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Chylothorax and chylous ascites due to *Mycobacterium tuberculosis* in an AIDS patient whose PCR tested negative

Chilotorax și ascită chiloasă secundare infecției cu Mycobacterium tuberculosis *la pacient cu SIDA cu test PCR negativ*

Abstract

Mycobacterium tuberculosis *as a cause of both chylothorax and chylous ascites is extremely rare. A 46-year-old non-adherent woman with AIDS and pulmonary tuberculosis presented to our clinic with dyspnea, pleuritic chest and abdominal pain. Chest x-ray demonstrated a left pleural effusion. Contrast-enhanced CT showed free abdominal fluid. Thoracentesis revealed a chylothorax, and paracentesis a chylous ascites. AFB staining and PCR for* M. tuberculosis *(GeneXpert MTB/RIF Assay) were both negative. Malignant cells cytology also tested negative. Tuberculosis could account for both chylothorax and chylousascites, as she clinically improved when antituberculous drugs were resumed. Even when PCR tested negative,* M. tuberculosis *should be included in the differential diagnosis because of its therapeutic and prognostic implications.*

Keywords: ***Chylothorax, chylous ascites, Mycobacterium tuberculosis, acquired immunodeficiency syndrom, antituberculous drugs***

Rezumat

Mycobacterium tuberculosis *este o cauză rară de chilotorax și ascită chiloasă. Prezentăm cazul unei paciente de 46 de ani cunoscută cu SIDA și tuberculoză pulmonară, neaderentă la tratament care se internează pentru dispnee, durere toracică de tip pleuritic și durere abdominală. Radiografia de torace pune în evidență revărsat pleural stâng, iar CT cu substanță de contrast: revărsat pleural stâng și lichid în cavitatea pleurală. Toracenteza și paracenteza au evacuat lichid chilos. Examenele lichidului evacuat: bacteriologice (GeneXpert MTB/RIF Assay) sunt negative pentru* Mycobacterium tuberculosis*, nu se identifică celule tumorale. Sub tratament antituberculos evoluția pacientei este favorabilă. Chiar in prezența unui PCR negativ,* Mycobacterium tuberculosis *trebuie inclus in diagnosticul diferențial al chilotoraxului și ascitei chiloase.*

Cuvinte-cheie: ***chilotorax, ascită chiloasă,* Mycobacterium tuberculosis*, sindrom de imunodeficiență dobândită, medicamente antituberculoase***

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Introduction

Chylothorax and chylous ascites are not frequently seen together. The most common causes reported in the literature are trauma or surgery, which account for nearly half of the cases[1]. Other possible etiologies include lymphoma (in 11.3% of the cases)[1], metastatic carcinoma, protein-losing enteropathy, and tuberculosis[2,3]. *Mycobacterium tuberculosis* as a cause of concurrent chylothorax and chylous ascites is extremely rare. This etiology should be considered even in the presence of negative acid-fast bacilli (AFB) staining and polymerase chain reaction (PCR), especially in immunosuppressed patients[1,4].

Case report

A 46-year-old woman with a 2 year history of AIDS and a recent diagnosis of pulmonary tuberculosis (PTB) presented to our clinic with sudden, severe epigastric pain, radiating to the back, and also bloating, nausea and gastric vomiting. Those symptoms were accompanied by moderate dyspnea and pleuritic chest pain. She was non-adherent to antiretroviral therapy and intensive phase of antituberculous treatment (rifampin, isoniazid, pyrazinamide, and ethambutol), and no viral load and CD4 count were recently done. She was dehydrated and cachectic. Chest examination was compatible with left pleural effusion. Her abdomen was soft and non-distended, with normal bowel sounds. She had diffuse abdominal tenderness but no signs of peritoneal inflammation were found. Paraclinical investigations were requested and the results were the following: haemoglobin of 12.3 g/dL; leukocytes, 5.3 k/dL, normal platelet count; glucose, 135 mg/dL, serum creatinine, 1.1 mg/dL; serum albumin, 2.4 g/dL; alanine aminotransferase, 41 (20-60 UI/L); aspartate aminotransferase, 38 (20-60 UI/L); serum amylase, 79 IU/L (28-100 UI/L); and serum lipase, 147 IU/L (23-300 IU/L). The electrocardiogram revealed only sinus tachycardia. The chest X-ray confirmed the left pleural effusion. At this point the differential diagnosis included pneu-

