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CASE REPORT

TENSION GASTROTHORAX: A CASE REPORT AND REVIEW OF LITERATURE

By

Magdy Zedan,[1] Mohammed El-Ghazaly,[2] Basem Saied,[2] Mohammed El-Bayoumi,[1] Alaa Abdelkader,[1] Ashraf Fouda[1]

[1] Department of Pediatrics, [2] Department of Pediatric Surgery, Mansoura University Children's Hospital, Egypt

Background: ***Tension gastrothorax develops when the stomach, herniates through a congenital diaphragmatic defect into the thorax and is massively distended by trapped air. We report a case of tension gastrothorax and review the literature.***

Case Report: ***A previously healthy 8 months old female, presented with severe respiratory distress, misdiagnosed as tension pneumothorax. Intercostal tube was inserted. The tube was noted to drain food as well as air. The patient was investigated by radio-contrast swallow, which demonstrated the presence of the stomach in the chest. The patient was operated upon and the stomach, transverse colon and spleen were reduced back to the abdomen. The defects in the stomach and diaphragm were closed.***

Conclusion: ***Tension gastrothorax is a life-threatening condition leading to acute and severe respiratory distress. The presence of air filled structure in left hemithorax in a previously healthy child presenting with acute respiratory distress should prompt the inclusion of tension gastrothorax in the differential diagnosis***

Index words: ***Tension gastrothorax; Congenital diaphragmatic hernia; Respiratory distress.***

INTRODUCTION

Congenital diaphragmatic hernia (CDH) occurs in approximately 1 in every 2500 live births and is associated with a reported mortality of almost 35% in live-born patients and a higher mortality when in utero deaths are counted (Lally, 2002).

The majority of cases with congenital diaphragmatic hernia (CDH) are currently diagnosed prenatally by ultrasound or within the first 24 hours after birth. Approximately 10% of patients with CDH present later, and their prognosis is good because of absence of significant pulmonary hypoplasia and pulmonary hypertension (Fein et al, 1993; Coren et al, 1997; Baglaj, 2004).

The clinical presentation of late-onset CDH encompasses a wide spectrum and may be associated with misleading clinical and radiologic findings making misdiagnosis a distinct possibility and adding to morbidity and mortality

(Numanoglu et al, 1997; Nadroo et al, 1999; Brouard et al, 2000). The presentation varies from nonspecific symptoms (recurrent pulmonary infection, chest pain, abdominal pain, and failure to thrive) to respiratory distress and cardiac arrest caused by massive distension of the intrathoracic stomach, that is, tension gastrothorax (Fein et al, 1993; Paut et al, 1996; Elhalaby & Abo Sikeena, 2002; Baglaj, 2004). The term tension gastrothorax first appeared in the literature in 1984 as a complication of traumatic rupture of the diaphragm (Ordog et al, 1984). Since then, only few reports of late-onset CDH presenting with tension gastrothorax appeared in literature Table 1.

Table 1. Case reports of late onset congenital diaphragmatic hernia presenting with tension gastrothorax.

	N	Presentation	Age	Using chest tube
Horst et al, 2005	4	Progressive RD	3,4,6,13 months	3/4
Horst et al, 2005	1	Sudden infant death (diagnosed on autopsy)	5 months	NA
Ninos et al, 2005	1	RD during upper GI endoscopy	77 years	No
Sridhar & Nichani, 2004	1	Acute RD	9 months	No
Elhalaby & Abo Sikeena, 2002	3	Acute RD	2.5, 4, 8 years	3/3
Schneider et al, 2000	1	Vomiting, RD following intake of carbonated soft drink on a commercial flight.	3 years	Needle aspiration
Beckmann & Nozicka, 1999	1	Vomiting, pallor, RD	3 months	Yes
Quah et al, 1999	1	Acute RD	30 months	Yes
Snyder et al, 1990	1	Acute respiratory failure	29 months	Yes

N = number of reported cases, NA = not applicable, RD = respiratory distress, GI = gastrointestinal.

CASE REPORT

A previously healthy eight months old female presented to the emergency room of Mansoura University Children Hospital with a 7 days history of increasing difficulty in breathing, preceded by upper respiratory tract infection, history of repeated choking once to twice /week during suckling. She was delivered at full-term by elective ceaserean section for cephalopelvic disproportion. There was a positive history of maternal Group-B Streptococcal infection. She was admitted to nursery at the first day of life due to respiratory distress, diagnosed as transient tachypnea of newborn (TTN). She was given oxygen via a headbox. Investigations at the time revealed within normal blood gases and negative partial septic screen. Chest radiograph obtained on admission revealed bilateral hyperinflation of both lungs and a normal appearing gastric shadow (Fig. 1). The baby was discharged home off oxygen on day 6.

