

[C-22] Successful management of massive hemorrhage in a child with aorto-esophageal fistula and esophageal foreign body: a case report

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Aorto-esophageal fistula (AEF) in the pediatric population is rare and life-threatening. To our knowledge, documented cases of AEF are associated with either congenital vascular ring or esophageal foreign body (EFB) independently<sup>1</sup>. We report a case of AEF presenting as exsanguinating hemorrhage in the setting of undiagnosed aortic arch anomaly and foreign body ingestion.

A 6 year old 17 kg male presented to our satellite emergency department with frank hematemesis. He was hypotensive (BP 46/35), tachycardic (HR 168) and anemic (Hgb 5.4). Chest x-ray showed EFB. He was emergently transferred to our main campus for surgical management of presumed AEF from battery ingestion.

Upon arrival to the operating room, rapid sequence induction was performed with ketamine and rocuronium. An arterial line was placed on the right wrist because a pulse was not easily palpated on the left. Flexible bronchoscopy revealed normal mucosa, thrombi from presumed aspiration and distal tracheal compression. Preoperative angiogram yielded no obvious signs of bleeding near the foreign body.

He developed recurrent hematemesis and became acutely unstable. Emergent sternotomy was performed revealing abnormal aortic branching suspicious for right aortic arch, however, AEF was not visualized.

Given EFB location and patient anatomy, left thoracotomy was performed, which confirmed a vascular ring consisting of right aortic arch, aberrant left subclavian artery and Kommerell diverticulum. The esophagus was transected revealing pulsatile blood along its posterior wall corresponding to the anterior aspect of the distal aortic arch.

Consensus was made that the AEF would be best addressed via a median sternotomy with the use of cardiopulmonary bypass, selective cerebral perfusion and circulatory arrest. Attempt at esophagoscopy was performed once supine, but only brisk bleeding was visualized, which was tamponaded with an esophageal balloon. A heavily corroded quarter was retrieved and AEF was repaired with a pericardial patch aortoplasty. The estimated blood loss was 4L. The patient received 12U of packed red blood cells, 6U of fresh frozen plasma, 5U of platelets and 4U of cryoprecipitate.

He was transferred to the ICU and extubated on postoperative day 6. He remains hospitalized and his course has been complicated by dehiscence of the thoracotomy incision and infection from chest tube drainage. His esophagus is still transected and he is receiving enteral feeds through a g-tube.

There is a well known link between vascular ring and development of AEF. This case is unique because it identifies a two-hit phenomenon consisting of a congenital defect of aortic anatomy and foreign body ingestion leading to AEF formation. It also represents a successful team approach utilizing experienced pediatric cardiac anesthesiologists, pediatric cardiothoracic surgeons, otolaryngologists, radiologists and emergency medicine physicians to prevent what usually results in loss of life. We attribute the patient's survival to prompt aggressive volume resuscitation, intraoperative multidisciplinary diagnostic approach and immediate surgical treatment.

#### References:

1. D'Angelis et al., Journal of Pediatric Surgery 2006.

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