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Management and Outcomes of Chylothorax: A Case Series

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Abstract

Chylothorax is a rare condition that is often over looked by pulmonologists due to its varied clinical presentations. It involves the accumulation of chyle in the pleural cavity, which can be due to many causes. The presentation of chylothorax may not always adhere to the classic textbook description, making it essential for clinicians to maintain a high level of suspicion for early detection and appropriate treatment. This case series includes 10 patients diagnosed with chylothorax, each with a different underlying cause. We conducted comprehensive clinical assessments, including imaging studies along with diagnostic procedures like pleural fluid analysis and lymphangiography, to identify the causes of the condition. Treatment plans were individualized according to the specific etiology of each case. The findings from this case series illustrate the wide spectrum of potential causes of chylothorax, which include both traumatic and non-traumatic factors. Traumatic causes, such as those following thoracic surgery, and non-traumatic causes, particularly malignancies like lymphoma, lung cancer and even infective causes like Tuberculosis were identified. The clinical presentations varied greatly among patients, underscoring the necessity of considering chylothorax even when the presentation deviates from typical signs. Diagnosis relied on pleural fluid analysis and various other imaging modalities. Early diagnosis, a thorough workup, and prompt treatment tailored to the underlying cause are essential for effective management.

Keywords: Chylothorax, Pleural Effusion, Pulmonary Medicine, Rare Condition.

Introduction

Chylothorax is an uncommon but significant medical condition that involves the accumulation of chyle in the pleural cavity, resulting in pleural effusion. It presents a diagnostic challenge due to its wide range of potential causes and diverse clinical presentations. Chyle, a milky fluid composed of lymph and absorbed fats, is normally transported from the intestines to the bloodstream via the thoracic duct. When flow of chyle is disrupted, it can leak into the pleural space forming a chylothorax. The thoracic duct originates from the cisterna chyli at the level of the second thoracic vertebra and ascends through the aortic hiatus, collecting lymph from various regions, including the lung parenchyma and pleura. The pleural effusion usually occurs on the right side if the thoracic duct is disrupted below the fifth thoracic vertebra, whereas left-sided chylothorax occurs when the disruption occurs above this level. This difference in anatomy explains why the right pleural space is more commonly affected, with numerous studies reporting right-sided chylothorax in up to 70% of cases (1). Chylothorax can be broadly categorized into two groups: traumatic and non-traumatic. Traumatic chylothorax is often associated with thoracic surgery, such as lung resection, esophagectomy, or heart surgery, which may inadvertently damage the thoracic duct or its tributaries (2). On the other hand, non-traumatic chylothorax is frequently linked to malignancies, particularly lymphomas and lung cancers, which can obstruct the thoracic duct or invade lymphatic vessels, causing chyle leakage into the pleural space (3). In addition to malignancies, other non-traumatic causes include infections, congenital abnormalities, and certain systemic conditions such as heart failure or cirrhosis (4). The clinical signs of chylothorax are often subtle and can include symptoms such as dyspnea, chest pain, and fatigue, or in some cases, the condition may progress without noticeable symptoms, leading to a delayed diagnosis. Diagnosis is typically confirmed through the analysis of pleural fluid, which appears milky due to the high triglyceride content. A triglyceride concentration exceeding 110 mg/dL is a hallmark diagnostic feature of chylothorax. Further diagnostic tools, such as

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imaging techniques (e.g., CT or MRI), lymphangiography, and pleural biopsy, may be required to identify the underlying cause and guide the treatment approach (5). Management of chylothorax is tailored to the specific cause and the severity of the condition. Initial treatment often includes conservative measures, such as a low-fat or medium-chain triglyceride diet, along with pharmacologic agents like octreotide. In more severe cases or when malignancy is identified, more invasive treatments, such as thoracic duct ligation or pleurodesis, may be necessary to control the effusion and address the underlying disease. The outcome largely depends on the timely identification and appropriate management of the underlying cause, as well as the effectiveness of treatment interventions. In this case series, we present 10 instances of chylothorax with various underlying etiologies. This series aims to contribute to the existing body of knowledge by highlighting the diversity of presentations and management strategies, with the ultimate goal of improving diagnostic accuracy and treatment outcomes for patients with chylothorax.

Methodology

This retrospective case series encompasses ten patients diagnosed with chylothorax, each with a distinct underlying etiology. The study was conducted at the Affiliated Hospital of SOA University with the approval of the Institutional Ethics Committee. As this study utilizes anonymized data, it falls under the exemption from review category as per the ethical guidelines of the institution. Informed consent was obtained from all participating patients.

