



Radiodiagnosis

"A RARE CASE REPORT OF TRAUMATIC CHYLOTHORAX DUE TO BLUNT TRAUMA."

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ABSTRACT Chylothorax is an unusual finding characterised by accumulation of chyle in pleural cavity due to disruption of thoracic duct. Traumatic chylothorax usually results from penetrating trauma, thus blunt trauma chylothorax is a rare entity. We present a case of a 38 years old man who came to emergency department of our hospital after sustaining a blunt trauma due to fall from bike. Patient initially came with complaint of chest pain but later develop breathing difficulty. On evaluation patient was found to have right side pleural effusion with no obvious radiological evidence of traumatic injury. Subsequent, a non contrast CT scan was performed and pleural fluid analysis was done confirming the diagnosis of chylothorax. Patient undergone multiple pleural fluid tapping and diet modifications which resulted in resolution of symptoms completely. Thus, Chylothorax should be included in differential diagnosis of a patient presenting with chest pain and shortness of breath after blunt trauma with no obvious radiological evidence of trauma.

KEYWORDS : Chylothorax, CT scan, Thoracocentesis, Trauma.

INTRODUCTION:

Chylothorax is a rare phenomenon defined by chyle collection in pleural cavity. It usually occurs due to disruption of thoracic duct with non traumatic aetiologies. Specifically, traumatic chylothorax is very uncommon with a reported incidence of 0.2–3.0% following blunt thoracic trauma and 0.9%–1.3% after penetrating trauma [1, 2]. Since undiagnosed chylothorax results in substantial mortality up to 15.5% [3], early and prompt diagnosis is required. Chylothorax causes complaints by local compression of the lung, as well as weight loss resulting from loss of triglycerides, it needs thorough investigation. Here, we present a case of a patient presenting with chylothorax after sustaining a blunt trauma to chest.

CASE PRESENTATION:

A 38 years old man came to the emergency department of our hospital with complaints of pain in chest after falling down from bike due to a road traffic accident. While initially he complained of chest pain, after few hours patient develop severe breathing difficulty with Oxygen saturation falling below 80%, subsequently the patient was given an oxygen mask. He reported no fever, palpitations, syncope, dysphagia, nausea or vomiting. Past medical history was non-significant.

On chest examination, there were decreased breath sounds on right side of chest with no obvious rales or rhonchi. Examination was other body system was unremarkable. Due to rapid worsening of condition of the patient, a right sided thoracocentesis was performed and approx 300 ml of milky fluid was drained which resulted in immediate relief to the patient.

Subsequently, a chest x-ray was done which revealed gross right side pleural effusion with collapse of underlying lung with no obvious fracture of ribs and vertebra noted (Fig1), however no drain was coming from the inter-coastal drainage tube.

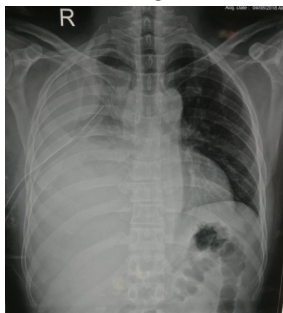


Figure 1: Frontal chest radiography showing homogeneous opacity noted in right hemi thorax causing obliteration of right costo-phrenic angle with Intercoastal drainage tube was in situ.

An ultrasonography of chest was performed which revealed gross echogenic collection in right pleural cavity (fig 2).

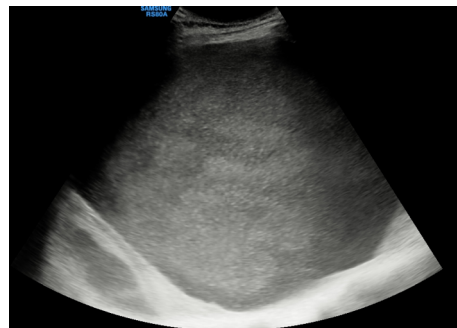


Figure 2: USG gray scale image showing gross echogenic collection noted in right pleural cavity with thick internal septations.

A non contrast computed tomography of chest (fig 3) was done which showed multiple loculated pockets with fluid-fluid level noted in right pleural cavity with near complete collapse of right lung. The tip of intercostal drainage tube was seen inside the collapsed lung parenchyma.

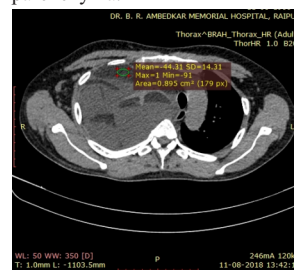
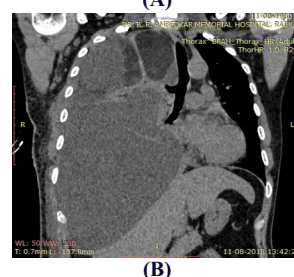


Figure 3: Non-contrast CT scan of chest (A) showing multiple loculated collection with fluid fluid level noted in right pleural cavity and a ROC curve drawn within fluid level showing fat attenuation .



(B) Coronal view showing large multi-loculated collection in right pleural cavity causing near complete collapse of right lung and shift of mediastinum towards left side.

Laboratory analysis of the pleural fluid (fig 4) was consistent with chylothorax revealing triglycerides of 3100 mg/dL, white blood cells count of 619 cells/uL, red blood cells of 701 cells/uL, LDH of 412 U/L, and total protein of 3.8 g/L, with absence of malignant cells on cytological analysis and no growth on microbiological examination.