On presentation at the age of eight months, she appeared ill, average built and nutrition. She was cyanosed with increased work of breathing. The respiratory rate was 65/min, heart rate was 130/min, blood pressure was 80/45, core temperature was 37.2°, pulse oximetry reading did not rise above 83% on maximum flow face mask oxygen. Glasgow Coma Scale was 12/15. The extremeties were cold and poorly perfused. Apart from poor perfusion, cardiac examination was unremarkable. Auscultation of lung fields showed diminished breath sounds over the left side, with tympanitic resonance on percussion. Plain chest X ray was obtained (Fig. 2) and was interpreted by the registrar on duty as a possible tension

pneumothorax. Chest tube was introduced and resulted in slight improvement with the respiratory rate going down to 60/min and pulse oximetry reading rising to low 90s. The chest tube was noted to drain air as well as gastric contents. An upper GIT radiocontrast study with omnipaque was obtained and showed a malrotated contrast-filled stomach seen in the left hemithorax (Fig. 3). Computed tomography scan of the chest with contrast showed a picture of congenital left diaphragmatic hernia with a large thick walled cavity with air and fluid level inside, almost occupying the left hemithorax shifting the mediastinum to the right side, the cavity was nothing but the stomach (Fig. 4).

Patient was operated in our hospital through a left subcostal incision, exploration showed left Bochdalek hernia. The stomach, splenic flexure of the colon and spleen were found in the chest with adhesions between the stomach and chest wall. The defect in the diaphragm was widened to facilitate blunt dissection of adhesions for delivery of the viscera to the abdomen, the stoma of the "intercostal" tube was found in the posterior surface of the stomach near the greater curvature (Fig. 5). The diaphragmatic defect and gastric stoma were closed in layers with insertion of an intercostal tube and a drain in the lesser sac (Fig. 6). X ray was obtained immediately after operation (Fig. 7).

The patient had an unremarkable post-operative recovery. She was fed through a nasogastric tube on day three post-operatively and was discharged home on day seven.

DISCUSSION

The presence of air filled structure in left hemithorax in a previously healthy child presenting with acute respiratory distress should prompt physicians to include tension gastrothorax in the differential diagnosis with tension pnemothorax and congenital cystic adenomatoid malformation. Tension gastrothorax should especially be considered in absence of the shadow of the left copula of diaphragm.

In such case, insertion of nasogastric tube is a wise step prior to chest tube insertion.

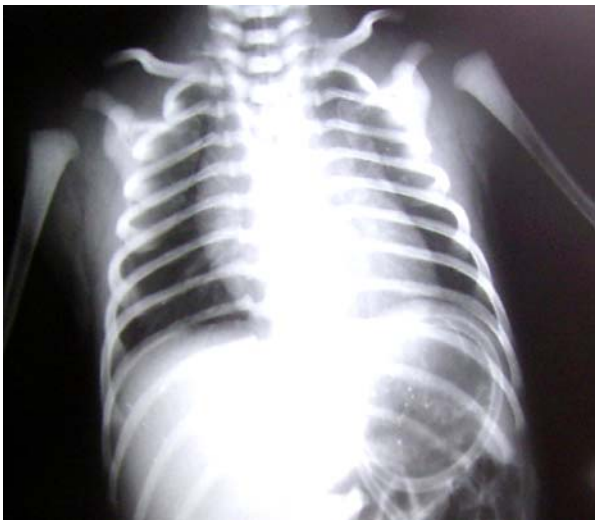

Fig 1. Chest X ray of the patient at the 1st day of life, notice feeding tube in the stomach.

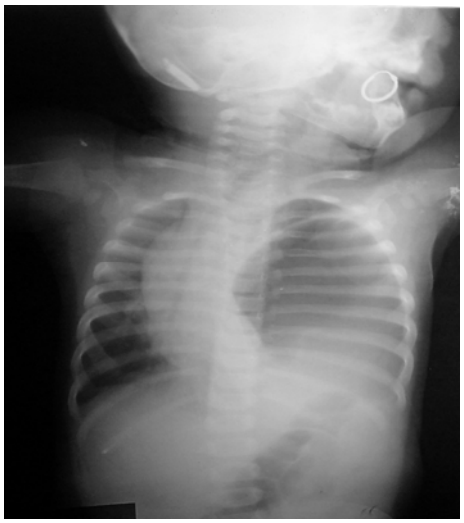

Fig 2. Chest radiograph AP view on presentation to the emergency room. This radiograph was interpreted as tension pneumothorax.