Case Series Evaluations

Case 1

A 64 year old diabetic, hypertensive male presented to the OPD with gradually progressive dyspnea over 5 months. He underwent a CABG 6 months back for triple vessel disease. On examination he had bilateral pitting pedal edema with BP- 96/60 mm of Hg, PR- 98/min, RR- 28/min, SpO_2 – 96% with room air. There was dull percussion note and reduced vesicular breath sounds on respiratory system examination. His chest X ray as well as CT thorax revealed bilateral pleural effusion, Figure 1 and Figure 2.

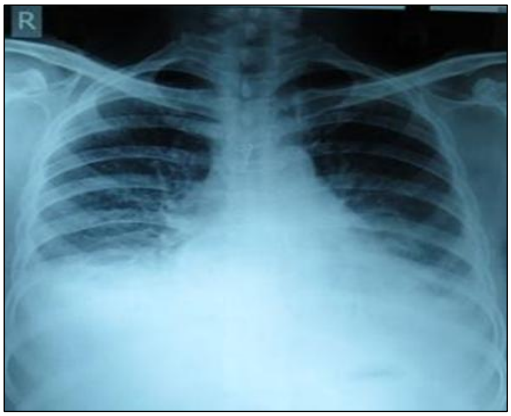

Figure 1: Chest X ray Showing Bilateral Pleural Effusion

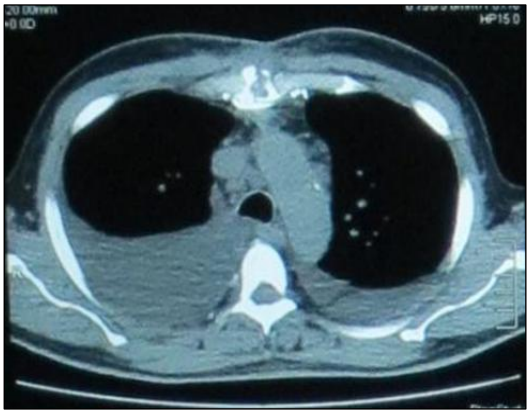

Figure 2: CT Thorax Showing Bilateral Pleural Effusion

Pleural fluid analysis revealed transudate bilaterally but presence of chyle in the right pleura. The patient was managed with TPN, MCFA containing diet and ICTD.

Case 2

A 44 year male without any comorbidities presented with shortness of breath, cough and an abdominal distention for 4 months. On examination he had pitting pedal edema bilaterally, raised JVP, facial puffiness. His vitals were PR- 80/min, BP- 96/60 mm Hg, RR- 26/min, SpO_2- 95 % with room air. Systemic examination revealed bilateral dull percussion note and reduced breath sounds on lung bases, muffled heart sounds and fluid thrill and shifting dullness in gastrointestinal system examination. A previous chest X ray collected from the patient showed enlarged cardiac silhouette (Figure 3). CT Thorax showed bilateral pleural effusion (Figure 4).

