

## Two faces of atrial flutter: double tachycardias in the fetus and neonates

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**Introduction:** Fetal tachyarrhythmia is an uncommon condition that occurs in 0.4% to 0.6% of all pregnancies. Atrial flutter (AFI) accounts for 26% to 29% of all fetal tachyarrhythmias. There has been no report specifically studying association of fetal atrial flutter with postnatal atrioventricular tachycardia. We aimed to investigate prenatal and postnatal outcomes of atrial flutter and its role in the development of a second tachycardia following restoration of sinus rhythm in the fetus or newborn.

### Methods

This study is a retrospective review of all fetuses presented with atrial flutter between October 2001 and August 2017 at the University Hospital of Wales. Demographical characteristics, type and time of the tachyarrhythmia, echocardiographic findings (structure of heart, hydrops, function), applied medical therapies and outcomes were evaluated.

### Results

70 fetuses were diagnosed with fetal tachycardia of whom 24 cases were intermittent and the rest was persistent tachycardia. 54 had supraventricular tachycardia (SVT) and 16 had atrial flutter. 13 of 16 patients with atrial flutter patient were managed by medical treatment and three were delivered without treatment. Five fetuses with fetal atrial flutter developed AVRT after DC cardioversion immediately at birth and four of them exhibited preexcitation in the ECG. One fetus with long RP tachycardia also developed atrial flutter before birth for which the neonate required cardioversion after birth. Two patients had hydrops, two patients Ebstein's anomaly but the rest of the patients had normal heart. Two of the fetuses presented with atrial flutter was diagnosed in 20 to 21 weeks of gestation and the others were diagnosed at the third trimester. In two newborns preexcitation became evident two weeks after discharge from hospital on a Holter recording. One asymptomatic patient with fetal atrial flutter and neonatal preexcitation required accessory pathway ablation.

### Conclusion

Fetal AFI in our study showed a strong association with rhythms involving an accessory pathway: atrioventricular reciprocating tachycardia, blocked reentrant premature atrial contractions, and ventricular preexcitation. We suggest that postnatal electrocardiograms after birth should be carefully reviewed in fetuses presenting with atrial flutter and Holter monitoring should be considered as AVRT could emerge in the neonatal period.