

## Case Report:

### Acute tension gastrothorax in an adult

K. Gowrinath,<sup>1</sup> M. Gayatri,<sup>2</sup> G. Varaprasada Rao<sup>3</sup>

Departments of <sup>1</sup>Pulmonary Medicine, <sup>2</sup>Radiology and Imaging sciences,

<sup>3</sup>Surgical Gastroenterology, Apollo Speciality Hospital, Nellore

---

#### ABSTRACT

---

Tension gastrothorax is a rare life threatening condition and may occur as an unusual complication of Bochdalek's hernia (BH) in an adult. We report the rare occurrence of acute tension gastrothorax in a 21-year-old male with BH. The tension gastrothorax was due to acute organo-axial volvulus and the diagnosis was established by the computed tomography (CT) of chest. The risk of misdiagnosis is high when air and fluid in the dilated stomach simulates hydropneumothorax clinically and is interpreted through postero-anterior chest radiograph alone. In our case, percutaneous fine needle aspiration of fluid within the dilated stomach facilitated nasogastric tube insertion decompressing the stomach and allowed surgery to be done electively.

**Key words:** *Gastrothorax, Bochdalek's hernia, Volvulus, Hydropneumothorax*

Gowrinath K, Gayatri M, Varaprasada Rao G. Acute tension gastrothorax in an adult. *J Clin Sci Res* 2017;6:241-4; DOI: <http://dx.doi.org/10.15380/2277-5706.JCSR.17.10.002>.

---

#### INTRODUCTION

---

Bochdalek's hernia (BH) with abdominal viscera is rare in adults and acute tension gastrothorax as its complication is unusual. Due to rare occurrence, prompt diagnosis of acute tension gastrothorax is difficult particularly when clinical and radiographic features mimic a tension pneumothorax or hydropneumothorax leading to management errors.<sup>1</sup> Acute gastric volvulus is most often reported among those aged over 60 years and paraoesophageal hernia is the most frequently associated diaphragmatic defect.<sup>2</sup> We report rare occurrence of acute tension gastrothorax and BH in a young male initially misdiagnosed as left hydropneumothorax.

---

#### CASE REPORT

---

A 21-year-old previously healthy male was referred as a case of left sided hydropneumothorax from a local hospital. He had sudden onset epigastric pain and breathlessness of 2

days duration. The pain was severe and radiating to back. Nausea and frequent unproductive retching were associated. Patient was refusing to eat due to aggravation of pain and was unable to walk even few yards due to pain and breathlessness. There was no significant medical or surgical history except for intermittent upper abdominal pain since two months. He was not a tobacco smoker or alcohol drinker. On physical examination, patient was thin built, mildly dehydrated but was haemodynamically stable. Respiratory system examination showed bulging of hemithorax, decreased breathsounds and succussion splash on left side. Abdomen was scaphoid with tenderness in the epigastric area. Total leucocyte count was 15,100/mm<sup>3</sup> with 86% polymorphonuclear leucocytes. Blood biochemistry was normal. Human immunodeficiency virus (HIV) serology tested negative. A postero-anterior (PA) chest radiograph (Figure 1) showed air and fluid in the left

Received: September 19, 2017, Accepted: September 30, 2017.

**Corresponding author:** Dr K. Gowrinath, Senior consultant, Department of Pulmonary Medicine, Apollo Speciality Hospital, Nellore, India.