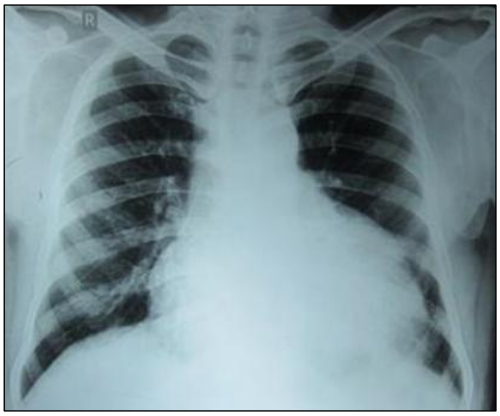

Figure 3: Chest X ray Report of Followed Patient Shows Enlarged Cardiac

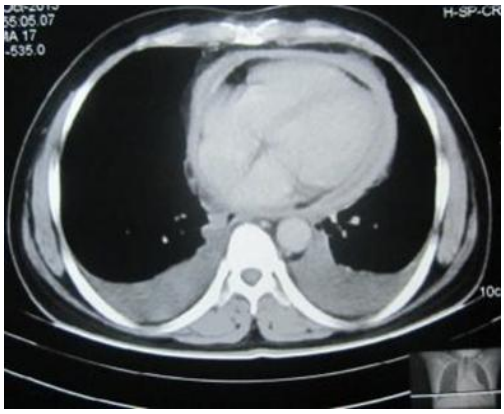

Figure 4: CT Thorax Report Showed Bilateral Pleural Effusion

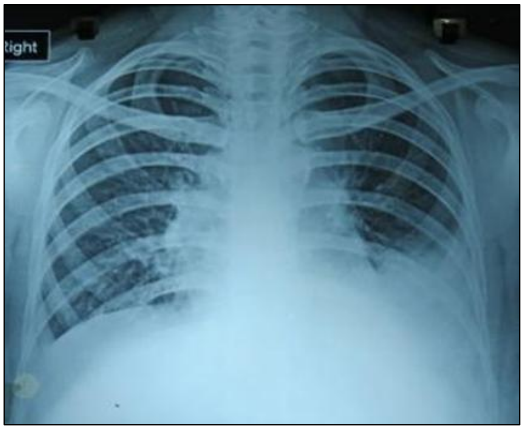

Figure 5: Chest X ray Showing Bilateral Pleural Effusion

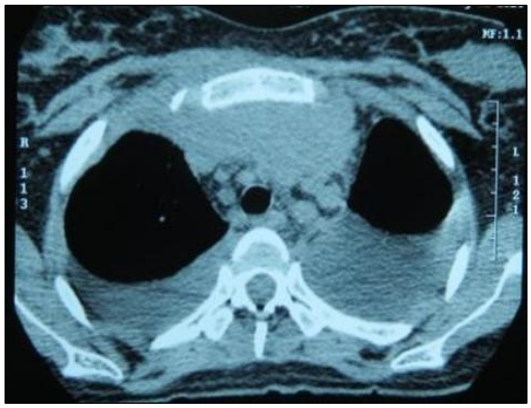

Figure 6: CT Thorax Showing Anterior Mediastinal Mass with Bilateral Pleural Effusion

Pleural aspiration done from the right yielded a turbid yellowish exudate which was lymphocytic and with low ADA. AFB staining and CBNAAT for Mycobacterium tuberculosis were negative, no organism was isolated on culture as well. However, there was high triglyceride and presence of chylomicrons. The left pleural effusion and ascites were transudative in nature. 2D ECHO- revealed posterior wall flattening, septal bounce, mitral inflow velocity inspiratory variation > 25%, loss of respiratory variation, hepatic venous expiratory flow reversal, mild pericardial effusion all suggestive of constrictive pericarditis. After ATT and ICTD insertion the patient was planned for pericardiectomy.

Case 3

A 24 year old female presented with right sided dull aching chest pain and low grade intermittent fever for 2 months. On examination she had PR – 80/min, BP- 96/66 mm Hg, RR- 28/min and SpO_2- 95% with room air. There was a firm right supraclavicular lymph node of size 2 cm x 3cm. Respiratory system examination revealed dull mediastinal percussion as well bilaterally and reduced breath sounds in bilateral intrascapular and intraaxillary areas. Chest X ray showed bilateral pleural effusion, Figure 5. CT thorax showed an anterior mediastinal mass with bilateral pleural effusion (Figure 6). Pleural fluid analysis revealed a milky white exudative, lymphocytic pleural fluid with low ADA and presence of malignant cells. Right supraclavicular lymph node biopsy revealed Non-Hodgkin's lymphoma, diffuse high grade large cell type. She received appropriate chemotherapy for the same.

Case 4

A 40-year-old diabetic male presented with high grade fever and shortness of breath for 2 months. Examination revealed a PR- 100/min, BP-100/60 mm Hg, RR- 30/min and SpO2- 92% with room air. Respiratory system examination revealed a bilateral dull percussion note with reduced breath sounds. There was presence abdominal distension with presence of fluid thrill and shifting dullness. Rest of the systems did not reveal any abnormality on examination. Chest Xray revealed bilateral pleural effusion, Figure 7. The CT thorax showed presence of numerous random nodules along with mediastinal lymphadenopathy and bilateral pleural effusion, Figure 8.

