www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i9.67

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Chylous Ascites in HIV/TB Co-Infections: Case Report, Challenges of Management in a Resource-Poor Setting and Literature Review

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Abstract
Chylous ascites is an uncommon clinical condition characterized by extravasation of milky chyle into the peritoneal cavity usually as a result of either blockage of the lymphatics or leakage from inadvertent trauma during surgeries. This is a report of a case of chylous ascites in a 32-year old Nigerian with HIV/TB co-infections. The report also highlights the challenges associated with management of chylous ascites in a resource-poor setting. The patient was managed conservatively with diuretic therapy, salt and fluid restrictions and elevation of the lower limbs. Although, the ascites re-accumulated initially, it finally resolved and she was followed up for at least six months with no recurrence.
Keywords: *Chylous ascites, HIV/TB co-infections, resource-poor settings, management challenges.*

Introduction

Human immunodeficiency virus (HIV) increases the risk of infection with Mycobacterium tuberculosis (MTB).[1] Extrapulmonary and disseminated tuberculosis (TB) such is common in HIV disease.[2] Chylous ascites (CA) is an uncommon clinical condition.[3] It is the extravasation of milky chyle into the peritoneal cavity. It is usually results either due to blockage of the lymphatics or leak due to inadvertent trauma during surgeries.[4] These conditions particularly include neoplasms such as lymphomas and disseminated carcinomas and abdominopelvic surgeries.[5] However, it may also be due to an infective cause and few cases have been reported in association with HIV.[6,7] We report a case of CA in a 32-year old African with HIV and disseminated TB. We also highlight the challenges associated with management of CA in a resource-poor setting where we work and lastly write a literature review on it.

Case Report

A 32-year old woman presented with cough and progressive abdominal swelling for three months. There was leg swelling which was disproportionate with increase in abdominal girth but no facial swelling. She denied having fever, chest pain, dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea, dysuria, nocturia or haematuria. No previous history of TB, jaundice or blood transfusion. No alcohol ingestion, cigarette smoking or use of illicit substances.

On physical examination, she was pale, anicteric, acyanosed, afebrile with minimal bilateral pitting pedal oedema. There was no palpably enlarged peripheral lymph node. She had oral thrush. Her body weight was 47kg. Respiratory system examination disclosed dull percussion notes and inspiratory crackles in the right lower lung zone. The abdominal examination revealed a non-tender doughy abdomen with marked ascites demonstrable by shifting dullness. The liver and spleen were not enlarged and kidneys not ballotable. Bowel sounds were nomoactive. Other systems were normal.

The patient had provider-initiated HIV counseling and testing and found to be positive for HIV 1. She had a $CD4^+$ T cell count of 45 cells/µl. Haemoglobin concentration was 9.2g/dl and total white blood cells count 1.7 x 10^9/l. Although the result of sputum examination was negative for MTB, the chest X-ray showed patchy reticulo-nodular opacities in the left lobe and a minimal left sided pleural effusion. The erythrocyte sedimentation rate was also elevated; 60mm/hr. Diagnostic paracentesis was done and sent for biochemical analysis and cytology. The results are as follow: total protein 13.4g/l, albumin 5.0g/l, glucose 4.9mmol/l and triglycerides 1.5mmol/l. Ascitic fluid was negative for Gram staining and culture yielded no growth for bacteria and MBT. Leucocytes were scanty, 100 cells/mm3, and no malignant cells. Abdominopelvic ultrasonography revealed gross ascites and few mesenteric and para-aortic lymph nodes. Liver, gall bladder, bile duct system, spleen, pancrease and kidneys were sonologically normal. Serum liver function test was normal except for albumin which was low. She was non-reactive for hepatitis B surface antigen and anti HCV antibodies. Abdominal CT scan was not done because of financial constraints and lymphangiogram was not available anywhere in Nigeria and West African subregion.

The diagnosis was disseminated TB (pulmonary and abdominal components) and she was started on antituberculosis drugs, isoniazid, rifampicin, ethambutol and pyrazinamide. Two weeks after, the patients was also commenced on antiretroviral drugs, zidovudine, lamivudine and efavirenze. The chylous ascites was managed conservatively only with diuretic therapy, salt and fluid restriction and elevation of the lower limbs. Parenteral nutrition and medium sized triglycerides were not available. However, the ascites gradually resolved and she was discharged after about eight weeks on admission. Sadly the ascites started reaccumulating about two months after discharge despite good adherence to antituberculosis and antiretroviral drugs and cotrimoxazole prophylaxis. She was readmitted and managed again conservatively only with diuretic therapy, salt and fluid restriction and elevation of the lower limbs. Thereafter, she has been followed up for at least six months with no recurrence of the CA.