**e-mail:** [drgowrinathk@hotmail.com](mailto:drgowrinathk@hotmail.com)

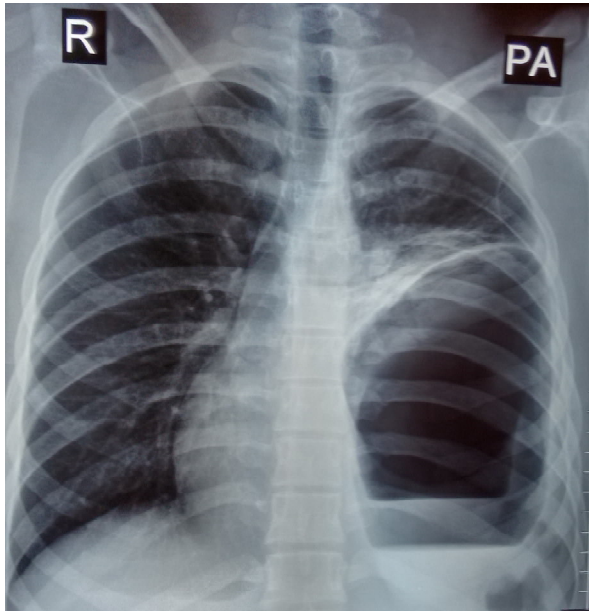


#### Online access

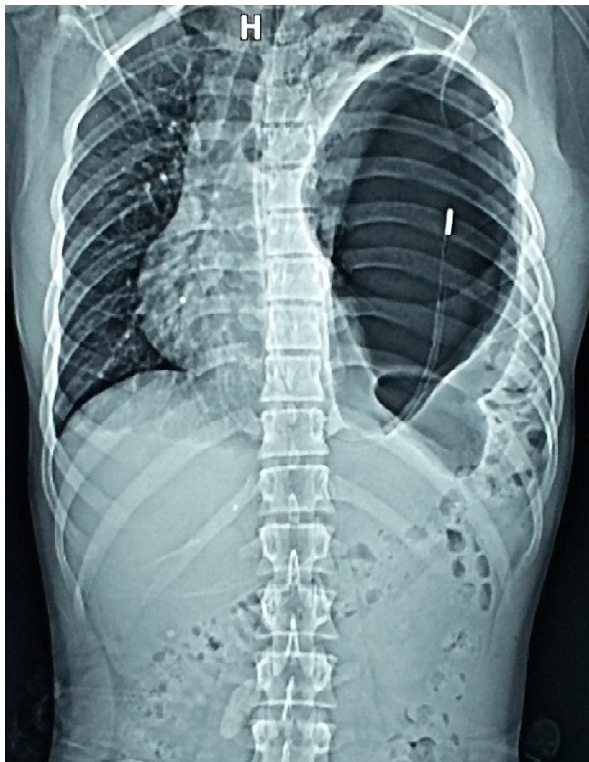
[http://svimstpt.ap.nic.in/jcsr/oct-dec17\\_files/2cr.17.10.002.pdf](http://svimstpt.ap.nic.in/jcsr/oct-dec17_files/2cr.17.10.002.pdf)

DOI: <http://dx.doi.org/10.15380/2277-5706.JCSR.17.10.002>

hemithorax with shift of mediastinum to opposite side. Nasogastric tube could not be passed. Percutaneous needle (20 Gauge) aspiration yielded 1400 ml of thin whitish fluid and patient felt better. Later nasogastric tube



**Figure 1:** Chest radiograph showing (postero-anterior view) air and fluid in the left hemithorax with shift of mediastinum to opposite side

