

Title: A Sentinel Case of Maternal Atrial Fibrillation during Active Labor

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Background/Synopsis: Pregnancy is associated with an increased risk of arrhythmias, such as atrial fibrillation (AF), ventricular tachycardia (VT), and supraventricular tachycardia (SVT).^{1,2} Risk factors include obesity, advanced maternal age over 40, preexisting cardiovascular disease, or cardiovascular morbidities.¹ A study demonstrated a rising trend in arrhythmias during pregnancy with reported frequencies of 68 per 100,000 for all arrhythmias, 27 per 100,000 for AF, 16 per 100,000 for VT, and 22 per 100,000 for SVT.² Atrial fibrillation with rapid ventricular response (AF with RVR) can precipitate maternal and fetal complications, such as preeclampsia, stroke, decreased uteroplacental perfusion, and fetal distress.¹ Treatment with antiarrhythmic agents during pregnancy requires careful consideration due to pregnancy-induced physiological changes affecting drug pharmacokinetics and potential fetal adverse effects. According to 2023 ACC/AHA/ACCP/HRS Guidelines, direct current cardioversion (DCCV) is safe for pregnant individuals with AF as well as the fetus.³ In addition, pregnant patients with AF with structurally normal hearts should be managed with antiarrhythmic agents such as flecainide and sotalol for rhythm control, and beta blockers and digoxin for rate control.³

Objective/Purpose: Over the past 20 years, the prevalence of atrial fibrillation in pregnancy has increased in the United States. This case report aims to highlight important considerations in the management of atrial fibrillation during pregnancy, including acute management of a patient with no prior history of cardiac arrhythmia.

Case Presentation: A 32-year-old female, G3P2003 at 39 weeks, 1 day EGA who presented to our labor and delivery unit for a scheduled induction of labor. The pregnancy was complicated by chronic hypertension (on no medication), sickle cell trait and pre-diabetes with a hemoglobin A1c of 5.9% and a pre-pregnancy BMI of 33. The patient passed her 1 hour GCT during pregnancy. The fetus had a known "horseshoe" kidney.

At the time of admission, the patient had a pulse of 86 bpm. During an assessment of vital signs and patient condition at 5 cm dilation, the patient was noted to have tachycardia in the 120 bpm range. The patient denied chest pain, shortness of breath, or palpitations. EKG was notable for atrial fibrillation with rapid ventricular response (AF with RVR) and PVCs, with a cardiac rate of 110-120 bpm. After consulting with cardiology, diltiazem IV was administered with no immediate improvement. Cardiology considered the AF with RVR to be stress-induced. During the 2nd stage of labor the fetal heart tracing

deteriorated, with recurrent variable decelerations noted despite amnioinfusion and maternal position changes. A low forceps-assisted vaginal delivery was performed, with Apgar scores of 8/9 and a neonatal weight of 2760 g.

Two hours postpartum, a MET call was activated for persistent AF with RVR with a maternal heart rate of 160 beats per minute. The patient was treated with metoprolol, diltiazem, and flecainide, ultimately converting to sinus rhythm. Echocardiogram demonstrated normal cardiac valvular anatomy and function with an ejection fraction of 65%. On postpartum day two, patient remained clinically stable with a normal sinus rhythm. The patient was discharged with prescriptions for diltiazem 120 mg once daily and flecainide 150 mg Q 12 hours.

Conclusion: This case demonstrates the importance of prompt treatment and collaborative care for AF with RVR in pregnancy especially in complicated pregnancies at risk for maternal and fetal hemodynamic instability. As arrhythmias become increasingly more prevalent in the obstetric population, early diagnosis and interdisciplinary care are crucial for reducing perinatal morbidity and mortality.

References:

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