Severe Bronchospasm in Post-Op Cardiac Patient in Resource Limited Setting

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BACKGROUND
The efforts to decrease morbidity and mortality in children with congenital heart disease (CHD) at Kantha Bopha Children’s Hospitals Jayavarman VII, Siem Reap, Cambodia presents a novel experience in which advanced surgical techniques are applied in a resource limited environment.

CASE PRESENTATION
6-mo 4 kg F with trisomy 21 (T21) and known atrioventricular canal defect s/p complete repair without complication, and returned to recovery unit intubated.

Postoperative Course
- Acute hypoxia following suctioning associated with severe bronchospasm and patient noted to be difficult to ventilate by hand.
- Ketamine and subcutaneous (SQ) epinephrine provided no improvement. Subsequently, solumedrol, morphine and rocuronium were administered. Bronchospasm persisted; aminophylline, magnesium and a 2nd dose of SQ epinephrine were administered. The patient remained hypoxic and bronchospastic, a 2nd dose of aminophylline was administered followed by nasogastric terbutaline.
- The patient became bradycardic, hypotensive and arrested, receiving 30 seconds of chest compressions followed by return of spontaneous circulation.
- ABG revealed 6.88/140/57/26. The patient was brought back to the operating room and isoflurane anesthetic was administered. Shortly thereafter the patient became easier to ventilate. Repeat ABG while on isoflurane revealed 7.27/PCO2/46/59/21. The isoflurane was stopped and ventilation was continued in the operating room. The patient remained stable without any subsequent hypoxia or signs of bronchospasm.
- ABG upon return to the recovery unit revealed 7.35/39/39/22. The patient was extubated the next day without any further complications.

DISCUSSION
- Severe bronchospasm is a rare complication following cardiac surgery, and in a resource limited setting it was potentially fatal.
- Postoperative complications occur in >40% of pediatric patients post cardiac surgery\(^1\); however, there is a paucity of literature describing bronchospasm as a major contributor.
- Children with T21 do have a higher propensity for respiratory complications, regardless of CHD, and these patients often have more severe illness\(^2\). Bronchospasm may be commonly encountered in children with T21; however, access to fast acting therapeutics, mitigates the consequences.
- In this resource limited setting, many of the first line therapeutics were not available including beta-agonists. The patient in this case was temporized with multiple doses of SQ epinephrine, received nasogastric terbutaline given intravenous was not available, and ultimately required inhaled anesthetic isoflurane to resolve the bronchospasm, a therapeutic first described in 1984\(^3\).

References