The THAI Journal of SURGERY 2024;45(1):8-11.
Official Publication of The Royal College of Surgeons of Thailand

Case Report

Delay Traumatic Chylothorax after Gunshot: A Case Report

Warach Taksinachanekij, MD

Division of Cardiothoracic Surgery, Department of Surgery, Buriram Hospital, Buriram, Thailand

Abstract

Background: Chylothorax is the occurrence of chyle in the pleural space due to damage or obstruction of the thoracic duct. Its etiology can be traumatic or nontraumatic. If left untreated, chylothorax may yield an overall 50% mortality rate.

Objective: To present a case of chylothorax secondary to a gunshot lesion as well as to review current concepts about chylothorax and its treatment.

Materials and Methods: Case report: A 22-year-old Thai man who complaint progressive chest pain and dyspnea on exertion for two weeks after being discharged from a traumatic gunshot with right hemothorax after treatment with pleural drainage and retained gunshot at left lower lung. Cardiovascular examination revealed normal. Chest examination revealed decreased breath sound at the right thorax. The chest X-ray (CXR) showed a massive pleural effusion. Management was based on pleural drainage and pleural fluid analysis to confirm the diagnosis of chylothorax.

Results: Our patient underwent pleural drainage and fasting for about 1 week with parenteral nutrition but failed conservative treatment. Surgical treatment becomes an option in this case. We approached video assisted right minithoracotomy in identifying and ligating the thoracic duct and performed a surgical pleurectomy of the right thorax. Post-operative, the flow rate through pleural drainage decreased, and pleural fluid characteristics were changed to serum fluid. CXR showed no pleural effusion. The patient was discharged from the hospital 1 week after surgery.

Conclusion: In this case report, we emphasize the late traumatic chylothorax after the gunshot. Chylothorax requires a high index of clinical suspicion for diagnosis. This case report demonstrates that timely and appropriate treatment is essential to prevent associated complications.

Keywords: Chylothorax, Traumatic chylothorax, Gunshot

Introduction

Chylothorax is the occurrence of chyle in the pleural space due to damage or obstruction of the thoracic duct. Its etiology can be traumatic or nontraumatic.

The term traumatic is often used to include both iatrogenic and postinjury chylothoraces, which usually represent the most common causes of significant chyle accumulation in the chest.

In a recent report from the Mayo Clinic, the cause was surgery or trauma in 50% of the patients, medical conditions in 44%, and unknown in 6%.

If left untreated, chylothorax may yield an overall 50% mortality rate.

Biochemically, chyle is usually characterized by a content of triglycerides in the pleural fluid greater than that detected in the plasma (> 110 mg/dL), a cholesterol/triglycerides ratio less than 1, and the presence of chylomicrons.

Received for publication 15 January 2024; Revised 18 February 2024; Accepted 19 February 2024

Corresponding author: Warach Taksinachanekij, MD, Division of Cardiothoracic Surgery, Department of Surgery, Buriram Hospital, Buriram, 31000, Thailand; Email: twarach@hotmail.co.th

Three approaches to managing chylothorax are

1. Conservative (nonsurgical); (1) nothing per oral (NPO); (2) medium-chain triglyceride diet; or (3) parenteral nutrition.

2. Surgical, aimed at identifying and isolating the lymphatic duct causing the leak so it can be closed.

3. Surgical, aimed at obliterating the space otherwise to be filled by chyle.

We report the presentation and management of a case of chylothorax secondary to a gunshot lesion, as well as review current concepts about chylothorax and its treatment.

Case Presentation

A 22-year-old Thai man with no underlying disease who complaint progressive chest pain and dyspnea on exertion for two weeks after being discharged from a traumatic gunshot with right hemothorax after treatment with pleural drainage and retained gunshot at left lower lung. He has no current medication. A cardiovascular examination revealed that his heart rhythm was regular. Chest examination revealed decreased breath sound at the right thorax. The results of an examination of other systems were normal.

Chest X-ray (CXR) showed a right massive pleural effusion with a retained gunshot in the left lower lung (Figure 1A). Our patient underwent pleural drainage, and pleural effusion was milky, about 4 liters, with no smell (Figure 1B). We sent pleural fluid to confirm the diagnosis. After right intercostal drainage (Rt. ICD), Chest computed tomography (CT chest) was sent for evaluation (Figure 1C).

