

IV Amiodarone vs IV Sotalol For Use In Postoperative Junctional Ectopic Tachycardia (JET): A Randomized Study

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Background

- JET is a post-operative arrhythmia that can result in hemodynamic compromise in children after congenital heart surgery.
- In many centers, amiodarone is the pharmacologic treatment of choice. Though effective, it can be associated with serious dose-related adverse effects.
- There is a low rate of cardiovascular collapse and adverse events with the use of sotalol in patients with congenital heart disease(CHD).
- It is unclear whether IV sotalol is as safe and as effective as amiodarone in the treatment of JET.
- This report summarizes our results to date.

Aims

Aim 1: To evaluate the safety of IV sotalol as well as in comparison to IV amiodarone in patients postoperatively with JET through hemodynamic monitoring

Aim 2: To evaluate the efficacy of IV sotalol as well as in comparison to IV amiodarone by assessing tachycardia time to rate control and return to normal sinus rhythm.

Methods

- Patients scheduled for a repair of an atrioventricular canal defect, ventricular septal defect (VSD), Tetralogy of Fallot (TOF) and neonates (<6 mo) undergoing cardiac surgery were consented pre-operatively.
- Patients with confirmed JET were randomized to IV amiodarone or IV sotalol treatment.
- Efficacy was determined by successful termination of JET, time to adequate rate control, and recurrence of JET.
- Adverse events were reported.

Results

- Since September 2019, 85 patients have qualified for enrollment and 50 were consented.
- Ten patients had documented postoperative JET. Five patients were randomized into the study.
- Of the five not randomized, one did not require medications, one was not approached, and three declined enrollment.

CHD type (age)	Drug	Dosage	Outcome (Time to adequate rate control (<165bpm))	Adverse Events
Total anomalous pulmonary venous return (TAPVR) (15 days)	sotalol	1 mg/kg bolus over 60 minutes Repeat 1mg/kg bolus for different rhythm	Successfully AAI paced (60 minutes)	Patient deceased from suspected bacterial sepsis due to Klebsiella pneumoniae. Unrelated to administration of Sotalol.
TOF (5 months)	amiodarone	5 mg/kg bolus x 3 3mg/kg bolus x 8 * Over 60-120 minutes 5-20 mg/kg/day infusion x 8 days	Successfully DDD paced (Intermittent control over 5 days)	None
Transposition of the Great Arteries (TGA), VSD (6 days)	sotalol	1 mg/kg bolus x 2 over 60 minutes	Successfully AAI paced (1 st bolus 60 minutes) (2 nd bolus 120 minutes)	None
TGA (14 days)	amiodarone	5 mg/kg bolus x 2 over 60-90 minutes 5-10 mg/kg/day infusion x 3 days	Successfully AAI paced (1 st bolus, no resolution) (2 nd bolus 240 minutes)	Patient deceased from cardiopulmonary failure secondary to severe pulmonary hypertension present since birth. . Unrelated to administration of Amiodarone.
TOF (7 weeks)	sotalol	1-2 mg/kg bolus x 2	Successfully AAI paced (N/A- prophylactically given) (2 nd bolus 90 minutes)	None

Conclusions

- We have a low incidence of postoperative JET at our institution (11.7%).
- Both medications have achieved rate/rhythm control with no significant adverse events believed to be attributed to either medication.
- We will continue to collect data to determine if IV Sotalol is as safe and as effective as IV amiodarone in patients with postoperative JET.