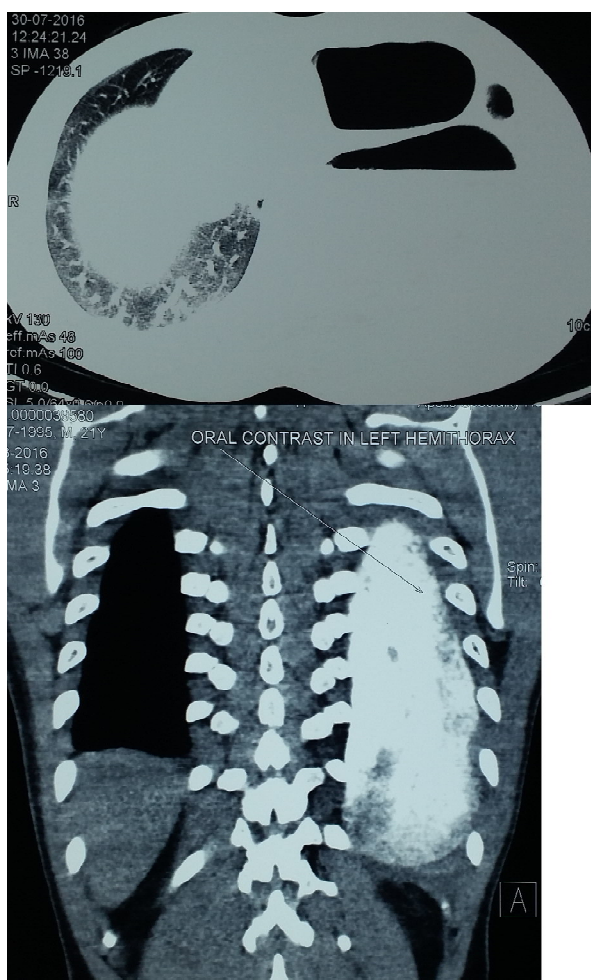


**Figure 2:** The chest CT scanogram showing nasogastric tube within the stomach in the left hemithorax

could be inserted and the gastric contents aspirated with further symptomatic improvement. Sections of CT of chest with contrast (Figures 2, 3 and 4) showed organoaxial volvulus of stomach and other

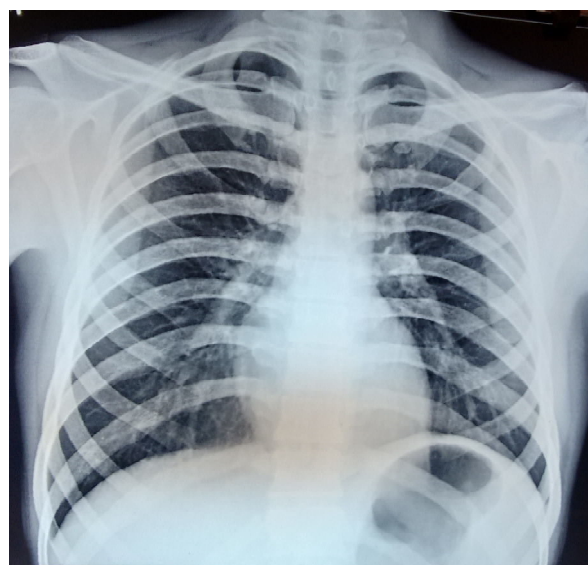


**Figure 3:** Sections of CT scan of chest showing organoaxial volvulus of stomach and oral contrast filled stomach in the left hemithorax



**Figure 4:** Sections of CT scan of chest showing stomach and other herniated organs (Spleen, pancreas, transverse colon with splenic flexure and descending colon) of BH along with posterior defect in the left hemidiaphragm

herniated organs (spleen, pancreas, transverse colon with splenic flexure and descending colon) of left sided BH along with a large defect of approximately 6 cm in the left hemidiaphragm. Upper gastrointestinal endoscopy revealed grossly distended stomach with plenty of food residue. Pylorus was deformed and duodenum was normal. After two days, patient underwent elective surgery through laparotomy approach. On inspection, stomach did not have ischemic changes and detorsion of the volvulus was done followed by removal of adhesions between left hemidiaphragm and spleen, reduction of the herniated contents, closure of the diaphragmatic defect and anterior gastropexy. Patient made



**Figure 5:** PA chest radiograph showing re-expanded lung and normally placed hemidiaphragm on left side

uneventful recovery and post-operative PA chest radiograph (Figure 5) showed re-expanded left lung and was discharged after 5 days. Patient is currently doing well during the follow up period of 14 months.

