

Comparison of Transplacental Treatment of Fetal Supraventricular Tachyarrhythmia with Digoxin, Flecainide and Sotalol: Results of a Non-randomized Multicenter Study

Jaeggi E. (1), Carvalho JS. (2), de-Groot E. (3), Api O. (2), Clur SA. (3), McCrindle B (1), Rammeloo L (3), Manlhiot C. (1), Blom NA. (3)

The Hospital for Sick Children, Toronto, Canada (1); Center of Congenital Heart Disease Amsterdam-Leiden, The Netherlands (2); Royal Brompton & St George's Hospitals, London, United Kingdom (3)

Background. Fetal tachyarrhythmia may result in low cardiac output and death. Consequently, antiarrhythmic treatment is offered in most affected pregnancies. We compared three drugs commonly used to control atrial flutter (AF) and other forms of supraventricular tachycardia (SVT)

Methods. We reviewed 159 consecutive referrals to our centers with fetal SVT (n=114) and AF (n=45). Of these, 75 fetuses with SVT and 36 with AF were treated non-randomly with transplacental flecainide (n=35), sotalol (n=52), or digoxin (n=24) as first-line agents. Kaplan-Meier estimates were used to determine treatment effects over time to birth.

Results. Regardless of the choice of therapy, fetal hydrops (n=33) was associated with treatment failure (hazard ratio 1.8; p=0.035) and in-utero death (hazard ratio 4.7; p=0.003) and AF was more difficult to convert to sinus rhythm prior to delivery than SVT (hazard ratio 2; p=0.005). Cardioversion at 5 and 10 days was achieved in 50% and 63% of treated SVT cases respectively but only in 25% and 41% of treated AF cases. If incessant AF/SVT persisted to day 5 of therapy (n=45), median ventricular rates declined more with flecainide (-22%) and digoxin (-13%) than with sotalol (-5%; p<0.001) (Figure 1). Sotalol was also least likely to convert fetal SVT to a normal rhythm over time as shown in the Figure 2 (p<0.05). No serious drug-related adverse events were observed but arrhythmia-related mortality was 5%. Post-hemorrhagic hydrocephalus without neurological sequels occurred in 1% (2/159 cases). None of the mothers or fetuses experienced severe treatment-related side effects.

Conclusions. Transplacental flecainide and digoxin were superior to sotalol in converting SVT to a normal rhythm and in slowing both AF and SVT to better tolerated ventricular rates and therefore should be considered first to treat significant fetal tachyarrhythmia.

Figure 1

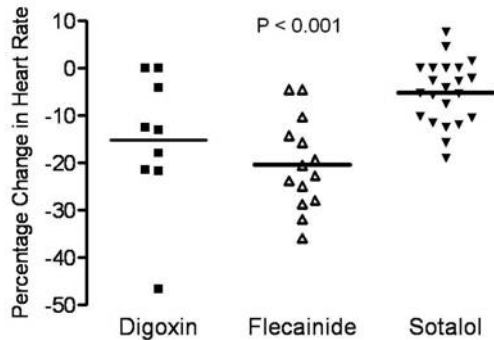


Figure 2

