

Chylothorax due to tuberculosis lymphadenitis

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ABSTRACT

Chylothorax is a rare clinical condition characterized by high triglyceride and low cholesterol levels in milky pleural aspirate. Generally, it occurs through leakage of chyle as result of trauma or malignancy. Chylothorax due to tuberculous lymphadenitis is very rare clinical condition that has only been documented in a few cases. Although precise pathogenesis is not known, enlarged mediastinal and hilar lymph nodes are thought to be associated with opening of collateral anastomosis between thoracic duct and the azygos and intercostal veins by creating pressure on thoracic duct and cisterna chyli. Presently described is case of chylothorax thought to be due to compression from mediastinal tuberculous lymphadenitis, and which had complete remission after antituberculosis treatment.

Keywords: Chylothorax; lymphadenitis; tuberculosis.

Chylothorax secondary to tuberculous lymphadenitis is rarely seen condition cited in the literature in only scarce number of case reports [1, 2]. In tuberculosis of mediastinal lymph node, lymph nodes obstruct thoracic duct and/or cisterna chyli or infiltrate these structures, which may lead to increase in pressure inside surrounding lymphatic system and leakage of chylous material into pleural cavity [1–3]. Chylothorax is rarely seen clinical condition characterized by high triglyceride (TG) and low cholesterol levels in milky pleural aspirate. Generally, it occurs as result of leakage of chyle into pleural cavity in cases of trauma or malignancy involving the thoracic duct. Chyle has bacteriostatic

and non-irritant characteristics, and low potential for development of fibrothorax. Every day, chyle is absorbed from the intestines, passes through cisterna chyli and thoracic duct, and between 1.5 L and 2.5 L of chyle drains into venous system. Therefore, in case of chylothorax, immediately following drainage, drained quantity of chyle may be replenished. Symptoms of chylothorax are almost always related to volume of accumulated fluid. Generally, fever and chest pain are not seen. Chyle does not always resemble milk, and in some cases, it assumes hemorrhagic appearance. Chyle is primarily made up of 400–6800/mm³ small lymphocytes. Therefore, long-lasting drainage of chyle may lead to T-lymphocyte deficiency [4–6].

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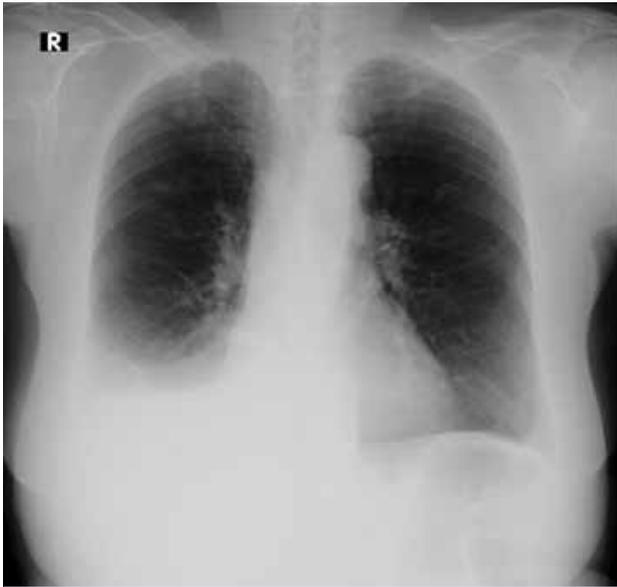


FIGURE 1. A dark shadow can be seen, consistent with pleural fluid masking the demarcation line between mediastinum and pleura at the inferior zone of the right lung.

Presently described is case of complete regression of pleural effusion in patient with chylothorax thought to be related to compression from mediastinal tuberculous lymphadenitis.