Figure 4: Thoracentesis revealed a milky fluid collection in bag

The ICD tube position was corrected and approximately 2 litres of milk colour fluid was drained and the patient was placed on a fat-free diet being monitored for worsening dyspnea, and assessed for fluid reaccumulation on serial radiographs. Upon improvement, he was discharged on post-admission day seven with stable oxygen saturation. On follow up three weeks later, the patient was doing well.

DISCUSSION:

Chylothoraces can be classified as neoplastic, traumatic, congenital and miscellaneous (4). Neoplastic obstruction is the most common cause of non-traumatic chylothorax, where lymphoma accounts for 70% of cases (5). Traumatic chylothoraces are generally iatrogenic in aetiology, with nearly 80% of these caused by damage to the thoracic duct during surgery such as oesophagectomy or pneumonectomy [6]. Blunt trauma causing chylothorax is a rare entity, but when it does occur it is often seen with fractures of ribs and/or spinal fractures (not seen in our case).[7].

The thoracic duct commonly originates from the cisterna chyli, which is located anterior to the second lumbar vertebra and postero-lateral to the abdominal aorta. The thoracic duct ascends into the thorax through the aortic hiatus at the level of the tenth to twelfth thoracic vertebra and travels to the right of the vertebral column. At the level of the fifth or sixth thoracic vertebra the thoracic duct crosses posterior to the aorta and the aortic arch into the left posterior mediastinum. It courses anterior to the subclavian artery, within Poirier's triangle, and exits the superior thoracic aperture in the neck. After exiting the thorax, it forms an arch anterior to the anterior scalene muscle and turns inferiorly to terminate at the junction of the left subclavian and internal jugular veins[6].

Patient typically present with chest pain and progressive dyspnoea. Electrolyte abnormalities may develop including hypocalcemia, hyponatremia and acidosis from continued loss of chyle into the pleural space [2]. Early diagnosis and recognition is warranted to avoid the detrimental effects of malnutrition, hypovolemia and immunocompromised state.

In the trauma setting, a chest radiograph demonstrating a pleural effusion often leads to subsequent CT to evaluate the possible underlying etiologies. Thoracentesis will demonstrate pleural fluid that is odorless, milky-white (in 50% of cases) but may be serous or serosanguinous if hemothorax is associated[2]. Presumptive diagnosis is made via quantitative analysis of the pleural fluid that reveals a triglyceride level >110 mg/dl (99% diagnostic)[8,9].

The treatment for chylothorax depends upon its etiology, volume of drainage and clinical picture. Conservative managements include nothing by mouth(NPO), thoracentesis and Total parenteral nutrition(TPN) to meet the metabolic and nutritional complications. In addition, administering a diet with a predominance of medium chain triglycerides reduces lymphatic flow and therefore minimises the rate of chyle leakage. Medium chain triglycerides are absorbed directly from the gut into the portal circulation while longer chain triglycerides are packaged into chylomicrons and transported into intestinal lacteal vessels[10]. When the output remains high even after administration of a medium chain fatty acid diet, octreotide (a somatostatin analogue)

can be given which acts by reducing chyle production and thus reducing chyle flow thorough thoracic duct. Patients who fail conservative management (usually within two weeks) with progression to malnutrition or electrolyte abnormalities may be candidates for surgical intervention [2].

CONCLUSION:

Chylothorax is an unusual finding characterised by accumulation of chyle in pleural cavity due to disruption of thoracic duct. Traumatic chylothorax by blunt trauma is very unusual and a rare entity. Hence, Chylothorax should be included in differential diagnosis of a patient presenting with chest pain and shortness of breath after blunt trauma.

REFERENCES:

- [1] Shah PP, Deshmukh S, Tulshibagwala RK. Chylothorax: a case report. *Int J of Pharmacol Clin Sci.* 2012;1(4):115-7.
- [2] Pillay TG, Singh B. A review of traumatic chylothorax. *Injury.* 2016;47(3):545-50.
- [3] Kumar S, Mishra B, Krishna A, et al. Nonoperative management of traumatic chylothorax. *Indian J Surg.* 2013;75(Suppl 1):465-8.
- [4] DeMeester T. The pleura. In: Spencer E, editor. *Surgery of the chest.* 4th ed., Philadelphia: WB Saunders 1983.
- [5] McWilliams A, Gabbay E. Chylothorax occurring 23 years post-irradiation: literature review and management strategies. *Respirology* 2000;5:301-3.
- [6] Nair S, Petko M, Hayward M. Aetiology and management of chylothorax in adults. *Eur J Cardio Thorac Surg* 2007;32(2):362e9
- [7] Townshend A, Speake W, Brooks A. Chylothorax. *Emerg Med J* Feb 2007;24(2). e11
- [8] Chinnock BF. Chylothorax: case report and review of the literature. *J Emerg Med.* 2003;24(3):259-62.
- [9] Serin-Ezer S, Oğuzkurt P, Ince E, et al. Bilateral chylothorax after blunt thoracic trauma: a case report. *Turk J Pediatr.* 2009;51(5):504-6.
- [10] Merrigan B, Winter D, O'Sullivan G. Chylothorax. *Br J Surg* 1997;84(1):15e20