## DISCUSSION

Tension gastrothorax may result from congenital or acquired (Iatrogenic or traumatic) diaphragmatic defects. Abnormal rotation (More than 180 degrees) of stomach is unusual and difficult as its position is firmly secured by the gastrophrenic ligaments, oesophageal hiatus, retroperitoneal fixation of the duodenum, short gastric vessels and gastrocolic ligaments. In congenital diaphragmatic hernia, these gastric attachments are lax or absent increasing the risk of volvulus.<sup>3</sup> Our patient had all three features of acute gastric volvulus originally described by Borchardt (Borchardt's triad) like frequent unproductive retching, severe and constant abdominal pain and difficulty or inability to insert a nasogastric tube.<sup>4</sup> Multi-slice CT of chest with coronal and sagittal images is the most useful imaging technique and in selected cases, magnetic resonance imaging may be required.<sup>5</sup> In our case, CT of chest with different reconstructed

sections was diagnostic of gastric volvulus and BH along with contents. Prompt diagnosis followed by surgery is essential as gastric ischemia, perforation and acute haemorrhage, pancreatic necrosis and omental avulsion are the potential life threatening complications of gastric volvulus.<sup>6</sup> In a similar case before, chest tube was inserted after succussion splash was heard and PA chest radiograph findings simulated hydropneumothorax in a 25 year-old-male who presented with respiratory distress and upper abdominal pain.<sup>7</sup> In gastrothorax, tube thoracostomy for emergency relief may lead to complications such as bowel perforation, sepsis, faecothorax, empyema, acute lung injury and respiratory failure.<sup>8</sup> Percutaneous needle thoracostomy was recommended as a safer, quicker and well tolerated procedure without causing spillage of stomach contents.<sup>9</sup> We did percutaneous fine needle thoracostomy without any complication before the diagnosis of gastrothorax was made.

In tension gastrothorax, insertion of a nasogastric or orogastric tube is the initial procedure of choice as it can relieve gastric compression and also visible through imaging study establishing the location of stomach.<sup>10</sup> In our case, nasogastric tube was visible during chest CT study (Figure 2) confirming gastrothorax. The surgical treatment of gastrothorax due to acute gastric volvulus and BH include detorsion of the volvulus, reduction of the herniated contents, closure of the diaphragmatic defect and fixation of the stomach to the anterior abdominal wall. Our surgical approach was through laparotomy but with laparoscopic technique, even BH complicated with gastric volvulus can be discharged within 2 days of emergency surgery.<sup>11</sup>

## REFERENCES

1. Singh SP, Sukesan S, Kiran V, Makhija N. Gastrothorax or tension pneumothorax : A diagnostic dilemma. *J Emerg Trauma Shock* 2011;4:128-9.
2. Gourgiotis S, Vougas V, Germanos S, Baratsis S. Acute gastric volvulus: Diagnosis and management over 10 years. *Diag Surg* 2006;23:169-72.
3. Alaya JA, Naik-Mathuria B, Oluyinka O. Delayed presentation of congenital diaphragmatic hernia manifesting as combined-type acute gastric volvulus : a case report and review of literature. *J Pediatr Surg* 2008;43:e35-e39.
4. Borchardt, M. Zur pathologie und therapie des magen. *Arch Klin Chir* 1904;74:243-60.
5. Eren S, Ciris F. Diaphragmatic hernia: diagnostic approaches with review of the literature. *Eur J Radiol* 2005;54:448-59.
6. Shivanand G, Seema S, Srivastava DN, Pandey GK, Saini P, Prasad R, et al. Gastric volvulus: Acute and chronic presentations. *Clin Imaging* 2003;27:265-8.
7. Somani SK, Gupta P, Tandon S, Sonkas D, Bhatnagar S, Saxena M. Bochdalek diaphragmatic hernia masquerading as tension hydropneumothorax in an adult. *J Thorac Cardiovasc Surg* 2011;141:300-1.
8. Zieren J, Enzwaler C, Muller JM. Tube thoracostomy complicates unrecognized diaphragmatic rupture. *Thorac Cardiovasc Surg* 1999;47:199-202
9. Slater RG. Tension gastrothorax complicating acute traumatic diaphragmatic rupture. *J Emerg Med* 1992;10:25-30.
10. Sridhar AV, Nichani S. Late presenting congenital diaphragmatic hernia. *Emerg Med J* 2004;21:261-2.
11. Harinath G, Senapati PS, Pollitt MJ, Ammori BJ. Laparoscopic reduction of an acute gastric volvulus and repair of a hernia of Bochdalek. *Surg Laparosc Endosc Percutan Tech* 2002;12:180-3.