CASE REPORT

Female patient aged 75 years who had no history of chronic disease apart from depression presented at outpatient clinic with complaints of lassitude, loss of appetite, exertional dyspnea for 4 months, and dry coughing for 2 months. Her examination revealed marked decrease in respiratory sounds at basal segments of the right lung. Hematological values, sedimentation, glucose, urea, creatinine, sodium, potassium, total protein, and albumin levels were within normal limits. Levels of alanine aminotransferase (189 U/L), aspartate aminotransferase (113 U/L), cholesterol (251 mg/dL), and lactate dehydrogenase (LDH) (193 U/L) were also measured. X-ray graphy revealed a dark shadow, consistent with pleural fluid masking the demarcation line between mediastinum and pleura at the inferior zone of the right lung (Figure 1). Thoracic computed tomography (CT) revealed

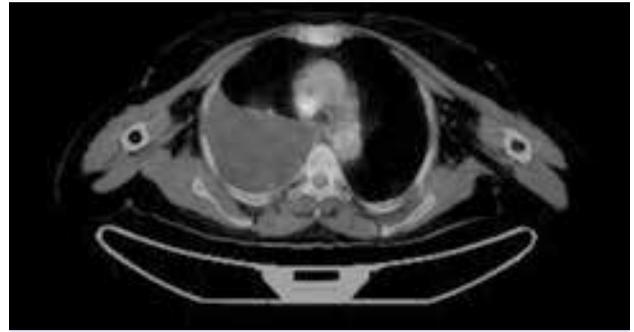


FIGURE 2. Computed tomography.

multiple sites of lymphadenopathy, the largest containing dense calcification 22 mm in size, and marked pleural effusion on the right side (Figure 2). Milky fluid with high density sampled from pleural effusion did not precipitate after centrifugation, and contained TG (1072 mg/dL), cholesterol (173 mg/dL), LDH (148 U/L), and albumin (2.7 g/dL) at indicated concentrations. Sudan staining disclosed presence of fat globules. Lymphocyte dominancy was also detected in pleural fluid. Sputum ARB -negativity was detected 3 times, and bronchoscopy of the patient did not reveal any endobronchial pathology. Pleural biopsy was performed. Bronchial lavage and bronchoscopic biopsy results indicated benign condition of chronic pleuritis. Positron emission tomography-CT was obtained to rule out mediastinal tumor. During lymphatic scanning performed to detect etiology of chylothorax, images taken at second, fourth, and sixth hours demonstrated passage of radiographic contrast substance through bilateral inguinal, parailiac, paracaval, and paraaortic lymph nodes, and accumulation of radioactivity in these lymph nodes at popliteal, femoral, and pelvic regions, respectively. On delayed thoracic images, no uptake of radioactivity apart from background activity was observed. Images suggested possible thoracic duct obstruction. Mediastinal lymph node biopsy performed at external center revealed presence of granulomas demonstrating caseous necrosis. Abdominal ultrasound was normal. Antituberculosis treatment was initiated. Symptoms regressed with treatment, and level of liver enzymes decreased. At sixth month, marked regression in pleural effusion was observed (Figure 3).



FIGURE 3. Prominent decrease in pleural fluid was observed at sixth month of treatment.

DISCUSSION

Chylothorax was first defined by Bartolet in 1633, and the first case was presented by Quinke in 1875. Trauma is the most frequent cause of chylothorax; however, etiology may also be tumor or other cause may be responsible. Long course of the thoracic duct makes it vulnerable to injury. Chylothorax may occur secondary to mobilization of subclavian vein during cardiovascular, pulmonary, or esophageal surgery. It can also be seen following trauma such as fall from height, motor vehicle accidents, and abdominal and thoracic crush injury. The second most frequently detected cause is malignancy; 75% are due to lymphoma, but bronchogenic carcinoma, and rarely leukemias may also be seen. Many idiopathic cases are thought to occur secondary to minor trauma, such as coughing or hiccupping, or eating fatty foods, or it may be congenital. The fourth category includes vena cava superior or subclavian vein thrombosis, cirrhosis, lymphangiioleiomyomatosis (a rarely seen interstitial parenchymal disease), Gorham's Syndrome, Kaposi's sarcoma, Castleman's disease, filariasis, and familial lymphedema, sarcoidosis, radiation-related mediastinal fibrosis, and hypothyroidism [4–7].