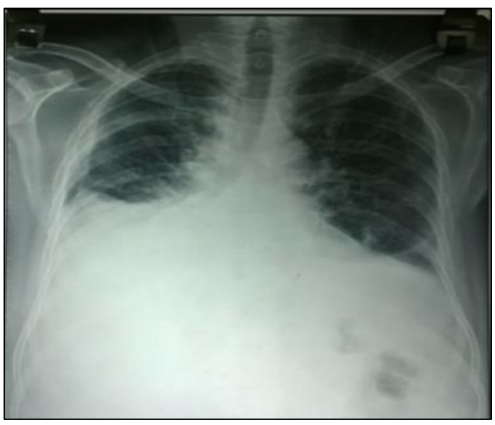

Figure 7: Chest X Ray Showing Bilateral Pleural Effusion

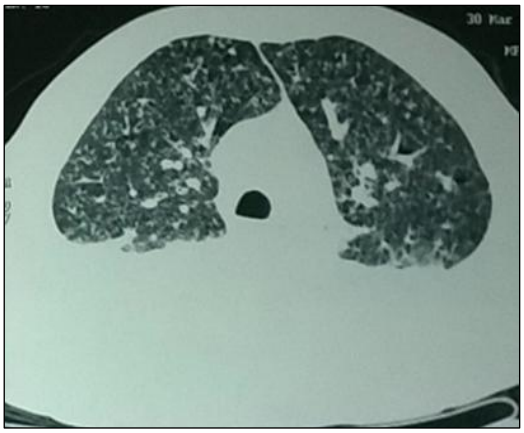

Figure 8: CT Thorax is Showing Bilateral Pleural Effusion and Multiple Nodules

USG abdomen revealed necrotic retroperitoneal lymph nodes and ascites. Both the pleural fluid and ascites were milky white in color and confirmed to be chyle after analysis. 2D ECHO ruled out constrictive pericarditis and heart failure. A fiber optic bronchoscopy was performed and the BAL CBNAAT detected *Mycobacterium tuberculosis.* Conservative management in form of ATT and dietary modification were helpful.

Case 5

A 50 year old male without any comorbidities presented shortness of breath for 1 month. There was no history of trauma. Examination did reveal any reveal any abnormality except for dull percussion note and reduced breath sounds on the right with shifting of mediastinum to the left. Chest X ray showed right massive pleural effusion in Figure 9.

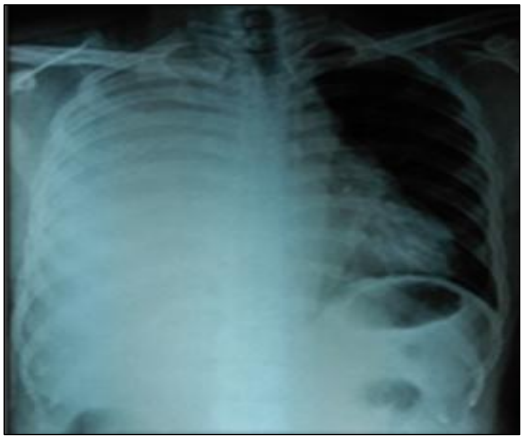

Figure 9: Chest X Ray Showing Right Massive Pleural Effusion

Pleural fluid analysis revealed an exudate with presence of chyle. CECT thorax and abdomen did not reveal any other abnormality. Fiberoptic bronchoscopy also didn't reveal any abnormality. Lymphoscintigraphy was also normal. He was managed conservatively with ICTD and modified diet.

Case 6

A 25 year old male without any comorbidities or history of trauma presented with shortness of breath for 2 months. He had swelling of both legs and was treated for filariasis 10 years back. He also gave a history of MRSA osteomyelitis of right foot and associated bacteremia which was treated with intravenous antibiotics 3 years back. Clinical examination revealed only a massive left pleural effusion. Pleural fluid analysis revealed a milky white exudate with presence of chyle. Chest X ray Figure 10 and CECT thorax and abdomen did not reveal any abnormality except for a massive left pleural effusion Figure 11.

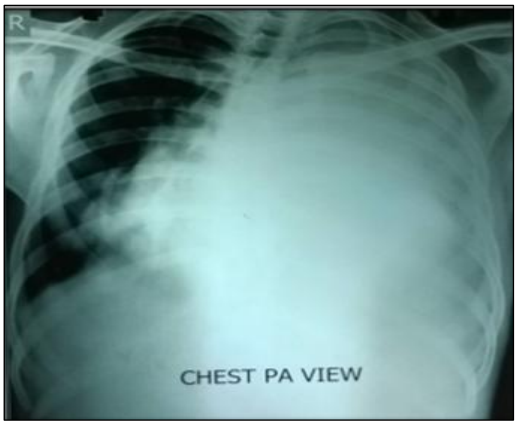

Figure 10: Chest X Ray Showing Left Massive Pleural Effusion

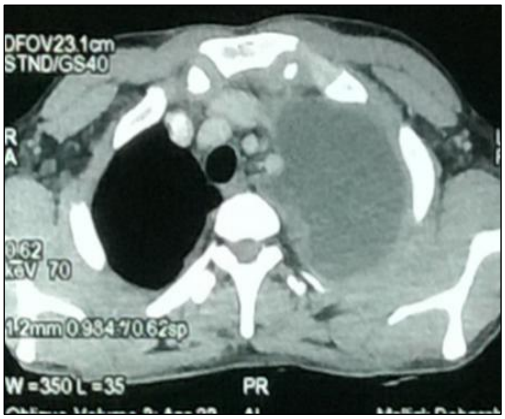

Figure 11: CT Thorax Showing Left Massive Pleural Effusion

Lymphoscintigraphy was normal. ICTD insertion and appropriate diet restriction led to improvement.

