

Chylous Ascites in a Patient with Hepatitis C-Related Cirrhosis: A Case Report and Literature Review

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Abstract

Chylous ascites is an infrequent clinical entity, characterized by the presence of ascitic fluid with a milky appearance, containing triglyceride levels above 1000 mg/dL or 2 to 8 times higher than the plasma triglyceride value. This paper reports the clinical case of a 61-year-old female patient with cirrhosis of viral etiology (hepatitis C virus), with a history of worsening ascites and milky ascitic fluid on paracentesis.

Keywords

Ascites, Hepatitis, Viral, Cirrhosis, Liver transplantation

1. Introduction

Chylous ascites (CA) is a rare condition in Hepatology, characterized by the presence of peritoneal fluid with a milky appearance and rich in triglycerides, resulting from the leakage of thoracic or enteric lymph into the abdominal cavity. Its clinical presentation may vary according to the underlying etiology, making diagnosis challenging and requiring a multidisciplinary approach for accurate identification and management.

The pathophysiology of CA can be explained by three main mechanisms: obstruction of lymphatic flow by malignancy, exudation of lymph through the walls of dilated retroperitoneal vessels and acquired obstruction of the thoracic duct secondary to trauma or surgical manipulation. In addition to these causes, CA may be associated with systemic conditions such as advanced hepatic cirrhosis, often accompanied by protein-losing gastroenteropathy. This association can lead to significant malnutrition, further worsening the patient's prognosis.

Given its low prevalence and the diversity of causes involved, CA represents a diagnostic and therapeutic challenge, requiring individualized strategies for its treatment and control.

2. Case Report

A 61-year-old female patient, born and residing in São Paulo, Brazil, with a history of hypothyroidism and hepatitis C virus infection. She underwent treatment in 2014 without achieving sustained virological response, obtaining a response only in 2017 after a new therapy. In 2016, she was diagnosed with hepatic cirrhosis following her first episode of ascites. In 2022, her condition worsened, requiring weekly paracenteses and referral to Hospital Ipiranga for further investigation.

During hospitalization, the patient underwent through several laboratories tests as shown in **Table 1**. Imaging such as CT-scan of the whole abdomen was performed and no signs of malignancy were found. The first paracentesis revealed milky, high-volume ascitic fluid (approximately 13 liters drained), as shown in **Figure 1** and **Figure 2**. The workup ruled out infection with both cytology and ascitic liquid culture resulted in negative. Oncotic cells were not found on the ascitic fluid, ruling out the hypothesis of peritoneal malignancies. The triglyceride level in the ascitic fluid was 239 mg/dL ($3 \times$ plasma) establishing the diagnosis of chylous ascites due to lymphatic hypertension. Due to recurrence of CA, the patient was listed for liver transplantation, which was successfully performed at the end of 2023 without clinical or surgical complications, as illustrated in **Figure 3**, with subsequent complete resolution of symptoms and hepatic cirrhosis. For the publication of this case report, informed consent was obtained by the patient.

Table 1. Patient's laboratories tests during hospitalization.

Laboratories	Dates		
	08/08/2023	09/08/2023	10/08/2023
Albumine (mg/dL)	4.4	-	-
Creatinine (mg/dL)	1.60	1.80	-
Bilirubins (mg/dL)	2.10	-	-
Platelets	75.000	-	-
Potassium (mEq/L)	-	4.9	-
Sodium (mEq/L)	-	134	-
Hemoglobin (g/dL)	-	7.6	-
RNI	-	-	1.40
Urea (mg/dL)	-	-	66.0
Gama-GT (mg/dL)	-	-	26.0
Triglycerides (mg/dL)	-	-	76.0



Visual appearance of ascitic fluid after paracentesis
(Source: Personal collection)

Figure 1. Ascitic fluid.



Tense ascites of the patient before paracentesis (Source: Personal collection)

Figure 2. Ascitis.



Post-liver transplant
(Source: Personal collection)

Figure 3. Post liver transplantation.

3. Discussion

The etiology of CA is complex and may be associated with multiple factors, varying according to the geographical region and the patients' underlying conditions. In Western countries, the main causes include congenital lymphatic abnormalities, intra-abdominal neoplasms, postoperative status following oncologic surger-

ies, chronic inflammatory diseases, and, notably, advanced hepatic cirrhosis, which accounts for a significant proportion of cases [1]. On the other hand, in developing countries, infections such as peritoneal tuberculosis and filariasis still play an important role in the pathogenesis of CA, due to poor sanitation conditions and the high prevalence of infectious diseases [2].

The pathogenesis of CA in patients with hepatic cirrhosis is associated with increased venous pressure in the inferior vena cava and the portal vein, leading to impaired hepatic lymphatic drainage. This occurs because elevated portal venous pressure increases hepatic lymph production by up to 20 times compared to healthy individuals. When the lymphatic system's reabsorption capacity is exceeded, lymph leaks into the peritoneal cavity, resulting in the formation of chylous ascites [3].

The diagnosis of CA depends on the analysis of ascitic fluid, with the classic criterion being the presence of triglycerides at a concentration greater than 200 mg/dL, although some authors advocate for a higher cutoff above 1000 mg/dL for greater specificity [4]. In addition, cytological and microbiological analysis is essential to rule out concomitant neoplasms and infections. After successful liver transplantation, normalization of portal venous pressure restores hepatic lymphatic drainage and eliminates the excessive lymph leakage into the peritoneal cavity, which explains the complete resolution of chylous ascites observed in this patient.

The management of CA should focus on treating the underlying condition. In patients with hepatic cirrhosis, measures such as dietary restriction of long-chain lipids, supplementation with medium-chain triglycerides, use of diuretics, and, in more severe cases, transjugular intrahepatic portosystemic shunts (TIPS) may be employed. In refractory situations, liver transplantation is the only definitive option [5]. Recently, new therapeutic approaches, such as angiogenesis inhibitors and antifibrotic agents, have been investigated with promising results in modulating hepatic lymphangiogenesis [1].

Following liver transplantation, the normalization of portal venous pressure restores lymphatic flow dynamics, thereby preventing further leakage of lymph into the peritoneal cavity and leading to complete resolution of chylous ascites.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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