Are children with supra systemic pulmonary arterial pressures at higher risk of post operative adverse events after non cardiac surgical procedures?

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Introduction

Pulmonary hypertension [PH] is a predictor of peri-operative cardiovascular complications including pulmonary hypertensive crises, cardiac arrest and death in children undergoing cardiac catheterization or non cardiac surgery under anesthesia. At The Children's Hospital of Philadelphia, our peri-operative management of children and young adults with PH mandates postoperative recovery in one of our intensive care units for a 24 hour period. Clinical studies in adults and children with PH have associated the presence of PH with increase in peri-operative morbidity and mortality [1-4]. The role of PH in the occurrence of postoperative AEs has not been determined. There are no pediatric studies that have evaluated the presence of suprasystemic pulmonary arterial pressures with the occurrence of postoperative/ post anesthetic adverse events [AE] in the form of desaturation, hypotension, arrhythmias or impaired ventricular function requiring escalation of inotropic support.

Objectives

To determine if the presence of supra systemic pulmonary artery pressure [suprasystemic pulmonary hypertension] increases the incidence of post-operative adverse events in children with pulmonary hypertension undergoing non cardiac surgery.

Materials & Methods

Retrospective chart review of children with a diagnosis of PH by cardiac catheterization [defined as a pulmonary vascular resistance (PVR) >4 wood units], receiving a general anesthetic with postoperative recovery in one of our intensive care units for a 24 hour period. Clinical studies in adults and children with PH have associated the presence of PH with increase in peri-operative morbidity and mortality [1-4].

Results

A total of 89 subjects with a diagnosis of PH underwent 270 anesthetic exposures for non cardiac surgery and cardiac catheterizations in this time period. The type and distribution of postoperative AE is shown in Table 1 and Figures 1 & 2. The incidence of AE was highest 6 –24 hours after emergence. There were 17 subjects with supra systemic pulmonary artery pressure, all of which subjects had postoperative AE, most commonly hypotension.

Conclusions

There was no serious morbidity or mortality in this cohort of children with PH. Presence of PH increases the incidence of postoperative AE after non cardiac surgery, which persists at least through the first 24 hours. However, this risk seems to be even higher in children with suprasystemic PA pressures, all of which had an AE in the postoperative period. These results support our continued practice of recovery of these patients in critical care units, where monitoring and early intervention could prevent adverse outcomes.

References


Table 1: Severity of PH and the occurrence of Postoperative AE

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<th>PVR/PHR</th>
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