Case 7

A 42 year old diabetic, hypertensive male presented with breathlessness and cough for 3 months. He did not have any addictions or habituations. Examination revealed bilateral dull percussion note and reduced breath sounds. There was no evidence of heart failure clinically or in 2D ECHO. Chest ray and CECT thorax showed only a bilateral pleural effusion Figure 12.

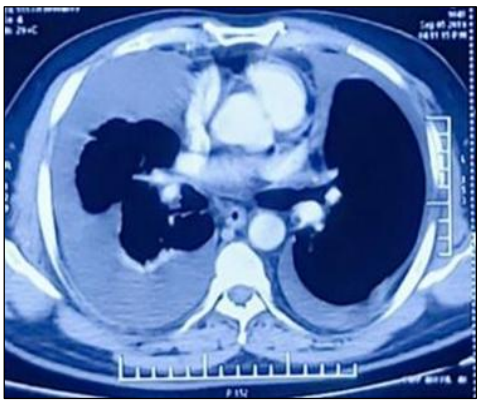

Figure 12: CT Thorax Showing Bilateral Pleural Effusion

Lymphoscintigraphy did not reveal any lymphatic obstruction. Pleural fluid was an exudate with lymphocyte predominance with presence of chyle. He required repeated pleural aspirations to relieve dyspnea for which ICTD insertion was done along with TPN and a strict diet of MCFAs. No evidence of malignancy or Tuberculosis could be found out despite a battery of appropriate tests. There was absence of anti-Filaria antibody as well as Filaria Ag. The patient was planned for a pleural biopsy which he refused. He improved with surgical intervention and pleurodesis.

Case 8

A 30 year old male presented to the ER with sudden onset of shortness of breath, chest pain following blunt trauma to right chest the same day in a road traffic accident. He was hemodynamically stable but was tachypneic, examination revealed a massive right pleural effusion which was also confirmed by the chest X ray Chest X Ray Figure 13. After a hemorrhagic pleural tap an ICTD was urgently put in the right pleural space suspecting hemothorax. On day 2 post ICTD insertion milky white pleural fluid was seen in the bag. Patient was managed with surgical intervention.

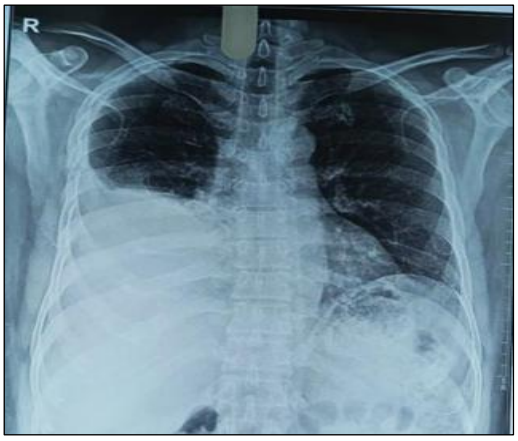

Figure 13: Chest X Ray Showing Right Pleural Effusion

Case 9

A 48 year old male previously being treated at the department of Urology for evaluation of haematuria was referred to Pulmonary medicine due to incidental detection of a lung mass on the right with a moderate pleural effusion. He had no respiratory symptoms and examination did not reveal any abnormality. His CT thorax revealed a large mass (4cm *5cm) with irregular margins, right moderate pleural effusion and enlarged mediastinal and abdominal lymph nodes. Diagnostic pleural tapping revealed a milky white exudative fluid which was confirmed to be chyle. A CT guided biopsy was done from the mass which revealed adenocarcinoma lung. He improved with chemotherapy.

Case 10

A 25 year old male presented with high grade fever and shortness of breath for 20 days, on examination he had right lung volume loss and pleuroparenchymal fibrosis. Chest X ray and CT thorax revealed right sided gross pleural thickening with multiple septations. Only 20 ml of pus could be aspirated from the right pleural space with was negative for bacteria, mycobacteria or fungi. He underwent a decortication for the same. On the third post-operative day he developed shortness of breath and his chest X ray showed increased right pleural effusion. a repeat pleural fluid analysis revealed a milky white fluid and presence of chyle. An urgent surgical intervention led to improvement.