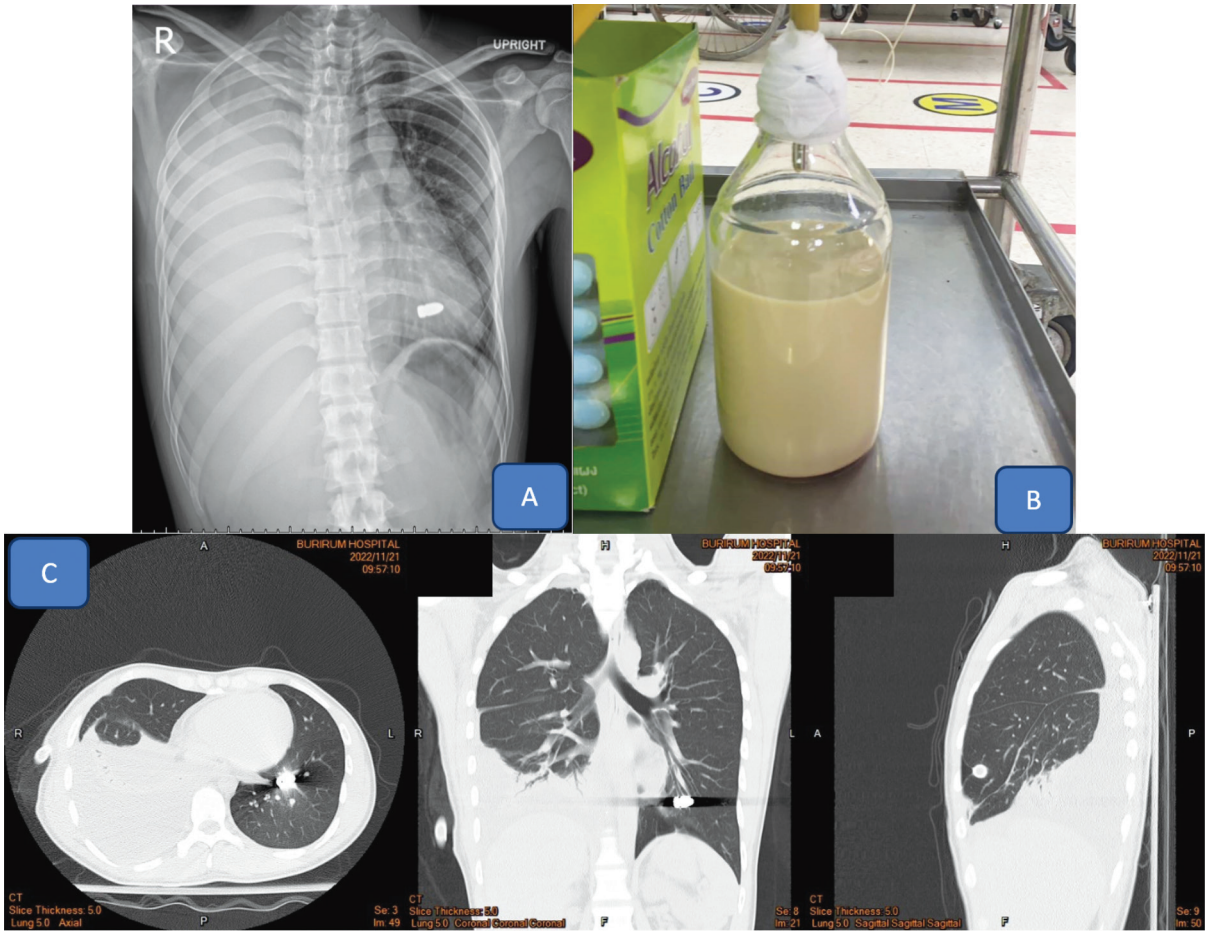

Figure 1 A: CXR on admission, B: Pleural fluid on admission, C: CT chest after on Rt.ICD

The results of lab investigations

- Triglycerides in the pleural fluid: 2,834 (> 110 mg/dL)
- Cholesterol/ triglycerides ratio less than 1: 0.13 (367/2834)

The result of CT chest: hyperattenuation right pleural effusion (Ddx; hemothorax, chylothorax) with compressive right lower lobe atelectasis, a large metallic fragment at left lower lung without bony fracture, great vessel, cardiac or esophageal injury.

Our patient underwent pleural drainage and fasting for about 1 week with parenteral nutrition but failed conservative treatment (Figure 2).

Figure 2 Pleural fluid after conservative treatment

Surgical treatment becomes an option in this case. We approached video assisted right minithoracotomy, to identify and ligate the thoracic duct (Figure 3) and performed surgical pleurectomy of the right thorax and intra-operative medical pleurodesis with TALC.

Post-operative, the flow rate through pleural drainage decreased, and pleural fluid characteristics were changed to serum fluid (Figure 4).

CXR showed no pleural effusion (Figure 5). The patient was discharged from the hospital 1 week after surgery.

