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(CASE REPORT)

Left-sided chylothorax complicating abdominal laparoscopy

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Abstract

Chylothorax, defined as the accumulation of lymph in the pleural cavity, is a rare complication of abdominal surgery, particularly following laparoscopy. We report the case of a 33-year-old female patient who developed a massive left-sided chylothorax diagnosed sometime after a gynecological intervention. The clinical presentation, complicated by a viral and bacterial co-infection due to local immune compromise, evolved favorably under conservative management combining chest tube drainage and strict dietary measures.

Keywords: Chylothorax; Laparoscopy; Abdominal surgery; Conservative management; Triglycerides

1. Introduction

Chylothorax is characterized by the presence of lymphatic fluid of digestive origin (chyle) within the pleural cavity. While traumatic thoracic and neoplastic etiologies (lymphomas) predominate, chylothorax secondary to abdominal surgery, and a fortiori laparoscopic surgery, remains exceptional [1]. These cases generally result from an occult injury to the retroperitoneal lymphatic vessels. Diagnosis is confirmed biochemically. Management, though not standardized, favors an initial conservative approach aimed at halting the lymphatic leak.

2. Case report

A 33-year-old female patient, with no history of tuberculosis but exposed to biomass smoke, was admitted for the management of a persistent left-sided pleural effusion. Her surgical history was significant for a laparotomy for a mucinous ovarian cystadenoma in 2023, followed one year later, in November 2024, by a laparoscopic intervention for an ovarian cyst.

The patient's history revealed symptoms beginning in early 2025 and evolving over three months, consisting of left-sided chest pain and dyspnea on exertion, in the context of general deterioration of health and apyrexia.

On admission, the clinical examination found the patient to be hemodynamically and respiratory stable (SpO2 96% on room air), presenting with clinical signs of a fluid effusion in the lower two-thirds of the left hemithorax. The initial postoperative CT scan confirmed a large-volume left pleural effusion associated with residual pneumoperitoneum in the peri splenic area, indicative of the recent surgery.

Thoracentesis yielded a fluid with a milky appearance. Biochemical analysis confirmed the diagnosis of chylothorax, revealing a massively elevated triglyceride level of 7.14 g/L associated with a pleural protein level of 44 g/L.

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The clinical picture was complicated by a documented co-infection; multiplex respiratory PCR identified the simultaneous presence of Coronavirus, Metapneumovirus, and Enterovirus, while bronchial samples isolated Klebsiella Oxytocic and Pseudomonas Aeruginosa.

The therapeutic strategy relied on chest tube drainage, allowing for the total evacuation of 4500 cc of fluid, coupled with a strict low-fat, high-protein diet. The clinical course was favorable, marked by the drying up of the effusion, complete lung re-expansion confirmed radiologically, and removal of the drain on day nine with no immediate recurrence. Clinical and radiological follow-up showed the patient to be respiratory asymptomatic with a normal chest X-ray.

Figure 1 AP Chest X-ray showing a moderate abundance left-sided pleural effusion in the process of loculation