Table 1: Routine Blood Investigations: (N- Within Normal Limits)

Case no	Hb	TLC	LFT	RFT	Sodium	Potassium	Serum TG	Serum Cholesterol
1	10.2	7540	N	N	130	3.5	50	180
2	12.4	6700	N	N	133	3.7	64	163
3	13	8268	N	N	128	3.3	56	189
4	11.4	7000	N	N	139	4.1	60	190
5	10.8	9880	N	N	127	3.2	89	220
6	13.1	6590	N	N	130	3.7	66	230
7	10	5400	N	N	126	3.9	78	200
8	11.7	1170	N	N	131	3.2	57	175
9	9	7800	N	N	126	3.6	60	180
10	14	5065	N	N	134	3.7	70	240

Investigations

Table 1 shows the routine blood tests of all patients which were normal except for anemia in case 9 and hyonatremia in 4 patients which was not symptomatic. The serum triglyceride and cholesterol values were also recorded as they were needed for confirmation of chylothorax. Table 2 shows the pleural fluid analysis of all the patients. Physical characteristics like colour varied amogst patients with predominant milky white colour in 6 patients and others with variations. Pleural fluid was predominantly lymphocytic, exudative except for 1 patient who had transudative fluid. Pleural fluid had high triglyceride and presence of chyle in all patients. Table 3 shows the various imaging investigations in the patients, lymphoscintigraphy could be only done in 3 patients which were all normal.

Table 2: Pleural Fluid Analysis

Case no	Color	Protein	Sugar	LDH	ADA	Cytology	Cellblock for Malignancy	TG	Cholesterol	Chylomicrons
1	Reddish white	2.7	76	79	02	100 cells-lymphocytic	Neg	138	28	present
2	Turbid yellow	3.2	50	90	4	200 cells lymphocytic	neg	190	46	present
3	Milky white	3.9	60	100	7	500 cells lymphocytic	neg	189	51	present
4	Milky white	4.2	50	123	10	678 cells lymphocytic	neg	156	45	present
5	White	3.9	64	98	17	560 cells lymphocytic	neg	178	67	present
6	Milky white	5.1	48	267	13	434 cells lymphocytic	neg	200	52	present
7	Yellowish white	4.3	69	345	19	352 cells lymphocytes	neg	178	43	present
8	Milky white	3.3	89	158	6	689 cells lymphocytic	neg	141	59	present
9	Milky white	4.8	78	145	14	221 cells lymphocytic	neg	162	39	present
10	Milky white	4.4	69	200	8	386 cells lymphocytic	neg	170	46	present

Table 3: Radiological Investigations

Case no	Chest X ray	CECT thorax	Lymphoscintigraphy
1	Bilateral pleural effusion (right > left)	Bilateral pleural effusion(right >left)	-
2	Increased Cardiothoracic ratio	Pericardial thickening with bilateral pleural effusion	-
3	Mediastinal widening, bilateral pleural effusion	Anterior mediastinal mass ,mediastinal lymphnodes, bilateral pleural effusion	-
4	Bilateral pleural effusion	Numerous random nodules, mediastinal lymphadenopathy , bilateral pleural effusion	-
5	Right massive pleural effusion	Right moderate pleural effusion	normal
6	Left massive pleural effusion	Left massive pleural effusion	normal
7	Bilateral pleural effusion	Bilateral pleural effusion	normal
8	Right massive pleural effusion	Right massive pleural effusion , fractured anterior 5^{th} to 9^{th} ribs	--
9	Right lung mass, moderate right pleural effusion,	Lung mass(4cm *5 cm) with irregular margins, right moderate pleural effusion, mediastinal and abdominal lymphadenopathy	-
10	Pre op- right pleural thickening with reduced lung volume Post op- right massive pleural effusion	Preop - Right sided gross pleural thickening with multiple septations Post op- right massive pleural effusion with collapsed lung	-

Results

This case series highlights the diverse etiologies of chylothorax, encompassing both traumatic and non-traumatic origins. Traumatic causes, often secondary to thoracic surgeries, were observed alongside non-traumatic ones; primarily malignancies such as lymphoma and lung cancer were identified. Furthermore**,** the clinical presentations exhibited significant variability among patients. For instance, Case 1 demonstrated successful management with a reserved NPO period along with TPN for 3 days followed by MCFA containing diet, permissible carbohydrate and adjusted dose insulin and TPN as well for the next 10 days. There was gradual decrease in collection and finally on day 12 ICTD was removed and the patient was discharged with advice of fat restricted diet to continue until follow up. He showed clinico radiological improvement on subsequent follow ups. Case 2, despite initial improvement with anti-tubercular therapy and ICTD insertion, succumbed to sepsis following pericardiectomy**.** In contrast, Case 3 responded well to chemotherapy (RCHOP) and conservative management with MCFAs and TPN. Moreover**,** Case 4 also showed favorable outcome with ATT and both chylothorax and chylous ascites were managed conservatively with dietary modification and TPN. On subsequent follow ups the patient improved clinico radio logically. In case 5, the rapid reaccumulation of fluid necessitated ICTD insertion. The patient was kept nil per orally for first 48 hours and on TPN followed by gradual introduction of MCFAs and fluids. The fluid collection gradually reduced and ICTD was removed on day 15. On subsequent follow ups the patient improved and there was no reaccumulation of fluid further. Similarly, in case 6, the rapid recollection of pleural fluid led to insertion ICTD along with strict dietary modification limited to MCFAs and TPN. The collection gradually reduced and the ICTD was removed. Later on, the patient never had

