised: Anti ds DNA 1:320 (significant > 1:60) and Anti Sm 1:120 (significant > 1:80), favoring the diagnosis of systemic lupus erythematosus (SLE), which explained the presence of CHB and recurrent mid-trimester abortions.

**CONCLUSION**

Our case (a 34-year-old lady) is presented in the fourth gestation with CHB, IUFD, and active vaginal bleeding. She was posted for emergency uterine evacuation. TPI was carried out on her for CHB. Before induction, she developed a severe bronchospasm, which was treated with intravenous bronchodilators and hydrocortisone. Surgery was carried out under GA. Postoperatively she required ventilatory support for 36 hours. She was discharged on the 8th postoperative day after implantation of a permanent pacemaker. The cause of her CHB and recurrent trimester abortions was later found to be due to SLE.

**CLINICAL SIGNIFICANCE**

CHB, though rare in pregnancy, should be investigated appropriately and more so when associated with IUFD, bad obstetric history, hypercoagulable state, and a perioperative bronchospasm, all of which suggest the presence of an underlying disease with multisystem involvement. A multidisciplinary team approach is always required to obtain a positive patient outcome.

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**REFERENCES**