Maternal Serum Antiarrhythmic Drug Levels Do Not Predict Fetal Supraventricular Tachycardia Response Time

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Background: Fetal tachycardia requires rapid diagnosis of fetal rhythm and timely initiation of antiarrhythmic medication. Fetal mortality and neurological morbidity has been unacceptably high when recommended treatment protocols have been followed. However not only maternal antiarrhythmic drug levels but also fetal response time may play an important role in unfavourable outcomes.

Methods: We reviewed all fetuses presenting with tachyarrhythmia to University Hospital of Wales Fetal Cardiology. Flecainide and digoxin combination was treatment of choice. Maternal antiarrhythmic drug levels and fetal response time to tachycardia have been evaluated.

Results: There were 51 patients and 37 fetuses were given flecainide and digoxin combination treatment. The sinus rhythm was established in mean of 4.31±3.21 days (range, 1–14 days) in fetuses with supraventricular tachycardia (96%). The response time in atrial flutter was longer with a mean of 9.0±6.95 days (range, 1–18 days). Hydrops resolved completely in all fetuses but it took as long as 2 weeks after normalization or reduction of fetal heart rate below 160 bpm. There was no correlation between maternal serum peak drug levels and fetal response time to tachycardia (digoxin r=-0.17 and flecainide r=-0.06).

Conclusion: The two drug combination treatment with flecainide and digoxin has been effective in improving fetal haemodynamics in most cases with fetal supraventricular tachycardia and atrial flutter but tachycardia response time had no significant correlation with maternal serum peak drug levels. Tachycardia response time is highly likely to play an important role in fetal outcomes therefore efforts should concentrate on rapid restoration of sinus rhythm or reducing fetal heart rate as close to tolerable levels as possible rather than following escalation protocols or applying wait and see policy.