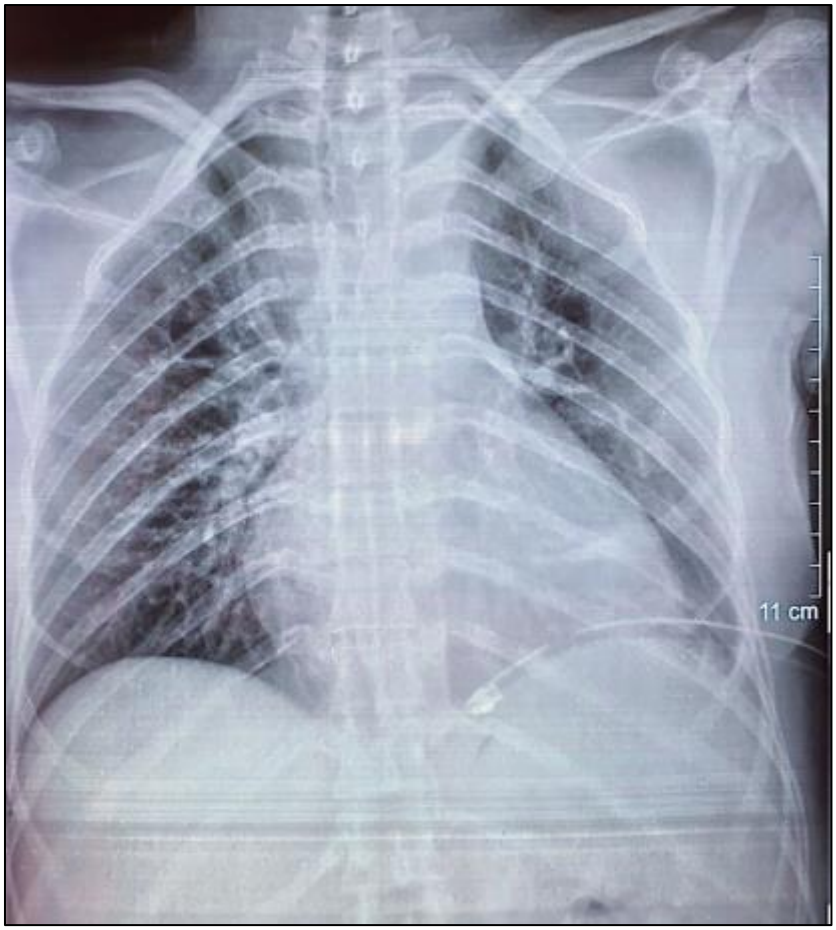

Figure 2 Follow-up X-ray showing complete radiological clearance after thoracic drainage

3. Discussion

The occurrence of chylothorax following abdominal surgery constitutes an exceptional complication, representing a marginal fraction of iatrogenic chylous effusions, which are usually dominated by thoracic or traumatic causes [2, 3].

While the classic mechanism of injury involves direct damage to the cisterna chyli or its tributaries during extensive retroperitoneal dissection, the appearance of this complication after laparoscopy suggests a specific pathophysiology: the increase in intra-abdominal pressure induced by the pneumoperitoneum may favor the migration of chyle toward the thorax through anatomical hiatuses or congenital diaphragmatic porosities [2].

Diagnostically, although the milky appearance of the fluid is a strong indicator, certainty is exclusively biochemical. Based on the reference criteria by Staats et al., diagnosis relies on demonstrating a pleural triglyceride level greater than 1.24 mmol/L (110 mg/dL) [4], a threshold largely exceeded in our observation (7.14 g/L), confirming the diagnosis unambiguously.

Beyond the mechanical respiratory issues, the chyle leak engenders major systemic consequences. The continuous loss of lymph leads to lymphocyte depletion (mainly T lymphocytes) and immunoglobulin depletion, responsible for acquired immunosuppression [5]. This pathophysiological mechanism explains the severity of the infectious presentation in our patient, characterized by an opportunistic viral and bacterial co-infection.

First-line therapeutic management remains conservative, with an estimated success rate between 50 and 80% [6]. It imperatively associates effective pleural drainage with strict dietary measures (a fat-free diet or one enriched with medium-chain triglycerides) to stem chyle production; surgical recourse to thoracic duct ligation is reserved for failures of medical treatment or persistent refractory flow rates [1, 6].

4. Conclusion

This report highlights that left-sided chylothorax constitutes an exceptional and rare complication following abdominal laparoscopic surgery, with the diagnosis definitively confirmed by highly elevated pleural triglyceride levels. Despite the clinical complexity introduced by opportunistic co-infections, the patient's successful recovery under conservative management—combining chest tube drainage and strict dietary restrictions—underscores the effectiveness of this non-invasive approach. This study benefits society by alerting practitioners to this rare diagnostic trap, promoting early recognition and conservative management to optimize patient outcomes and guide future surgical vigilance.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflicts of interest.

Statement of informed consent

All participants included in the study provided informed consent.

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