

Pulmonary Hemorrhage During Induction in an Infant

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Introduction

Pulmonary hemorrhage is unusual but can be life threatening. During infancy, infections, trauma, and foreign bodies are the most common causes of pulmonary hemorrhage. Other possible causes for pulmonary hemorrhage include idiopathic pulmonary hemosiderosis, arteriovenous malformation, or autoimmune diseases. We report a case of pulmonary hemorrhage during the induction of anesthesia in an infant.

Case Report

A ten-month-old female patient was scheduled for elective removal of a nevus of the forehead. She had been completely well prior to the surgery; parents denied fever, URI symptoms, increased work of breathing, vomiting or diarrhea. Preoperative physical exam was remarkable for crusting nasal discharge and left lower lobe coarse breath sounds; otherwise the patient appeared well. Her past medical history was remarkable for the history of a lower spine hemangioma; no intervention was performed on this. She had no allergies and received no regular medications. She received acetaminophen 200 mg in the pre-op holding area.

Mask induction was uneventful. Intubation with an endotracheal tube was atraumatic. Auscultation after intubation revealed coarse breath sounds bilaterally and bright red blood was noted in the endotracheal tube. Patient remained hemodynamically stable. Initial chest radiographic imaging study was normal. Emergency consultation with otorhinolaryngology and pulmonary services were initiated and the case was aborted. Rigid bronchoscopy did not reveal any upper airway source of bleeding. Flexible bronchoscopy revealed oozing that appeared greatest from the right middle bronchus but no focus of bleeding could be identified. No vascular anomalies were noted in the major airways. Bronchial lavage was obtained for cultures and hemosiderosis samples. Patient remained intubated and sedated to the intensive care unit. Extubation was uneventful after day one with no hemodynamic instability during the ICU stay. Bronchoalveolar lavage grew *Moraxella*; all other results including CT with angiogram were negative.

Patient was discharged to the floor with antibiotic coverage. Persistent systemic hypertension was noted. Urine analysis, renal function analysis and renal imaging ultrasound were normal. She was discharged on antibiotics and antihypertensive medication, both of which were discontinued after 10 days. Follow up clinic visits with pulmonologist were unremarkable.

Discussion

The presentation of pulmonary hemorrhage rarely occurs during anesthesia. Upon the incident of pulmonary hemorrhage, it is crucial to identify the source of the hemorrhage. Emergency consultation with pulmonologists and otorhinolaryngologist are indicated. In this case, the pulmonary hemorrhage resolved spontaneously with ventilatory support. A double lumen endotracheal intubation may be a consideration in a focal and heavy bleed. Diagnosis of the etiology of pulmonary hemorrhage involves bronchoalveolar lavage, angiographic imaging of the pulmonary system, and immunologic studies. Alveolar hemorrhage can occur without sufficient blood reaching the central airways to produce hemoptysis and may not produce visible infiltrates on chest radiographs. Overt pulmonary hemorrhage requiring ventilator support should be followed by alveolar macrophage cytology several weeks after the acute hemorrhage to evaluate continued elevated hemosiderosis denoting a chronic process.¹

Reference

1. Dearborn DG et al, *Pediatrics*. 2002;110(3):627-637.