

## [C-21] Effects of droperidol on the QT interval during volatile anesthesia in patients undergoing stage 2 or 3 single ventricle palliation

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### Abstract

#### Background

Droperidol has been commonly used for postoperative sedation of critically ill children. A FDA black-box warning regarding its arrhythmogenic potential greatly reduced its use. We hypothesized that administration of neuroleptanalgesic dose droperidol during volatile anesthesia would only transiently prolong the corrected QT interval (QTc) in patients undergoing single ventricle palliation.

#### Methods

As part of a prospective study in children undergoing stage 2 or 3 single ventricle palliation we recorded perioperative electrocardiograms (ECGs): (1) preoperatively, (2) after induction of volatile anesthesia, (3) after intravenous infusion of 75 mcg/kg droperidol, and (4) postoperatively after arrival in the cardiac intensive care unit. Mean absolute QT interval and heart rate data were analyzed in blinded fashion for each ECG. The longest QT interval was determined in each ECG and corrected for heart rate (QTc) by the Friderici (QTcF) and Bazett (QTcB) formulae. Any perioperative arrhythmias were recorded.

#### Results

Complete data were available for 62 patients. The corrected preoperative QT intervals were  $382 \pm 27$  ms (QTcF) and  $426 \pm 28$  ms (QTcB). Volatile anesthesia led to significant prolongation of the QTc interval [QTcF  $418 \pm 33$  ms ( $p < 0.001$ ), QTcB  $469 \pm 36$  ms ( $p < 0.001$ )]. Administration of droperidol after cardiopulmonary bypass resulted in a further significant QTc prolongation [QTcF  $434 \pm 36$  ms ( $p < 0.001$ ), QTcB  $495 \pm 37$  ms ( $p < 0.001$ )]. However, all QTc changes were transient in nature as the postoperative QTc, while still prolonged relative to baseline, was significantly shorter than the post-droperidol QTc [QTcF  $392 \pm 30$  ms ( $p < 0.001$ ), QTcB  $453 \pm 31$  ms ( $p < 0.001$ )]. No episodes of Torsades de Pointes (TdP) or ventricular arrhythmias were observed.

#### Discussion

The administration of neuroleptanalgesic dose droperidol during volatile anesthesia in patients undergoing single ventricle palliation is associated with significant QTc prolongation, which is transient in nature and not associated with TdP or malignant ventricular arrhythmia generation.

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