Acute Spontaneous Chylous Peritonitis: Report of a Case

Igor Mishin, Gheorghe Ghidirim, Marin Vozian

First Department of Surgery „N. Anestiadi" & Laboratory of Hepato-Pancreato-Biliary Surgery, Medical University „N. Testemitsanu", National Center of Emergency Medicine, Kishinev, Republic of Moldova

Abstract

Acute abdominal pain with peritonitis due to sudden extravasation of lymph into the peritoneal cavity is a rare condition that is often mistaken for other causes of acute abdomen. The diagnosis of spontaneous chylous peritonitis is rarely suspected preoperatively, usually misdiagnosed with diverse common surgical emergencies. We report the case of an 81 year old female who presented with typical symptoms of acute abdomen, presumed as acute mesenteric ischemia. The diagnosis of chylous peritonitis was established during laparoscopy and treatment consisted of low fat diet and octreotide.

Key words

Acute abdominal pain – chylous peritonitis – somatostatin.

Introduction

Chylous ascites is characterized by lymphatic fluid leaking into the abdominal cavity and has a prevalence of 1/20,000 hospital admissions [1]. Sudden outpouring of chyle into the peritoneal cavity may produce acute chylous peritonitis. Acute chylous peritonitis is defined as an acute abdomen with all signs of acute peritoneal irritation resulting from free chyle in the peritoneal cavity, without any underlying disease [2]. Very few cases of acute chylous peritonitis have been described in the literature [2-5].

Though the incidence of chylous ascites has increased recently, the treatment remains unsatisfactory in some cases because of prolonged duration of disease. Treatment of chylous peritonitis involves surgical exploration, paracentesis, a medium chain triglyceride (MCT) based diet, total parenteral nutrition (TPN) and, recently, somatostatin. We discuss here the clinical features and management of acute chylous peritonitis.

Received: 05.11.2009 Accepted: 20.11.2009
J Gastrointestin Liver Dis
September 2010 Vol.19 No 3, 333-335
Address for correspondence: Igor Mishin, MD, PhD
Str. Muncesti 52, ap. 60
2001, Kishinev
Republic of Moldova
Email: mishin_igor@mail.ru

Case presentation

An 81-year-old female presented with acute abdominal pain and nausea for 26 hours before admission. The symptoms of abdominal distension and pain were continuous and aggravated by movement. The patient did not have any history of trauma or similar pain, had had cholecystectomy 26 years before and cardiac arrhythmia in her past medical history. On examination, temperature was 36.8°C, pulse rate 60-100/min and blood pressure 140/90 mmHg. Systemic examination was unremarkable. The abdomen was slightly distended, and there was tenderness over the periumbilical area and the right and left flanks. Bowel sounds were audible. Blood analysis gave the following values: total leukocyte count, 10.6 x 10^9/μL; Hb, 141 g/L; platelet count, 23.0 x 10^9/μL; neutrophils, 83%; lymphocytes, 6%; urea, 4.4 mmol/L; creatinine, 82 μmol/L; glucose, 6 mmol/L; AST, 32 u/L; and ALT, 23 u/L.

Acute mesenteric ischemia was suspected and diagnostic laparoscopy was performed. Laparoscopy revealed free milky fluid in the pelvis and between intestinal loops in an approximate amount of 150 ml and no obvious signs for any underlying pathology were found. Three drainage tubes were inserted into the peritoneal cavity. The laboratory tests of the chylous fluid from the peritoneal cavity showed triglyceride concentration of 5.4 mmol/L, staining with Sudan Red was positive for fat globules (Fig.1).

We started a fasting diet for the patient, TPN and octreotide in a dose of 100 μg 3 times daily for five days. Amount of the fluid drained was: day 1 - 500 mL, day 2 – 300 mL, day 3 - 100, day 4 – 0 mL. Drainage tubes were removed on day 4. The patient started a low-fat diet, and was recovering well after a 6-month follow-up. Follow-up was achieved with oncological markers, chest X-ray and computed tomography (CT) scan of the abdomen (at 3 and 6 months). No abnormalities were diagnosed, neither abdominal/thoracic masses nor lymphatic dysplasia. She had never complained of diarrhea or any other symptom of

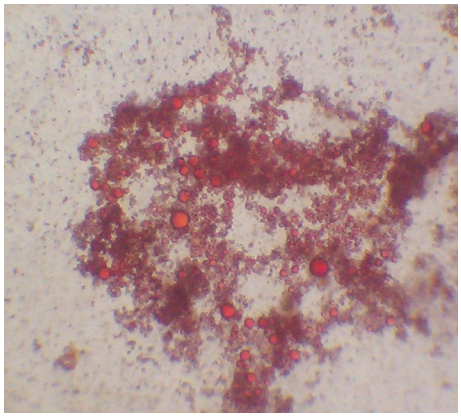

Fig 1. Sudan Red staining positive for fat globules in the peritoneal fluid.

malabsorption, and fecal examination was normal. After 6 months, no malignancy or any recurrence of chylous ascites has been evidenced.