reaccumulation of chyle in the pleural space on subsequent follow ups. In Case 7, despite thoracic duct ligation there was persistent accumulation of chyle. The patient improved with thoracic duct embolization and had his chest tubes removed after right pleurodesis. Case 8, a suspected case of traumatic chylothorax, responded effectively to prompt thoracic duct ligation. In case 9, the patient was put on a modified diet of MCFAs and simultaneously underwent chemotherapy for the lung neoplasm. The pleural fluid gradually reduced subsequently without requiring an intervention. In the last case 10, the patient had an iatrogenic injury of thoracic duct for which he underwent ligation of the thoracic duct in a second surgery which was uneventful and improved subsequently on follow ups. The overall findings and treatment outcomes of this case series are summarized in Table 4, emphasizing the need for a tailored approach to managing this complex condition.

Table 4: Treatment and Follow Up

Case	Diagnosis	Treatment	Follow up
1	Traumatic chylothorax (post CABG)	MCFA based diet, TPN, ICTD	Resolution without any recurrence
2	Chylothorax secondary to constrictive pericarditis	MCFA based diet, TPN, ICTD ATT, Pericadiectomy	Sepsis, death
3	Chylothorax in lymphoma	MCFA diet, TPN, RCHOP regimen for lymphoma	Resolution of chylothorax after 3 cycles of chemotherapy
4	Chylothorax secondary to pulmonary TB	TPN, MUFA based diet, ATT	Clinico radiological resolution after completion of ATT Course
5	Idiopathathic chylothorax	TPN, MCFA based diet, ICTD	Resolution after 2 weeks
6	Idiopathic chylothorax	TPN, MCFA based diet, ICTD	Resolution after 3 weeks without recurrence
7	Idiopathic chylothorax	Thoracic duct ligation, thoracic duct embolisation, pleurodesis	Failure of conservative management, thoracic duct ligation Resolution after thoracic duct embolisation and pleurodesis
8	Traumatic chylothorax	ICTD, thoracic duct ligation	Resolution without any recurrence
9	Chylothorax due to involvement of thoracic duct by lung mass(carcinoma lung)	MCFA based diet, chemotherapy for lung malignancy	Resolution without recurrence after 4 cycles of chemotherapy
10	Traumatic chylothorax	Thoracic duct ligation	Resolution after surgery.

Discussion

Chylothorax is a rare condition that presents a diagnostic and therapeutic challenge due to its wide spectrum of potential causes and variable clinical presentations. This case series adds valuable insights into the management of chylothorax, reinforcing the importance of early recognition, targeted treatment, and individualized care. The findings from this series are consistent with several points in the existing literature, while also providing further nuance in the treatment and outcomes of this condition.

Chylothorax can result from both traumatic and non-traumatic causes, as evidenced by the cases in this series. Traumatic chylothorax is often associated with surgical procedures involving the thoracic region, such as coronary artery bypass grafting (CABG), lung resection, or esophagectomy. These procedures can disrupt the thoracic duct, leading to the leakage of chyle into the pleural space. In contrast, non-traumatic causes often include malignancies, such as lymphoma or lung cancer, which can obstruct or infiltrate the thoracic duct. Several studies support these findings, indicating that trauma, particularly post-surgical, is a significant contributor to chylothorax in clinical practice, accounting for approximately 50% of cases (1). Similarly, malignancy is the leading non-traumatic cause, particularly when tumors invade the thoracic duct or disrupt lymphatic drainage (3).

Interestingly, idiopathic chylothorax, where no clear underlying cause is identified, is another prominent feature of this series. This aligns with reports from the literature, where idiopathic cases are observed in approximately 10–20% of chylothorax patients (5). The management of these idiopathic cases is particularly challenging, as there is no obvious trigger to guide therapy. However, as seen in this series, many idiopathic cases respond to conservative management, including medium-chain fatty acid (MCFA)-based diets, total parenteral nutrition (TPN), and chest tube drainage (ICTD), which have been shown to reduce chyle production and promote resolution (6). The management strategies used in this series reflect the standard treatment modalities for chylothorax as outlined in the literature. A study found that up to 80% of traumatic chylothorax cases could be effectively managed with conservative treatments (e.g., chest tubes and dietary modifications) without the need for surgery (6). However, surgical interventions like thoracic duct ligation are recommended when there is persistent or high-output chylothorax that does not respond to initial drainage. Furthermore, Conservative measures, including dietary modifications (such as MCFA-based diets) and TPN, are often the first line of treatment for chylothorax, especially when the underlying cause is not malignant. Studies have consistently shown that a low-fat diet supplemented with MCFA can significantly reduce the volume of chyle, as MCFA is directly absorbed into the bloodstream without passing through the lymphatic system, thus minimizing the production of chyle in the pleural cavity (7).

