Abstract: About 1% of all pregnancies are complicated by maternal cardiac diseases. Among the various cardiac pathologies complicating pregnancy, arrhythmias are the most common. Most of them are diagnosed for the first time during pregnancy. Tachyarrhythmias are the commonest form of arrhythmias reported during pregnancy. Risk factors for this are the presence of organic heart disease, various hormonal and hemodynamic changes during pregnancy. Fortunately most of these arrhythmias are benign and require no intervention. Treatment options must take into consideration hemodynamic status of mother, gestational age and the possible teratogenic effect of medications on the fetus. We are hereby reporting a case of successful electrical cardioversion performed in a woman at 37th week of gestation due to resistant symptomatic atrial fibrillation.

Keywords: Cardioversion; late pregnancy; case report.

About 1% of all the pregnancies are complicated by maternal cardiac diseases (1), of which arrhythmias are the most common. Tachyarrhythmias are the commonest form of arrhythmias reported during pregnancy (2, 3). We are hereby reporting a case of electrical cardioversion (ECV) performed due to persistence of symptoms in a case of resistant atrial fibrillation (AF) in a woman at the 37th week of pregnancy.

Case Report

Thirty-seven-year-old primigravida presented to our emergency department at 27th weeks of gestation with complain of palpitation. She had no significant past medical illness and was hemodynamically stable. Abdominal ultrasound examination confirmed fetal viability and growth of the fetus which were consistent with her duration of the pregnancy. Her initial transthoracic echocardiogram was within normal limit. Blood investigations were done to rule out anemia, hyperthyroidism and electrolyte abnormality. Her electrocardiogram (ECG) showed AF and she was started on metoprolol and therapeutic dose of low molecular weight heparin (LMWH).

After six weeks, her ECG showed rate controlled AF. Foetal maturity was confirmed at thirty-fourth weeks of gestation by abdominal ultrasound examination. After multidisciplinary meeting it was decided to do transoesophageal echocardiography (TOE) to rule out any left atrial thrombus followed by elective ECV to revert her back to sinus rhythm as she was still symptomatic with complain of palpitation.

She was admitted the night before the procedure. LMWH was withheld twenty-four hours before the procedure in anticipation of any emergency cesarean section which may arise with cardioversion. In the operating theatre standard monitoring was applied. To assess fetal wellbeing continuous cardiotocogram (CTG) was also used. Obstetrician was on standby for any emergency cesarean section if such situation arises. Difficult airway trolley was kept in the operation theater.

Patient was given acid aspiration prophylaxis with intravenous ranitidine (50 mg) and oral sodium citrate (0.3 Molar, 30 ml) 15 minutes before the procedure. General anesthesia was induced using modified rapid sequence induction technique with propofol (2.5 mg/kg) and rocuronium (1 mg/kg). Airway was secured with a cuffed endotracheal tube. Anesthesia was maintained with oxygen, air and sevoflurane. Ventilation was controlled using intermittent positive pressure technique. TOE revealed normal cardiac anatomy. She responded to a single synchronised shock of 150 Joules (Fig. 1).
precipitate transient fetal bradyarrhythmias which may require emergency cesarean section. It may also precipitate premature labour as hypertonic uterus and amniotic fluid act as good conductors of electricity (7, 8). Placement of pads anteroposteriorly rather than anterolaterally further minimises this risk.

Our patient was treated with metoprolol initially for rate control as per recommendation (5). Heart rate of our patient responded to the medical therapy, but her AF persisted and she continued to be symptomatic due to palpitation. Once fetal maturity was ensured it was decided to perform electrical cardioversion for reversion of her heart rhythm to which she responded. As the AF was more than 48 hours she was anticoagulated with LMWH as oral anticoagulant is mostly contraindicated in pregnancy (5). Pharmacological cardioversion is another way of reverting AF to sinus rhythm. But in pregnancy most of such drugs are contraindicated due to teratogenic effect. ECV in that context is safe if properly conducted. We thus opted for ECV in our case over pharmacological cardioversion.

She was extubated after adequate reversal of neuromuscular blockade with injection sugammadex (16 mg/kg) and was transferred to post anesthesia care unit after ensuring adequate hemodynamic stability and fetal wellbeing. She was discharged on the next day. Her anticoagulant was continued for four weeks. She subsequently gave birth to a healthy baby at forty weeks of gestation delivered by cesarean section.

**DISCUSSION**

Symptomatic arrhythmias during pregnancy affect the wellbeing of both the mother and the fetus. Treatment options depend upon the type of arrhythmias, maternal hemodynamic status, and possible side effects on the fetus (4, 5). ECV in pregnancy is considered safe and effective treatment modality when the pharmacological intervention fails to control the symptoms or the symptoms are life threatening (5, 6). Timing of the procedure is very important as ECV during pregnancy may precipitate transient fetal bradyarrhythmias which may require emergency cesarean section. It may also precipitate premature labour as hypertonic uterus and amniotic fluid act as good conductors of electricity (7, 8). Placement of pads anteroposteriorly rather than anterolaterally further minimises this risk.

Our patient was treated with metoprolol initially for rate control as per recommendation (5). Heart rate of our patient responded to the medical therapy, but her AF persisted and she continued to be symptomatic due to palpitation. Once fetal maturity was ensured it was decided to perform electrical cardioversion for reversion of her heart rhythm to which she responded. As the AF was more than 48 hours she was anticoagulated with LMWH as oral anticoagulant is mostly contraindicated in pregnancy (5). Pharmacological cardioversion is another way of reverting AF to sinus rhythm. But in pregnancy most of such drugs are contraindicated due to teratogenic effect. ECV in that context is safe if properly conducted. We thus opted for ECV in our case over pharmacological cardioversion.
CONCLUSION

Our case report proves that if properly performed with all precaution using multidisciplinary approach, electrical cardioversion is safe and effective treatment option for atrial fibrillation occurring in pregnancy.

References

8. Barnes E. J., Eben F., Patterson D., Direct current cardioversion during pregnancy should be performed with facilities available for fetal monitoring and emergency caesarean section, BJOG, 109, 1406-1407, 2002.