Discussion

The first case of acute chylous peritonitis was described by Renner [3] in 1910; since then less than 100 cases have been reported in the literature, and thus very little information is available regarding its etiology, diagnosis and treatment. The review published by Thompson et al [4] reported 56 cases in the English literature up to 1981; a Medline search in the world literature (using Pubmed), considering only adult cases of peritonitis due to acute chylous extravasation evidenced 15 more cases reported, bringing the total to 71 [5].

Acute accumulation of chyle in the peritoneal cavity is a rare event and is to be distinguished from chylous ascites, which is characteristically chronic. It is frequently idiopathic, and diagnosis is usually made at laparotomy, whenever signs of acute peritonitis impose it. The clinical presentation is acute abdomen, "acute chylous peritonitis" [6]. In the latter situation, the pain is severe, and a physical examination may demonstrate well-localized tenderness or rigidity. It is usually misdiagnosed as appendicitis, cholecystitis, perforated viscus or acute mesenteric ischemia, similarly to the case we present here. In these instances, the diagnosis is almost always established at celiotomy. Free chyle in the peritoneal cavity does not cause pain (a "nonirritating fistula"), but pain may result from the stretching of the retroperitoneum and the mesenteric serosa or from infection [7]. In the present case, acute abdominal tenderness and guarding was noticeable from the onset of symptoms, and the pain did not regress with common analgesics.

Krizek and Davis [8] classified patients with chylous peritonitis into obstructive, traumatic, idiopathic types and those associated with mesenteric cysts. In the obstructive type, an increased pressure within the thoracic duct or the liver results in lymph stasis, edema and consequent rupture of small lymphatic vessels, leading to chylous effusion. Congenital causes are more common in infants, while inflammatory and neoplastic causes are more common in adults [9]. Some authors suspect that chyle extravasation can occur after heavy fatty meals with consequent overload of the lymphatic channels [10]. In the present case no malignancies were evidenced, or any trauma reported, and the patient negated fatty meals. An undetermined etiology, investigated either postoperatively or postmortem, still accounts for the majority of the cases.

The diagnosis of chylous ascites is confirmed by analyzing the ascites fluid, which is only possible if such a diagnosis is suspected preoperatively. The chief characteristics of chylous effusions include a milky appearance, separation into a creamy layer on standing, lacking an odor, alkaline chemical properties, specific gravity greater than 1.012, bacteriostatic properties, 3% total protein, staining of fat globules with Sudan red stain, fat content of 0.4% - 4%, and total solids > 4% [11]. The triglyceride level is an important diagnostic tool, and concentration in the chylous ascites is typically two to eight times that of plasma [12], exceeding 200 mg/dL (2.28 mmol/L) [13]. True chylous ascites must be distinguished from "chyliform" and "pseudochylous" effusions, in which the turbid appearance is due to cellular degeneration from bacterial peritonitis or neoplasm. However, the triglyceride concentration is low in these effusions. Other diagnostic tests such as computed tomography, lymphangiography and lymphoscintigraphy have the highest yield of diagnostic information [13,14], but they are usually reserved for non-emergency situations as in chylous ascites. Fox et al [15] report laparoscopy as perhaps the best and most definitive method to diagnose lymphangiectasia, where otherwise subclinical chylous ascites, dilated lymphatics, or formation of collaterals may be missed.

The optimal management of true chylous peritonitis depends upon the underlying etiology. In patients with symptoms of an acute abdominal process, immediate exploration should be performed. Laparotomy usually allows a definitive diagnosis and provides an opportunity to address the underlying cause. The source of chylous extravasation can be corrected by ligation of the leaking lymphatics or removal of the offending lesion, the cause of many congenital and all traumatic cases. The goals of nonsurgical therapy for chylous ascites include maintaining or improving nutrition, and decreasing the rate of chyle formation. Dietary intervention involves a diet that is rich in protein, and low in fat and medium-chain triglycerides to decrease lymph flow in the major lymphatic tracts and to facilitate the closure of chylous fistulas [16]. Total parenteral nutrition can be used to achieve complete bowel rest and might allow resolution of the chylous ascites. Fasting, together with TPN, can decrease the lymph flow in thoracic duct dramatically from 220 mL/(kg/h) to 1 mL/(kg/h) [17]. Initial experience with continuous intravenous high dose somatostatin for the closure of postoperative lymphorrhagia was reported in 1990 by Ulibarri et al [18]. Also use of somatostatin analogue, octreotide (Sandostatin, Novartis Pharma AG), in a dose from 100 μg to 200 μg 3 times daily was reported [18]. The exact mechanisms by which somatostatin is drying

