

Bilateral Pleural Chylothorax from A Blunt Chest Trauma

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Abstract

Introduction: Bilateral traumatic chylothorax is a very rare condition. Approximately 80% of chylothorax are unilateral and usually 2/3 of cases on the right side [1]. The chyle leakage shows a milky white appearance, inexhaustible, in a consideration amount.

Purpose: To report the management of bilateral traumatic chylothorax as a very rare condition.

Material and methods: We present a patient with bilateral pleural chylothorax from a blunt chest trauma which is combined with a vertebral thoracic fracture of Th8, Th10. We present the diagnostic basis, treatment and evolution of chyle leakage.

Results: A 36 years old man involved in a car crash. He was hospitalized with a diagnose such as right pleural effusion and thoracic vertebral fractures of the Th8, Th10. 2 days after trauma the scan examination showed a large amount of effusion in the right hemithorax and minimal effusion in the left hemithorax. From the drainage tube in the right pleural cavity there was a flow of about 1000ml with a milky appearance. The biochemical analyses of the pleural effusion showed the presence of triglycerides with more than 1.24mmol/l and the cholesterol level with less than 5.18mmol/l which support the diagnosis of chylothorax. Initial treatment was conservative. A zero nutritional regimen was implemented for the first 10 days, being replaced by total parenteral nutrition such as plasma, albumin, electrolytes, vitamins. After that we passed to a fat-free nutritional diet. In the scan examination 6 days after the trauma, there was an increase in the amount of pleural effusion on the left side. A chest tube was performed from which there was 700 ml leakage, which had the appearance of chyle. The biochemical tests confirmed the diagnose of chylothorax. The chest tube of the left pleural cavity was removed after 5 days. The chyle leakage from the right pleural cavity has continued for about 3 weeks in a quantity ranging from 150-300 ml in 24 hours. After this period, approximately for 1 week the chyle leakage was in an amount of less than 1000ml in 24 hours. In the 5th week, the chest tube was removed, since the leaks were reduced to about 20-30 ml in 24 hours. The patient left the hospital after 30 days. The patient was completely recovered.

Conclusions: The case was managed conservatively, based on a bilateral pleural drainage and a diet without fats, which proved to be successful.

Keywords: chylothorax pleural; fluid analysis triglycerides malignancy conservative management

Introduction

Bilateral traumatic chylothorax is a very rare condition, often with potentially serious consequences. Chylothorax is an effusion of chyle in both pleural spaces, as a result of a both pleural spaces, as a result of a damage to the thoracic duct. This lymph is rich in lipids 85% - 92%, triglycerides 6-12 %, phospholipids 1-3 %, cholesterol, electrolytes, proteins, fat-soluble vitamins, lymphocytes and immunoglobulins. The thoracic duct brings in systemic circulation up to 2400 ml of lymph in 24 hours. The initial management of chylothorax is conservative with low-fat diet and chyle drainage through a thoracostomy tube. Conservative

management of chylothorax is successful in most cases, it turned out to be the same in our case [2,3,4,5].

Case Presentation

E.K. 36-years old man involved in a car crash. He is given first aid at the scene and brought to SUT for further evolution. After the initial assessment of the clinical condition, radiological and biochemical examinations were performed immediately. The patient is hospitalized with right pleural effusion and vertebral compressive fractures of Th8, Th10.

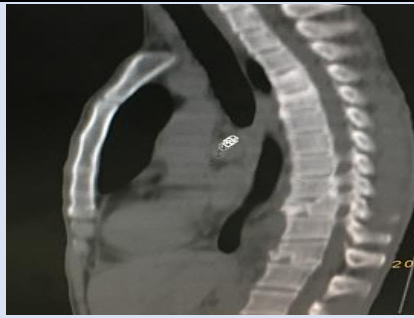


Figure 1: Fracture compressive Th8, Th10.

Two days after the trauma, the damage was re-evaluated with a thoracic scanner and this examination revealed a large amount of right pleural

effusion and minimal left pleural one. It was decided that it is necessary to remove the right pleural effusion.



Figure 2: Bilateral pleural effusion (minimal on the left).

From the chest tube on the right, there was chyle flow of about 1000 ml with a milky appearance.



Figure 3: The view of the pleural effusion.

Biochemical analysis of the pleural effusion has confirmed the presence of triglycerides of more than 1,24 mmol/l and a cholesterol level of less than 5,18mmol/l. At first the patient was treated

conservatively, albumin, then he started eating a fat-free diet. Evaluation with CT, 6 days after the trauma has confirmed an increase in the amount of the left pleural effusion.