Literature contains scarce number of cases related to tuberculous lymphadenitis. Kim et al., incubated tuberculosis bacilli in sputum and pleural fluid of a 17-year-old female patient with diffuse nodular opacities in her pulmonary parenchyma multiple necroticabdominallymphadenopathies, chylothorax, and chylous ascites. They reported improvement of the patient's health with antituberculosis treatment, dietary regimen rich in protein but low in fat, and supportive treatment. Hammoumi et al., also reported that they achieved cure with antituberculosis and supportive medical treatment in a patient with chylothorax secondary to mediastinal and abdominal tuberculous lymphadenitis [2, 5]. In our country, Buyuksirin et al., detected growth of *M.tuberculosis* in chylous pleural aspiration fluid of a 22-year-old female patient who presented with pleural effusion, and achieved favorable response with antituberculosis treatment [8]. We also achieved cure with antituberculosis treatment and further medical care in present case with chylothorax secondary to mediastinal tuberculous lymphadenitis.

Though pathogenesis of chylothorax is not known for sure, it is thought to be associated with compression of cisterna chyli, and thoracic duct by enlarged mediastinal and hilar lymph nodes, and opening of collateral anastomoses between thoracic duct system, azygos, and intercostal veins. With compression exerted by lymph nodes, pressure inside lymphatic system increases with resultant seeping of chyle into pleural cavity [1–4].

The most characteristic finding in diagnosis of chylothorax is level of TG in pleural fluid. Pleural fluid TG level >110 mg/dL, pleural fluid/serum TG ratio >1, but pleural fluid/serum cholesterol ratio <1 establish diagnosis of chylothorax. Pleural fluid TG level <50 mg/dL rules out diagnosis of chylothorax. If pleural fluid TG level is 50–100 mg/dL, then presence of chylomicrons in pleural fluid may establish diagnosis [2, 4–6].

Milky pleural fluid should be discriminated from pseudochylothorax and drainage of empyema or parenteral fluid through subclavian vein into thoracic cavity. Pseudochylothorax is associated with high cholesterol level and induces chronic pleuritis, which is characterized by increase in cholesterol or

lecithin-globulin complexes in pleural fluid. It has milky appearance, as in chylothorax; however, it leads chronic clinical course. If, after centrifuging, turbidity of the fluid persists and addition of ethyl ether eliminates turbidity, then diagnosis favors pseudochylothorax. Important for this discrimination is that pleural fluid/serum cholesterol ratio should be >1 . Empyema develops more frequently as complication of bacterial pneumonia. Fluid may have milky appearance and there may be acute onset, as seen in chylothorax; however, it has strong scent, unlike odorless fluid seen in chylothorax. Different from chylothorax, following centrifuging supernatant portions do not clarify. If parenteral fluid drains into pleural space through subclavian vein, only TG level in fluid increases, while in chylothorax, chylomicrons, TG, and lymphocytes are present. Fluid accumulates at acute onset and precipitation does not occur after centrifugation [4, 6].

In treatment of chylothorax associated with tuberculous lymphadenitis, when necessary, antituberculosis treatment in combination with therapeutic thoracentesis is performed. In case of serious dyspnea, pleuroperitoneal shunt, or drainage with chest tube may be required. Malnutrition and immunological disorders may manifest in cases with recurrent drainage of pleural fluid. Chyle contains high concentrations of protein, lipid, electrolyte, and lymphocytes. In some case reports, therapeutic use of octreotide has been indicated. In traumatic injury, defect of the thoracic duct generally closes spontaneously; however, if chylothorax persists for longer than 4 weeks, ligation of the thoracic duct during surgical exploration may be considered [1, 2, 4, 7].

Typical appearance of the pleural fluid of our patient, high TG concentration in the sample

obtained from pleural fluid, high pleural fluid/serum TG ratio, and relatively low pleural fluid/serum cholesterol established diagnosis of chylothorax. Our patient responded to antituberculosis treatment favorably. While analyzing pleural fluid to make diagnosis of chylothorax, tuberculosis should also be considered in differential diagnosis.

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