

FETAL ATRIAL FLUTTER ASSOCIATED WITH MATERNAL BETA-SYMPATHOMIMETIC DRUG EXPOSURE

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Beta-sympathomimetic agents are commonly used in pregnancy and have known chronotropic effects. We describe the development of fetal atrial flutter after inadvertent overdose of inhaled albuterol.

Case

A 34-year-old woman, para 1, was admitted at 33 weeks' gestation with fever, dyspnea, and cough. Her medical history was remarkable only for atopic dermatitis and allergic rhinitis. She was treated with intravenous antibiotics for community-acquired pneumonia. An albuterol metered-dose inhaler (two 90- μ g actuations every 4–6 hours) was used to treat her wheezing. On the third hospital day, albuterol nebulizer treatments (2.5 mg) were initiated at 4-hour intervals. The metered-dose inhaler was inadvertently continued. Over the next 24 hours, the patient received five doses of albuterol by metered-dose inhaler and five doses by nebulizer.

Three hours after the last dose of albuterol, fetal tachycardia exceeding 200 beats per minute was detected. Six hours earlier, auscultation had shown a normal rate. The maternal heart rate was 90–100 beats per minute and the patient was afebrile. A biophysical profile score was 8 of 8. Fetal echocardiography detected atrial flutter at a rate of 420 beats per minute with predominantly 2:1 conduction and rare 1:1 and 3:1 conduction. Albuterol administration was stopped. Eight hours after detection of the fetal dysrhythmia, there was spontaneous conversion to a normal rate. Normal atrial and ventricular rates were confirmed by echocardiography. No further fetal tachycardia was detected during the remainder of the pregnancy despite resumption of therapeutic doses of inhaled albuterol. The infant was delivered at term and observed in the hospital for 4 days. A heart rate of 130–150 beats per minute was documented during hospitalization. Two electrocardiograms were within normal limits.

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Comment

Beta-mimetic therapy has been used extensively in pregnancy for treatment of asthma and premature labor. Fetal sinus tachycardia is a recognized side effect, primarily during intravenous administration.¹ Despite a MEDLINE search of appropriate terms over the years 1990–1995 and review of textbook chapters and review articles, we were unable to locate any reports of fetal arrhythmia associated with maternal administration of beta-mimetic therapy. Fetal and neonatal heart rate irregularities without sustained tachycardia have been reported in association with maternal caffeine intake.² Maternal cocaine use has been associated with a variety of fetal and neonatal arrhythmias, including sustained supraventricular tachycardias and atrial flutter.³ Although we cannot confirm the cause or specify the pathophysiology, the temporal association of the dysrhythmia with the albuterol overdose, without recurrence, is of great concern.

This case supports the practice of fetal heart rate surveillance during administration of intravenous beta-mimetic therapy and suggests that the fetal heart rate should be evaluated in pregnant patients with iatrogenic, accidental, or intended overdose of inhaled beta-mimetic therapy. Exposure to beta-mimetics and other chronotropic agents should be reconsidered in women who present with fetal arrhythmia.

References

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