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CHYLOTHORAX SECONDARY TO CONGESTIVE HEART FAILURE: A RARE CASE REPORT

Pulmonary Medicine

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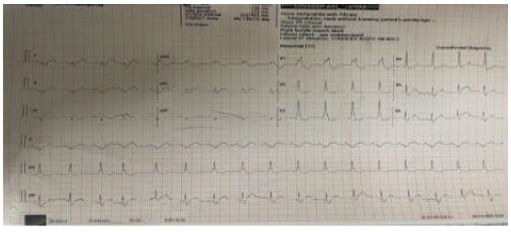
KEYWORDS

BACKGROUND

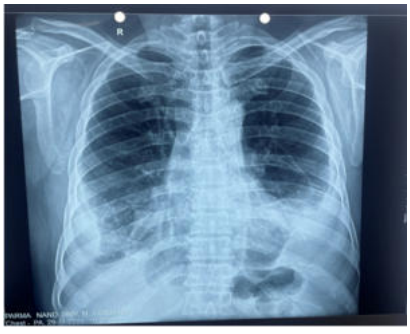
Chylothorax is defined as a collection of chyle which is a milky body fluid in the pleural cavity. Common causes of chylothorax are trauma, surgical complications, lymphomas, tuberculosis, and some congenital abnormalities. We report a case of chylothorax due to congestive heart failure which is a rare entity. The large amount of chyle in the pleural cavity can lead to dyspnea, nutritional deficiencies due to lipid loss, and immune deficiency due to the loss of immunoglobulins in the chyle. Diagnosis is made usually on the basis of imaging studies and pleural fluid analysis to confirm chyle in the pleural cavity.

CASE REPORT

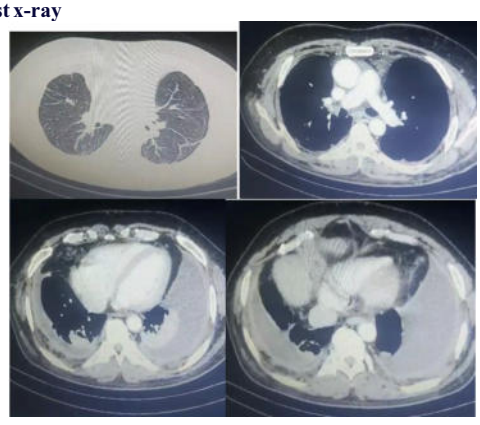
A 69-year-old male came to our emergency with complaints of breathlessness for 3 months which was insidious onset and progressive. He had chest tightness, and cough with whitish mucoid sputum for 1 month. He initially had chest pain 3 months back but it decreased gradually. There was no history of fever, He had a history of pulmonary tuberculosis 40 years back for which he took 9 months of antitubercular therapy. He was a smoker but did not consume alcohol. He was hypertensive for 10 years and was nondiabetic. There was no history of trauma, surgery, or any other interventions in the past. On admission, his blood pressure was 134/90 mm Hg, pulse 102/min, oxygen saturation 88% on room air, and respiratory rate 32/min. There was no pallor, icterus, cyanosis, clubbing, pedal edema, or lymphadenopathy. On inspection, there were decreased chest movements in infra-axillary and mammary areas. On percussion stony dull sound was noticed in the infrascapular, and infra-axillay regions bilaterally. On auscultation, there were decreased air entry in the infrascapular regions bilaterally and S3 gallop prominent Electrocardiogram (ECG) was suggestive of right bundle branch block pattern. Trop T was negative. Chest radio-graph showed blunting of bilateral costophrenic angles. Blood investigations were as follows: hemoglobin 13.2 gm/dl, leucocytes 8110/mm3, platelets 4.24 lakh/mm3, blood urea 31.4 mg/dl, creatinine 0.91 mg/dl, bilirubin 0.5 mg/dl, AST 43 IU/L, ALT 56 IU/L , total protein 5.6 gm/dl4, LDL 98 mg/dl, HDL 29 mg/dl, Triglyceride 125 mg/dl, VLDL 25 mg/dl, blood glucose 138 mg/dl. The urine examination was within normal limits. The patient's abdominal ultrasound was normal. Patients' viral markers HIV, HBsAg, and HCV were negative. Sputum Ziehl neelsen stain and gene xpert were negative for tuberculosis. Thoracic ultrasound revealed bilateral pleural effusion. Under ultrasound guidance, thoracocentesis was done. Pleural fluid was milky in color and its biochemical pathological and microbiological reports were as follows pleural fluid protein 4.06 gm/dl, glucose 137mg/dl, ADA 12.6 IU/L, LDH 806 mg/dl, triglyceride 381 mg/dl, cholesterol 51 mg/dl, gene xpert of pleural fluid was negative for mycobacterium tuberculosis. The culture was sterile. The total leucocyte count was 1000 of which 95%were lymphocytes and 5% neutrophils cytology was negative for malignant cells and no fungal element was seen. Thus, a diagnosis of chylothorax was made. Contrast-enhanced computer tomography was suggestive of a patchy area of consolidation/collapse with few specs of calcifications within and adjacent thin atelectatic bands seen in basal segments of bilateral lower lobes. There was no mediastinal lymphadenopathy. Bilateral pleural effusion seen with underlying atelectatic changes. 2D Electrocardiography revealed dilated cardiac chambers, severe left ventricles dysfunction with ejection fraction of 25-30%. Thus after ruling out other possible causes of chylothorax we made a diagnosis of chylothorax due to congestive heart failure which is a rare entity. After starting the treatment for congestive heart failure ,patient showed significant improvement symptomatically and Chest radiograph also showed decreased amount of pleural effusion. He was discharged on stable vitals with oxygen saturation 95% on room air.