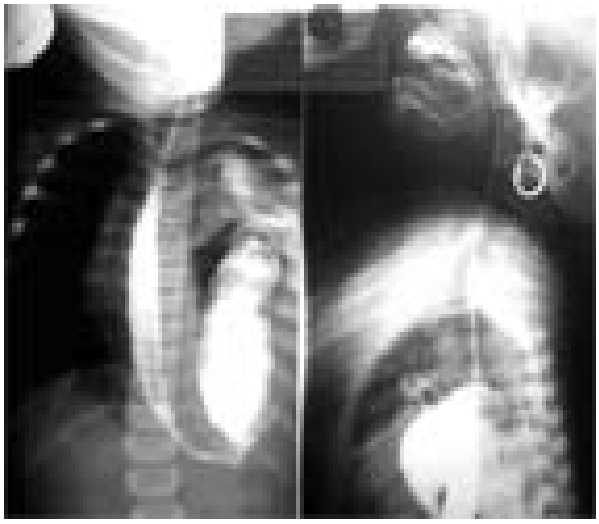

Fig 3. AP and lateral view radiocontrast study (Omnipaque swallow) through the feeding tube showing herniation of the malrotated stomach into the thoracic cavity

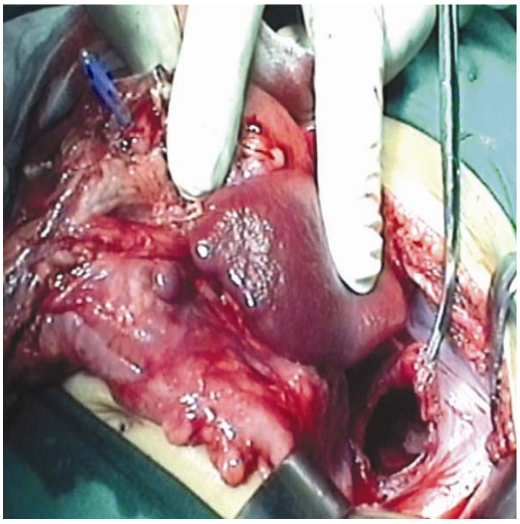

Fig 5. intraoperative view showing the diaphragmatic defect and the tip of nasogastric tube passing through the defect in the stomach wall caused by the chest tube.

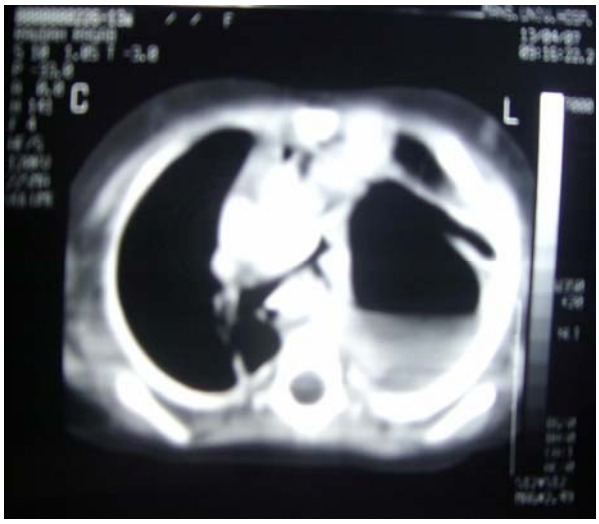

Fig 4. CT chest showing air and fluid level in stomach with intercostal tube inside.

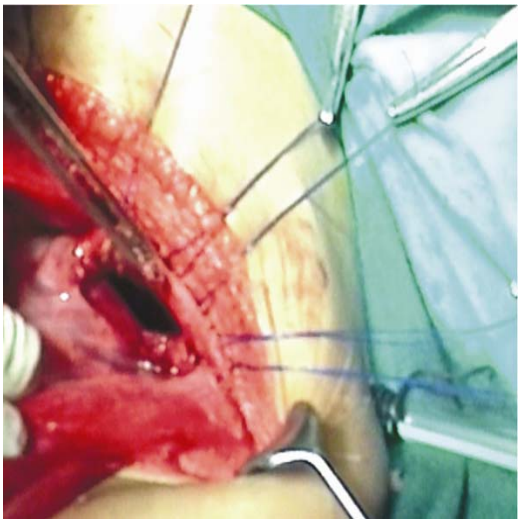

Fig 6. Closure of the diaphragmatic defect.

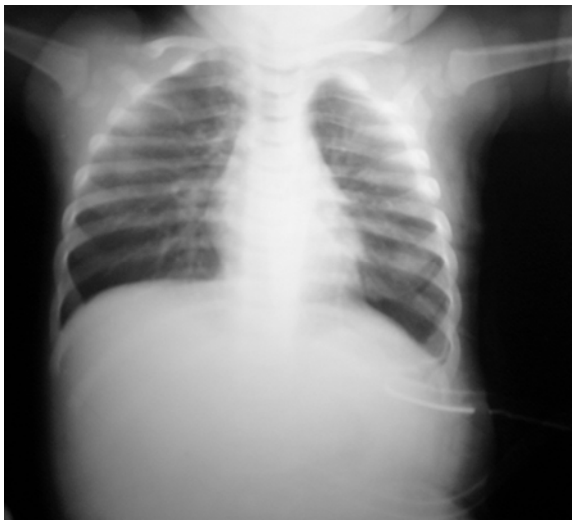

Fig 7. Chest radiograph AP postoperative view.

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