In malignancy-related chylothorax, as observed in this case series involving lung cancer and lymphoma, treatment of the underlying malignancy is essential. Chemotherapy or radiation therapy targeting the malignancy has been shown to resolve chylothorax by reducing tumor mass or lymphatic obstruction (8). The use of chemotherapy for lymphoma and lung cancer in this case series aligns with published reports on the successful resolution of chylothorax after appropriate oncologic treatment. In cases where conservative measures fail, more invasive interventions may be necessary. This series highlights the use of thoracic duct ligation, thoracic duct embolization, and pleurodesis in patients with persistent or refractory chylothorax. These surgical and interventional procedures are well-documented in the literature as effective options when conservative management is insufficient (9). Thoracic duct ligation has shown good outcomes in patients with traumatic chylothorax and in those with lymphatic involvement due to malignancy. pleurodesis, often used to obliterate the pleural space and prevent recurrence, has been reported as a valuable adjunct in managing chylothorax, especially when combined with thoracic duct ligation (9). The follow-up outcomes in this case series demonstrate that, when managed appropriately, the majority of patients achieve resolution of chylothorax. In particular, traumatic cases and those caused by malignancy or infection respond well to targeted interventions such as thoracic duct ligation and chemotherapy. This is consistent with the existing literature, which suggests that early diagnosis and intervention can lead to favorable outcomes in most cases of chylothorax (9). Tubercular constrictive pericarditis as a cause for chylothorax is an important factor that needs to be emphasized. In a retrospective study by Nakamura et al., sepsis was also a significant cause of mortality in patients with pericarditis and chylothorax (10). This highlights the importance of not only treating the chylothorax but also managing any underlying systemic illness that may predispose to further complications. While the majority of patients in this series experienced resolution of chylothorax without

recurrence, the mortality associated with chylothorax secondary to severe systemic diseases, such as pericarditis, underscores the potential risks of the condition when associated with complex underlying pathologies. As indicated by various studies, the mortality rate for patients with chylothorax associated with severe systemic illnesses, particularly malignancy and infection, can be significant if not appropriately managed (11).

The pulmonologist's role in chylothorax is central and multifaceted like pperforming diagnostic thoracentesis, interpreting fluid biochemistry, iidentifying the need for escalation to surgical management, mmonitoring nutritional and immunologic status (12). As primary care providers for respiratory conditions, pulmonologists must also evaluate for and manage co-existing lung diseases which may influence the course of chylothorax (13, 14).

While this case series provides useful insights, it is limited by its small sample size and retrospective nature. Larger, multi-center studies are needed to further evaluate the long-term outcomes and efficacy of different treatment approaches for chylothorax, particularly in idiopathic and malignancy-related cases. Moreover, as treatment options evolve, it is important to explore the role of newer therapies, such as lymphangiography-guided embolization techniques, in managing refractory cases (15).

Conclusion

This case series reinforces the diverse etiologies and treatment modalities for chylothorax, highlighting the importance of a tailored approach to each patient. The findings are consistent with the broader literature, which emphasizes the importance of early diagnosis, prompt treatment of the underlying cause, and the need for individualized management strategies. By expanding on current understanding, this series contributes to the growing body of literature on chylothorax and underscores the need for heightened clinical awareness in its diagnosis and management.

Abbreviations

ADA: Adenosine Deaminase, AFB: Acid Fast Bacilli, BP: Blood Pressure, CABG: Coronary Artery Bypass Graft, CBC: Complete Blood Count, CT: Computed Tomography, ICTD: Intercostal Chest Tube Drainage, LFT: Liver Function Test, MCFA: Medium Chain Fatty Acid, RFT: Renal Function Test, RR: Respiratory Rate, TG: Triglyceride, TPN: Total Parenteral Nutrition.

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Author Contributions

Sonali Parida: conceptualized the study and wrote the initial manuscript, interpreting the results, reviewing the manuscript, and approving the final version, Sangita Jena: gathered the data and conducted the analysis, interpreting the results, reviewing the manuscript, and approving the final version, Priyadarshini Behera: oversaw the project and offered essential revisions, interpreting the results, reviewing the manuscript, and approving the final version.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the study or this article

Ethics Approval

Informed consent was obtained from the patient involved in the case study, ensuring adherence to ethical guidelines and confidentiality standards.

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