Discussion

Although CA is a rare condition, it has been reported before in association with complications of HIV and TB. [6,7] Thus one major highlight of this work is about the challenges of management of chylous ascites in our institution which is in a resource-poor setting in sub-Sahara Africa. Besides antituberculous and antiretroviral drugs, furosemide and spironolactone were the only other drugs we used. Parenteral nutrition and medium sized triglycerides are not available in our setting and neither the newer drugs particularly octreotide. Infrastructure and capacity for surgical intervention in case of failure of conservative

measures or rapid accumulation of ascites are also not available.

Chylous ascites occurs majorly from two mechanisms: a disruption of the abdominal lymphatics which may be due to neoplasm, inflammation or trauma particularly during surgery [3-5] and an increase in the abdominal lymph production with ineffective development of collateral flow. The initial mechanism is more likely in infectious diseases.[6,7] Increase in the abdominal lymph production due to high venous pressure is probably responsible for few cases of CA associated with constrictive pericarditis [7-10] and severe heart failure.[11,12]

Abdominal swelling is the most common symptom in CA. However, the features of the primary disease may dominate the clinical picture. Our patient had both abdominal and pedal swelling. Sepsis is the most common complication and sudden deaths have been reported. The case reported by Talluri *et al*[4] was complicated by sepsis although she recovered and was discharged. In this case report there was no sepsis. Prognosis in CA depends on the primary disease. Generally the prognosis in nonsurgical ascites is poorer.

Chylous ascites is diagnosed when the ascites triglyceride level is more than 1.24mmol/l or 110mg/dl. Other common laboratory features of CA are shown in Table 1. The objectives of the treatment of CA are to relieve the symptoms associated with abdominal distention, reduce the flow of lymph into the mesenteric lymph nodes and replace the nutritional losses. [5] These objectives can be achieved by use of diuretics with salt and fluid restrictions, dietary measures, therapeutic paracentesis and other things such as elevation of lower limbs and use of supportive stockings.[14] The use of newer drugs such as somatostatin analog and etilefrine has also been described.[15,16] Also, orlistat, the saturated derivative of lipstatin, a potential natural inhibitor of pancreatic lipases, has been reportedly used in a patient with poor adherence with a low fat diet. [17]

Dietary measures form the cornerstone of conservative management of CA. These include high protein, low fat and medium chain TG diet. Low and medium chain TG diet bypasses the lymphatics and reduces the flow of chyle into them by diffusing directly into the portal venous system unlike the long chain TG which passes through the lymphatics.[5] Bowel rest and total parenteral nutrition may be beneficial particularly in patients who cannot tolerate orally and are also malnourished.[5]

Therapeutic paracentesis is a palliative measure which often provides immediate symptomatic relief. The drawbacks are that it is ineffective alone and often reaccumulate necessitating repeated paracentesis.

Somatostatin analogues, octreotide and lanreotide, have been used in the management of CA.[5,15,16, 18]Somatostatin significantly attenuates postprandrial increase in TG level by reducing gastric emptying and decreasing intestinal absorption of fat, and more importantly by inhibiting lymphatic flow in the major lymph vessels.

Surgical intervention when there is failure of optimal conservative management. This may be by direct ligation of the leaking lymphatics with or without use of fibrin glue and absorbable mesh or by establishing a peritoneovenous shunt. [19,20] Peritoneovenous shunting is only used in a small group of patients with rapid accumulation of CA. This avoids nutritional depletion associated with repeated paracentesis as the fluid is recirculated. However, shunt failure is common and complications such as sepsis may occur. [14] *Transjugular intrahepatic portosystemic shunt* has been used successfully in CA due to liver cirrhosis. [21]

Conclusion

Although CA is a rare condition, this is a case report in HIV/TB co-infections. In resource-constraint settings, particularly in sub Saharan Africa where there is extreme poverty and dilapidated healthcare infrastructure, there are challenges in the effective management of diseases and in this case CA.

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