Table 1 Pleural and peritoneal fluid characteristics

	Ascites Fluid	Pleural Fluid
Density	1.01	1.015
pH	8	7.48
Glucose (mg/dL)	78	74
Proteins (g/dL)	2.3	2.0
Lactate (mmol/L)	0.5	0.5
LDH (UI/dL)	98	90
Amilase (UI/dL)	74	49
Cholesterol (mg/dL)	25	31
Triglyceride (mg/dL)	333	507
Albumin (g/dL)	< 3	< 3
Leucocytes (cells/dL)	308	0
Neutrophils (cells/dL)	112	0
Lymphocytes (cells/dL)	207	0

monia, pulmonary tuberculosis and malignancy. Abdominal ultrasound revealed free abdominal fluid and no other abnormalities. A contrast-enhanced thoracoabdominal computed tomography (CT) was performed and revealed free abdominal fluid and left pleural effusion; compression atelectasis and multiple bilateral hilar nodules were also found (Figure 1 A,B). Diagnostic and therapeutic thoracentesis and paracentesis were performed, both pleural and ascites fluid had a milky aspect (Figure 1C). Cytochemical analysis were performed and their characteristics are shown in Table 1. Malignant cell cytology and AFB stain were negative. PCR for *M. tuberculosis* (GeneXpert MTB/RIF Assay) was performed and tested negative in both ascites and pleural fluid. We finally diagnosed her with chylothorax and chyloperitoneum most likely due to Mycobacterium tuberculosis in an immunosuppressed patient non-adherent to treatment. Intensive phase therapy was resumed and she was started on a high-protein and low-fat diet based on medium chain triglycerides. Her clinical outcome was favorable, and she was discharged three weeks later. At present, 6 months later, she has a good clinical status, without dyspnea, bloating or pain, and she is perfectly adherent to her treatment (including continuous phase of antituberculous treatment, antiretroviral therapy and prophylactic antibiotics).

Discussion

The chylous fluid has a white, milky or opalescent appearance. This feature is present in less than half of those with chylous effusions[1,5]. A triglyceride level above 110 mg/dL and cholesterol less than 200 mg/dL generally confirms the diagnosis of chylothorax or chyloperitoneum[1,6]. These conditions are usually caused by