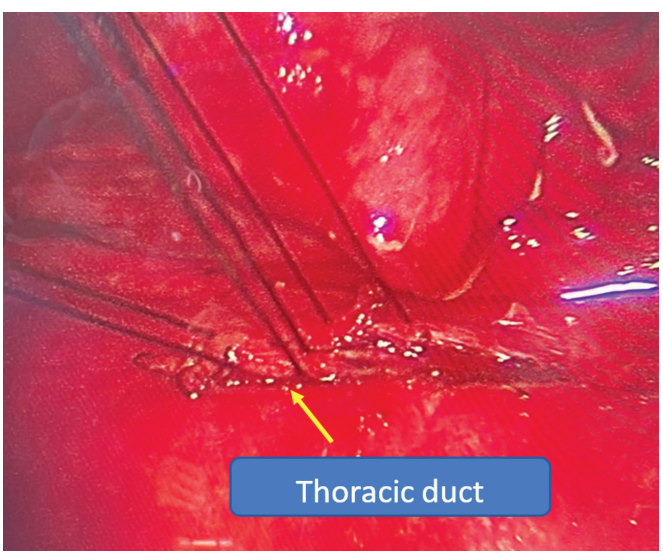

Figure 3 Intra-operative thoracic duct ligation

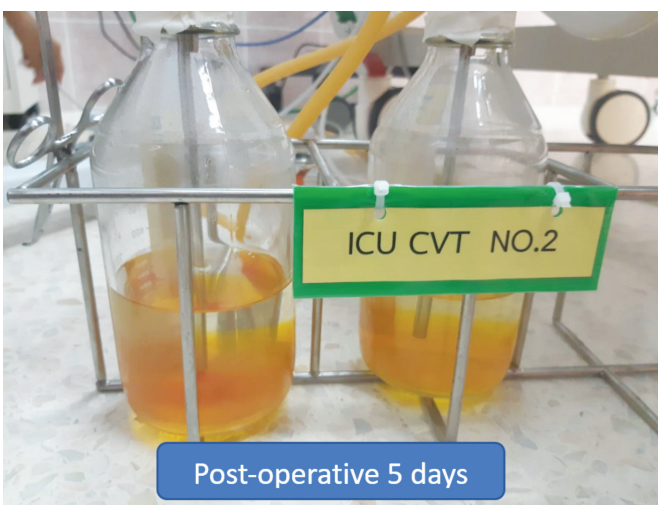

Figure 4 Pleural fluid (post-operative)

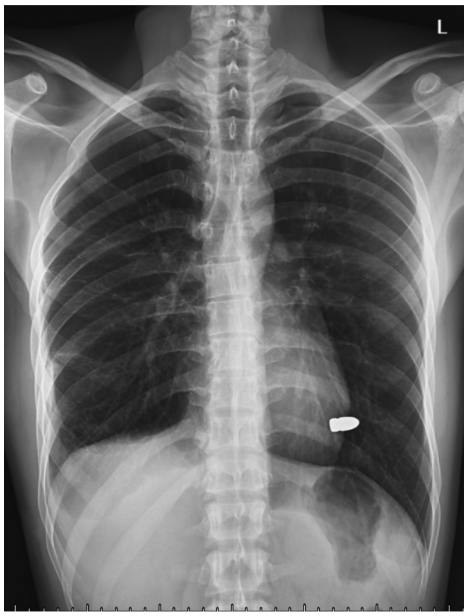

Figure 5 CXR (Post-operative)

Discussion

Chylothorax is a rare condition. Chylothorax of traumatic origin may be an early or late complication after an accident. It usually presents itself 7-10 days after the trauma.

Three approaches to managing chylothorax are:

1. Conservative (nonsurgical): (1) nothing per oral (NPO), (2) medium-chain triglyceride diet, or (3) parenteral nutrition.

2. Surgical, aimed at identifying and isolating the lymphatic duct causing the leak so it can be closed.

3. Surgical, aimed at obliterating the space otherwise to be filled by chyle.

In adults, it has been suggested that the detection of recurrent chylothorax greater than 1 liter/day after 1 week is evidence of failure of conservative management.

In this case, our patient underwent pleural drainage and fasting for about 1 week with parenteral nutrition but failed conservative treatment. Surgical management will be considered.

Conclusion

In this case report, we emphasize the late traumatic chylothorax after the gunshot. Chylothorax requires a high index of clinical suspicion for diagnosis. This case report demonstrates that timely and appropriate treatment is essential to prevent associated complications.

REFERENCES

1. Sellke FK, del Nido PJ, Swanson SJ. Sabiston & Spencer surgery of the chest 9th ed. Philadelphia: Elsevier. 2016.
2. Carrillo-Esper R, Sosa-García JO, Carrillo-Córdova CA. Chylothorax secondary to gunshot wound. Cir Cir. 2009;77(6):447-9.
3. Kugasemrat P, Nutritional Management in Patients with Chyle Leakage, Thai JPEN. 2022;30(1):9-19.
4. Pego-Fernandes PM, Nascimbem MB, Ranzani OT, et al. Video-assisted thoracoscopy as an option in the surgical treatment of chylothorax after cardiac surgery in children. J bras pneumol. 2011;37(1):28–35. doi: 10.1590/S1806-37132011000100006.
5. Cestero J, Bukhary H, Carrillo E, et al. Refractory chylothorax following a transhepatic gunshot wound to the abdomen requiring unorthodox surgical treatment. J Surg Case Rep. 2010;(6):3. doi: 10.1093/jscr/2010.6.3.
6. Umar A, Ismail S, Abdulkarim AA, et al. Massive chylothorax following gunshot injury to the left supraclavicular region: case report and literature review. Int J Cardiovasc Thorac Surg. 2019;5(1);18-20. doi: 10.11648/j.ijcts.20190501.14.