PW3-1

Correlation of maternal flecainide levels and therapeutic effect in fetal supraventricular tachycardia

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Background: Transplacental flecainide is an established therapy for fetal supraventricular tachycardia (SVT). There is a paucity of data relating to the dose-response relationship of flecainide for this indication.
Objective: To review the relationship between flecainide levels and arrhythmia control for fetal SVT between January 1997 and December 2008 at a tertiary fetal cardiology unit.
Methods: Review of records of fetal SVT cases. Other arrhythmias, for example, atrial flutter, were excluded.

Results: Flecainide was initiated at dose of 100mg three times a day. 27 fetuses were treated with flecainide at median gestation 31 weeks (range: 21-38) for persistent (n=19) or intermittent SVT (n=8). Median fetal heart rate was 250/min (range: 215-316). 11 fetuses were hydropic at initiation; 1 had long ventriculo-atrial tachycardia. Flecainide was administered first-line therapy in 17 and second-line in 10 with no significant . 19/27 (70%) fetuses converted to sinus rhythm. The median time to conversion was 3.5 days (range: 2-48). There were no fetal deaths on flecainide.

The therapeutic range for flecainide was 200-700micrograms/litre. The median flecainide level at reversion to sinus rhythm was 460 (range 250-840). 16/18 responders had a flecainide level within the therapeutic range, 2 were supra-therapeutic. The median flecainide level was 360 (range: 150-840) in fetuses who did not cardiovert and was not significantly different from responders. All non-responders achieved a therapeutic flecainide level during therapy.

Pharmacological cardioversion occurred in 10/11 (91%) hydropic fetuses at a median of 3.5days (range: 2-11) and in 9/16 (56%) non-hydropic fetuses at a median of 4days (range: 2-48). There was no significant difference between the flecainide levels in the hydropic versus non-hydropic groups. There was no significant difference in flecainide levels in non-hydropic fetuses who responded to flecainide (median 455, range 250-700) versus the non-hydropic responders (median 645, range 340-840).

Conclusions: Maternal flecainide levels do not predict cardioversion in the fetus with SVT. The clinical response to flecainide appears good, particularly in hydropic fetuses. Differences in fetal response may be related to placental transfer or electrophysiological properties of the arrhythmia rather than to the maternal blood flecainide level. The fetal safety profile of flecainide appears good.