ECG



Chest x-ray



Contrast Enhanced Computer Tomography of chest

DISCUSSION

Chylothorax is the accumulation of chyle in the pleural cavity. 1 Chyle is the milky fluid formed in the lacteal system of the small intestine. Chyle is a naturally bacteriostatic fluid of small intestinal origin, containing immunoglobulins and fat-soluble vitamins.[2–4]

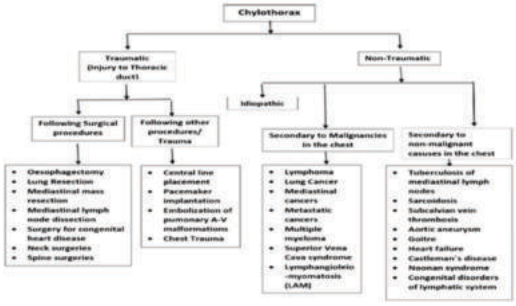
Chyle is a milky fluid made up of lymph and emulsified fats, free fatty acids(FFAs). Its composition includes following components:

Protein, Lipid, substantially triglyceride, Cells Primarily lymphocytes,

high content of fat-soluble vitamins, Immunoglobulins.5,6 The small- and medium- chain triglycerides consumed in the diet are broken down into free fatty acids by intestinal enzymes and absorbed into the portal circulation.7 The large amount of complex long- chain triglycerides can not be broken down by the intestinal lipases. rather, they combine with phospholipid and cholesterol to form cholesterol esters which help in formation of chylomicrons in the jejunum. [8]

The adult thoracic duct is the made up of the combination of the lower 2/3 of the embryonic right duct, the upper 1/3 of the left duct, and their interconnections 9. The thoracic duct is the largest lymphatic vessel that drains up to 75percent of the body's lymph from the entire left body and the right side of the body below the diaphragm.10,11 These large molecules are absorbed into the lymphatic system of the small intestine to form chyle.12 The lymphatic drainage from the intestine joins with lymphatics of lower extremities to form the thoracic duct system, which eventually drains into the systemic circulation.However,If there is any lymphatic duct injury, the milky, lipid-rich chyle leaks into the surrounding structures,

Chylothorax occurs when chyle leaks into the pleural cavity due to damage to the thoracic duct. On an average 2.4 Litres/ day , a considerable amount of chyle can accumulate in the pleural cavity 13. Although chylothorax is relatively uncommon, accounting for around 3% of cases of all pleural effusions 14. Approximately 83% of cases of chylothorax are usually unilateral (50% right-sided, 33% left-sided), 17% bilateral. [15]



CONCLUSION

There are various conditions that can lead to pleural effusions. For making an accurate diagnosis we must consider a wide range of differential diagnoses that can lead to pleural effusions. These conditions must be distinguished to ensure correct diagnosis of chylothorax and proper treatment should be started. The potential differential to be considered during diagnosing chylothorax are pseudo chylothorax, parapneumonic pleural effusion, thoracic empyema, exudative pleural effusion, hemothorax, congestive heart failure, AIDS-related effusions, malignant effusions.

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