

Fetal Atrial Flutter in a Term Antenatal

Field B¹, Nugent R¹

¹Obstetrics & Gynaecology Department, Sunshine Coast University Hospital, Queensland.

Correspondence: byron.field@health.qld.gov.au

Sunshine Coast
Hospital and Health Service
Exceptional people. Exceptional healthcare.

BACKGROUND

Fetal tachyarrhythmias occur in 1-2% of all pregnancies. Atrial flutter is the second most common fetal tachyarrhythmia.¹

Fetal atrial flutter can cause cardiac failure, neurological sequelae, and death if undetected in utero.²

M-mode & Doppler echocardiography are the cornerstones of early diagnosis, can assess for signs of cardiac failure, and monitor the efficacy of anti-arrhythmic therapy.³ M-Mode assesses the mechanical motion of the atrial and ventricular walls (figure one)⁴; while Doppler assesses the flow patterns at the superior vena cava and the ascending aorta.⁵

Treatment is aimed at rate control or conversion to sinus rhythm, and can be instituted either in utero or during the neonatal period.³

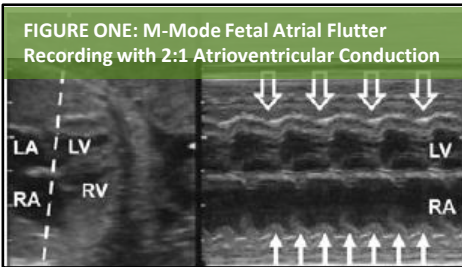


FIGURE ONE: M-Mode Fetal Atrial Flutter Recording with 2:1 Atrioventricular Conduction

CASE

A 40 year old G1P0 at 39+3 presented for planned induction of labour for advanced maternal age. She was rhesus positive, BMI 20, and a gestational diabetic well controlled with dietary modification. EFW was 40% at 37 weeks.

A CTG was commenced at 1640 and showed baseline fetal heart rate of 195BPM, absent variability, and nil accelerations (figure two). Maternal observations were normal. Despite intravenous fluid boluses, & maternal position changes the CTG remained persistently abnormal

A decision was made for category two emergency LSCS at 1715 and a live baby male was delivered at 1809 with APGARs of 9 and 9, and normal cord gases.

Post-delivery the neonate was persistently tachycardic to 195BPM. 12 lead ECG revealed atrial flutter with 2:1 block.

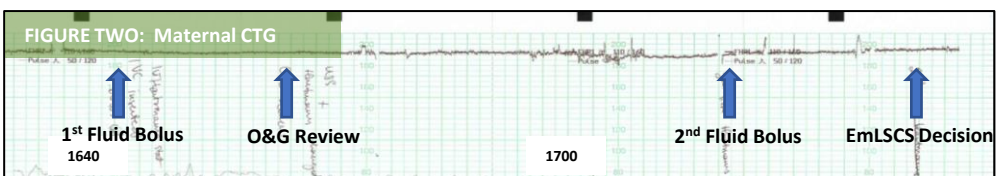


FIGURE TWO: Maternal CTG

The neonate was treated with antibiotics to cover sepsis and transferred to a tertiary centre where the diagnosis of atrial flutter was confirmed on echocardiogram and a successful cardioversion performed.

DISCUSSION

Fetal atrial flutter can be recognised as fetal tachycardia on a CTG. Fetal tachycardia has a broad differential (figure three)⁶ and can easily be misinterpreted as fetal distress as occurred in this case.⁷

FIGURE THREE: Causes of Fetal Tachycardia

Maternal tachycardia, dehydration, or fever
Infection e.g. chorioamnionitis
Drugs e.g. salbutamol
Fetal tachyarrhythmia
Hypoxia

Foetal echocardiography can help confirm the presence/type of arrhythmia, and assess for complications. However, it is limited by its cost, and high level of operator expertise to perform.⁷ It was not available at the delivery hospital in this case.

The decision to treat atrial flutter in utero versus deliver is impacted by gestational age, lung maturity, and evidence of cardiac failure.³

It is unlikely that echocardiography would have changed the clinical course of this case because the fetus was term. However, in a preterm fetus; echocardiography would guide timing of delivery by monitoring for evidence of cardiac failure and responsiveness to in utero treatment.

REFERENCES

- [1] Yu H, Chang Y, Chao A, Liang C. Prenatal Diagnosis and Management of Fetal Atrial Flutter: A Case Report. *Journal of Medical Ultrasound*. 2003;11(4):160-162.
- [2] Wren C. Cardiac arrhythmias in the fetus and newborn. *Seminars in Fetal and Neonatal Medicine*. 2006;11(3):182-190.
- [3] Lisowski L, Verheijen P, Benatar A et al. Atrial flutter in the perinatal age group: diagnosis, management and outcome. *Journal of the American College of Cardiology*. 2000;35(3):771-777.
- [4] Maeno Y, Hirose A, Kanbe T et al. Fetal Arrhythmia: Prenatal Diagnosis & Perinatal Management. *Japan Society of Obstetrics & Gynaecology*. 2009;35(4):623-629.
- [5] Chao R, Ho E, Hsieh K. Fetal atrial flutter and fibrillation: Prenatal echocardiographic detection and management. *American Heart Journal*. 1992;124(4):1095-1098.
- [6] RANZCOG. Fetal Surveillance Education Program. Presentation at Royal Brisbane & Women's Hospital; 2017.
- [7] Casey F, McCrindle B, Hamilton R, Gow R. Neonatal atrial flutter: Significant early morbidity and excellent long-term prognosis. *American Heart Journal*. 1997;133(3):302-306.