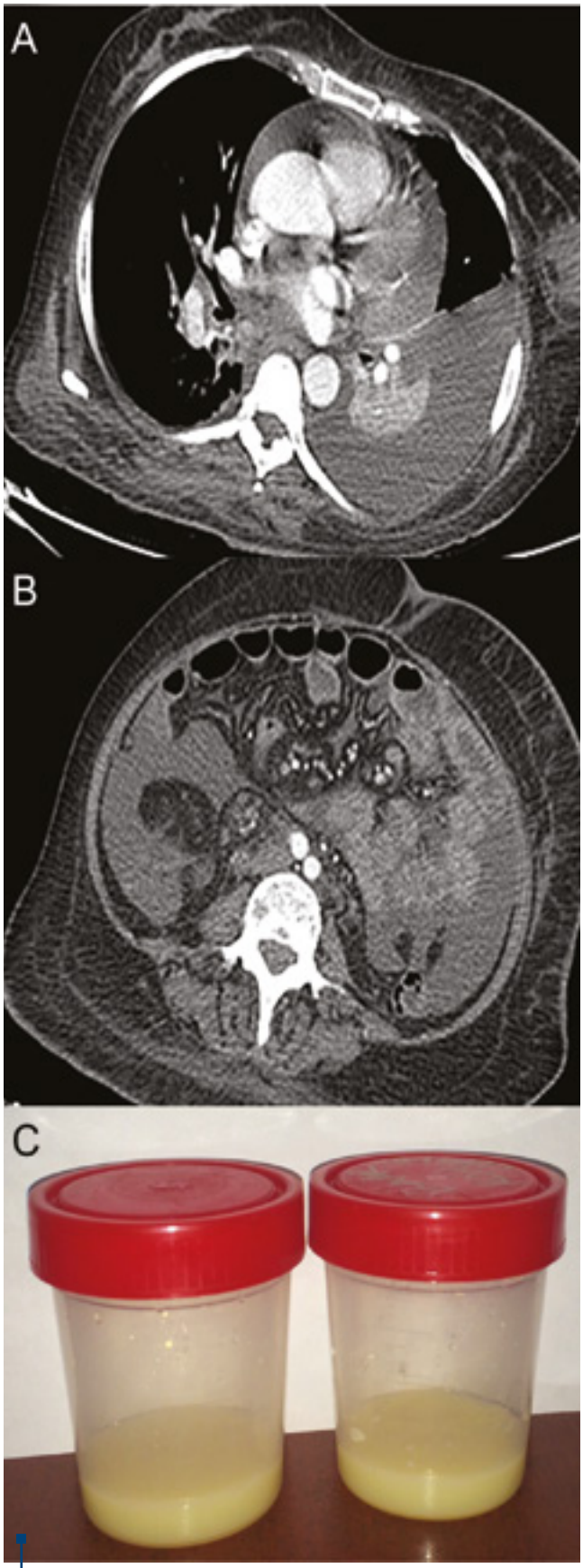

Figure 1. ***A.*** *Left pleural effusion (contrast-enhanced CT).* ***B.*** *Free abdominal fluid (contrast-enhanced CT).* ***C.*** *Pleural (left) and ascites (right) fluid. Demonstration of its milky appearance.*

obstruction or disruption of the thoracic duct or of one of its main divisions, which usually is the result of malignancy, trauma and inflammation[7]. In some patients with chylothorax, chylous ascites occurs simultaneously, usually associated with abdominal processes such as nephrotic syndrome, hypothyroidism, cirrhosis, abdominal surgery or pancreatitis[2]. However, both situations can also be produced by heart disease (myocardial ischemia, constrictive pericarditis and cardiac amyloidosis)[8].

Both thoracoabdominal CT scan and malignant cells cytology were negative in our patient, rationally excluding a neoplastic cause; she also denied any family history, abdominal surgery or trauma. The chemical fluid composition obtained showed high triglyceride levels (more than 110 mg/dl) and low cholesterol levels (less than 200 mg/dl), confirming the suspected diagnosis. Because of her recent diagnosis of PTB, which was done via PCR in bronchoalveolar lavage, chylothorax and chylous ascites were attributed to *M. tuberculosis* infection[9]. In the latter, sample sensitivity and specificity were determined to be 92% and 99.2%, respectively. However, sensitivity and specificity in extrapulmonary samples changed to 52.1% and 100%, respectively. When the AFB stain is positive, sensitivity increased to 100% and, on the contrary, with a negative AFB it decreased to 47.7%[10], although other authors have reported a lower sensitivity, (28.2%)[11], due to the lower number of bacilli in the sample. This explains why we got a negative result for *M. tuberculosis* in these fluids. *Mycobacteria spp.* is the most common cause of chyloperitoneum in HIV-positive patients[12]. Lymph nodes enlargement is caused by clogging of the ducts, or by direct invasion of the of the lymph nodes and has been proposed as a mechanism to explain how *M. tuberculosis* produces chylothorax and chyloperitoneum[1,13,14].

The ideal treatment for these patients is currently elusive. Nevertheless, intensive phase therapy resumption plus nutritional support seems a reasonable option. Medium chain triglycerides are absorbed directly into the intestinal cells and transported as fatty acids and glycerol to the liver via the portal system, while the long chain triglycerides need to be converted to monoglycerides and free fatty acids in order to be transported as chylomicrons by the lymph ducts[13,14]. Monitoring of viral load, lymphocyte count, serum electrolytes, serum albumin, total proteins, and body weight is recommended[15,16]. Somatostatin and octreotide have been used in the conservative treatment of chylothorax and have proven effective[17] ; these agents reduce intestinal chyle production and also decrease chyle volume through the thoracic duct. The mortality of this condition is not known with certainty, so it is imperative to delve into this point.

While chylothorax and chylous ascites concurrently diagnosed in an AIDS patient due to *M. tuberculosis* has been only rarely reported in the literature, it should be considered in our differential diagnosis, even when both AFB and PCR tested negative, as it could have therapeutic and prognostic implications. ■

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