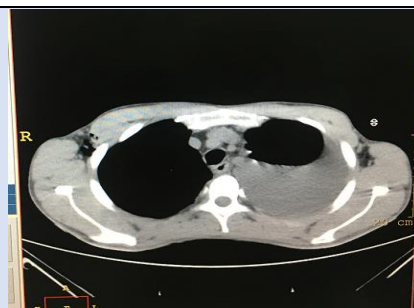


Figure 4: The left pleural effusion.

A thoracostomy tube is placed on the left pleural cavity from which chyle flowed about 700 ml. After 5 days, the tube was removed as flow of chyle was exhausted. From the right pleural cavity, chyle persisted for about 3 weeks, in an amount that varied from 150-300 ml in 24 hours. After this period, for about a week, the flow was in an amount of at least 100 ml in 24 hours. On the 5th week, the leaks are reduced to about 20-30 ml ne 24 hours at this time, the right pleural drainage tube was removed. The patient leaves the hospital fully recovered on the 30th day. There was no recurrence of chyle leakage.

Discussion

Chylothorax is caused by the damage of the thoracic duct along its path through the posterior mediastinum, resulting in drainage of the chyle into one or both pleural cavities. Chylothorax is a rare complication in thoracic surgery and chest trauma which can lead to a serious illness and can even be fatal. It is essential to be alert for chylothorax in a blunt chest trauma which is combined with a vertebral thoracic fracture of 8Th,10Th, a cervico-thoracic or rétropéritonéal intervention. It is confirmed by the analyses of pleural effusion [6-8]. Traumatic chylothorax usually appears with a latent period of two to ten days, but up to 25 days have been described. Approximately, it appears in an average of 7 days [9]. In the blunt chest trauma, the most common place of damage to the thoracic duct is in the area of the 9Th and 10Th thoracic vertebrae [9]. In our case, a fracture of the 8Th and 10Th thoracic vertebrae was found. Van Pernis concluded that the thoracic duct is a duplicated structure from Th12 to Th8 in the 40% of the patients [10]. The diagnosis of chylothorax is mainly based on the values of triglycerides and cholesterol which are found in the pleural effusion. The diagnosis is determined by chest CT and by the presence of triglycerides in the biochemical analyses of the pleural effusion. The presence of triglycerides with more than 1,24 mmol/l and cholesterol with less than 5,18 mmol / l in the pleural effusion support the diagnosis of chylothorax [7]. Lymphangiography and lymphoscintigraphy which are rarely performed, are useful to evaluate the location of the leak, to define the permeability of the thoracic duct, and to differentiate a partial or complete rupture of the duct [11]. Lymphoscintigraphy has the advantage of being fast

minimal invasive and has few negative effects. The differential diagnosis of chylothorax mainly includes pseudo chylothorax and empyema. Pseudo chylothorax is characterised by the presence of a high amount of cholesterol (>5,18mmol /l) and a triglycerides level of less than 1,24mmol/l. The most common cause of pseudo chylothorax are chronic exudates (tubercular pleurisy) [6,12]. Management strategies for chylothorax have undergone a significant innovation since the time of Rd. Bartlett's description in the 17th century. [13-16]. If the clinical condition allow initially conservative treatment should be preferred even in a chylothorax as a result of a chest trauma [8,13,17]. Conservative treatment is based on pleural drainage and a fat-free diet and appropriate etiological management. In case of failure, the closing of the thoracic lymphatic duct with a surgical technique or with interventional radiology should be considered. In our case, conservative treatment was performed which consist in total parenteral nutrition and bilateral pleural drainage. This tactic has been successful according to some reports, including in our case [18-21]. In our patient, the chyle leakage was exhausted in the 5th week after a conservative treatment only. The rate of success of conservative treatment is very variable and depends on the main causes, however, a flow more than 1000-1500 ml/24 hours is impossible to be resolve without a further intervention [3]. Chemical pleurodesis can be used as an alternative if it is necessary [12]. Surgical treatment has been, for many years, the only option after the failure of conservative treatment. The ligation of the right thoracic duct (between the 8Th and 10Th) is the most commonly used as a surgical treatment, especially in the traumatic chylothorax. In general, the main difficulty is the identification of the thoracic duct and its outflow. The swallowing of the butter or cream, as well as injecting of the blue methylene before the intervention can help to localise the leakage. Up to 50% of the patients may die from complications of untreated chylothorax [12], [13].

Conclusion

Bilateral traumatic chylothorax remains a very rare complication of chest trauma. The initial treatment is conservative which consist of a drainage thoracostomy tube and a free-fat diet. For many years surgical

treatment has been the only option after conservative treatment.

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