lymphatic fistulas are not completely understood. It has been previously shown to decrease the intestinal absorption of fats, lower triglyceride concentration in the thoracic duct and attenuate lymph flow in the major lymphatic channels [19]. In addition, it also decreases gastric, pancreatic and intestinal secretions, inhibits motor activity of the intestine, slows the process of intestinal absorption and decreases splanchnic blood flow, which may further contribute to decreased lymph production. It has also been speculated that somatostatin improves chylous ascites by inhibiting lymph fluid excretion through specific receptors found in the normal intestinal wall of lymphatic vessels [20]. In patients with a large amount of ascites, a total paracentesis to relieve discomfort and dyspnea can be performed and repeated as needed. However, one should note the risk of infection and fat emboli. If the patients are poor surgical candidates and refractory to nonsurgical treatment, peritoneovenous shunting may be an option, although these shunts carry a high rate of complications [21].

Conclusion

A rare case of acute chylous peritonitis that mimicked acute mesenteric ischemia has been described, but the cause could not be identified. This case highlights the role of laparoscopy in the early diagnosis of acute abdomen, regardless of the suspected etiology [22] and in the initial management of this condition, as well as the role of the somatostatin analogue, octreotide in the treatment of chylous peritonitis.

References

1. Press OW, Press NO, Kaufman SD. Evaluation and management of chylous ascites. Ann Intern Med 1982; 96: 358–364.
2. Fang FC, Hsu SD, Chen CW, Chen TW. Spontaneous chylous peritonitis mimicking acute appendicitis: a case report and review of literature. World J Gastroenterol 2006; 12: 154-156.
3. Renner A. Chylus als Bruchwasser beim eingeklemmten Bruch. Beitr Klin Chir 1910; 70: 695–698.
4. Thompson PA, Halpern NB, Aldrete JS. Acute chylous peritonitis. J Clin Gastroenterol 1981; 3 (Suppl 1): 51–55.
5. Vettoretto N, Odeh M, Romessis M, Pettinato G, Taglietti L, Giovanetti M. Acute abdomen from chylous peritonitis: a surgical diagnosis. Case report and literature review. Eur Surg Res 2008; 41: 54-57.
6. Rosser B, Poterucha JJ, McKusick MA, Kamath PS. Thoracic duct-cutaneous fistula in a patient with cirrhosis of liver: successful treatment with a transjugular intrahepatic portosystemic shunt. Mayo Clin Proc 1996; 71: 793-796.
7. Goldfarb J. Chylous effusions secondary to pancreatitis: case report and review of the literature. Am J Gastroenterol 1984; 79: 133-135.
8. Krizek TJ, Davis JH. Acute chylous peritonitis. Arch Surg 1965; 91: 253–262.
9. Browse NL, Wilson NM, Russo F, al-Hassan H, Allen DR. Aetiology and treatment of chylous ascites. Br J Surg 1992; 79: 1145–1150.
10. Weichert RF, Jamieson CW. Acute chylous peritonitis: A case report. Br J Surg 1970; 57: 230–232.
11. Hibbeln JF, Wehmueller MD, Wilbur AC. Chylous ascites: CT and ultrasound appearance. Abdom Imaging 1995; 20: 138-140.
12. Ward PC. Interpretation of ascitic fluid data. Postgrad Med 1982; 71: 171-173, 176-178.
13. Cardenas A, Chopra S. Chylous ascites. Am J Gastroenterol 2002; 97: 1896-1900.
14. Losanoff JE, Richman BW, Jones JW. Chylous ascites. Am J Gastroenterol 2003; 98: 219-220.
15. Provenza JM, Bacon BR. Chyloperitoneum associated with sarcoidosis. Am J Gastroenterol 1993; 88: 1462-1463.
16. Hashim SA, Roholt HB, Babayan VK, Vanitallie TB. Treatment of chyluria and chylothorax with medium-chain triglyceride. N Engl J Med 1964; 270: 756-761.
17. Aalami OO, Allen DB, Organ CH Jr. Chylous ascites: a collective review. Surgery 2000; 128: 761-778
18. Huang Q, Jiang ZW, Jiang J, Li N, Li JS. Chylous ascites: treated with total parenteral nutrition and somatostatin. World J Gastroenterol 2004; 10: 2588-2591.
19. Collard JM, Laterre PF, Boemer F, Reynaert M, Ponlot R. Conservative treatment of postsurgical lymphatic leaks with somatostatin- 14. Chest 2000; 117: 902-905.
20. Shapiro AM, Bain VG, Sigalet DL, Kneteman NM. Rapid resolution of chylous ascites after liver transplantation using somatostatin analog and total parenteral nutrition. Transplantation 1996; 61: 1410-1411.
21. Voros D, Hadziyannis S. Successful management of postoperative chylous ascites with a peritoneojugular shunt. J Hepatol 1995; 22: 380.
22. Agresta F, Ciardo LF, Mazzarolo G, et al. Peritonitis: laparoscopic approach. World J Emerg Surg 2006; 1: 9.