Intrathoracic esophageal rupture following blunt trauma chest in a ten months old girl

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ABSTRACT

A 10 months old girl child was admitted on June 05 2005, with a history of blunt injury of chest and respiratory distress for 2 days. Chest skiagram showed effusion on right side of chest, with shift of mediastinum to opposite side. Right intercostal chest drainage was done for pyopneumothorax. Rupture of esophagus was suspected, when the chest drain showed milk. Water-soluble contrast study confirmed rupture of thoracic esophagus. Conservative management was successful in the form of intercostal chest drainage, broad-spectrum antibiotics, nasogastric feeding, parenteral nutrition, etc. A repeat contrast study showed no stricture or leak. At a follow up of 3 months, she is doing well. To the best of our knowledge, this is the youngest patient with blunt injury of chest, leading to intrathoracic esophageal rupture.

KEY WORDS: Esophageal rupture, esophageal perforation, blunt injury chest

The most common causes of esophageal injuries in children, are ingestion of caustic liquids and penetrating trauma, which includes iatrogenic instrumentations. External blunt trauma to chest can also cause esophageal injury, though rarely. The incidence of esophageal perforation due to all blunt injury chest in children is <1%. Patients may present with chest pain, dyspnea, vomiting, fever, etc. Esophageal injury must be confirmed by contrast esophagography or esophagoscopy. Numerous options are available for the management of esophageal injuries, including non-operative treatment, primary repair, diversion, etc, with their own merits and demerits.

CASE REPORT

A 10 months old girl child was admitted on June 05 2005, with complaints of respiratory distress for 2 days. There was a history of fall of a wooden block over chest, 2 days back at home. On admission, the patient had a pulse of 128/min, was afebrile and respiratory rate was 64/min. There was decreased air entry on right side of chest. The rest of the systemic examination was normal. Local examination revealed a contusion of 2 x 2 cms, over sternum. Erect skiagram of chest showed effusion and air fluid level on the right side, with shift of mediastinum to left side. Radiological examination of abdomen was normal. Thoracentesis revealed pus and right intercostal tube drainage was done. Respiratory distress settled down within a day.

Next day, the chest drain contained milk and a diagnosis of esophageal rupture was suspected. A water-soluble contrast study confirmed a leak from the thoracic oesophagus to the right pleural cavity [Figure 1]. She was successfully managed on intercostal tube drainage, broad-spectrum antibiotics, nasogastric feeding, etc. A repeat esophagogram study was done on the 20th post injury day and was normal. The follow-up period was 3 months and she is doing well.

DISCUSSION

Esophageal perforations are the most fatal injuries of the alimentary tract. The majority of blunt esophageal injuries involve the cervical esophagus with intrathoracic esophageal injuries, being rare. The majority of intrathoracic esophageal perforation from blunt trauma occurs in adults, as a result of high-speed motor vehicle accidents.
Wilson et al saw no intrathoracic esophageal perforations in a series of 340 patients, hospitalised with blunt chest trauma. Beal et al. reviewed all esophageal perforations (cervical, thoracic and abdominal) from blunt trauma, noting 96 published cases (between 1900-1988) and they estimated the overall incidence of blunt esophageal injuries at 0.001%. Balci et al. reviewed 137 cases of blunt thoracic trauma in children (age 1-16 yrs) and found only one case of esophageal rupture.

The pathological mechanism of esophageal injuries is believed to be either due to a sudden rise in intraesophageal pressure caused by expulsion of gas from stomach through the gastroesophageal junction against a closed glottis, or due to compression of esophagus between the sternum and vertebrae. Esophageal perforation can cause chest pain, dyspnea, fever, tachycardia and subcutaneous emphysema in neck.

When an esophageal injury is clinically suspected, a diagnostic investigation is warranted. But the elaborate diagnostic study should always be differed, till the patient’s condition is stabilized. Diagnosis is confirmed by using contrast esophagogram or endoscopy or both. A negative study does not completely exclude esophageal injury, as false negative rate may be as high as 40% for contrast studies and 30% for endoscopy. Focal extra luminal collection at the site of esophageal tear, haematoma of the mediastinum or esophagus wall and occasionally a tract at the site of the tear, can be identified on CT scan of chest, besides evaluating the associated injuries to the other intra thoracic structures.

Management of patients with esophageal perforation remains controversial. Numerous options are available for management of esophageal injuries, including non-operative treatment, primary repair, diversions, etc. Primary closure within 24 hours is most effective method of treating esophageal perforation. Surgical management must be individualized according to the size of the defect, degree of inflammation, contamination and the overall condition of patient. Patients can be successfully treated non-operatively, if presented after 48 hours of esophageal perforation.

Our patient presented to us, 48 hours after injury and diagnosis of esophageal rupture was established on 4th day. Due to delay in diagnosis, we opted for conservative management and were able to manage her successfully. We reviewed recent data available on the website and were not able to find any case report, etc, related to a blunt injury chest leading to esophageal rupture in an infant.

REFERENCES