



Case Report

Salmonella sp Group A: A rare cause of bacterascites. A case report

Gustavo López-Arce,¹ Aldo Torre-Delgadillo,¹ Félix I. Téllez-Ávila¹

Abstract

Bacterascites (BA) is a minimally studied and defined entity. Its prognosis and clinical course are not well defined, and currently there are no management guidelines. We present a rare cause of BA in which *Salmonella* sp group A was isolated in a 44 year old man with cirrhosis who had diarrhea and fever three days earlier. Treatment with intravenous ceftriaxone was effective.

Key words: Spontaneous bacterial peritonitis, cirrhosis, ascites, neutrascites

Presentation of case

A 44 year old man was admitted to our hospital because malaise, chills, and abdominal pain. He had a history of non-bloody diarrhea and fever three days earlier. He did not seek medical attention and did not take any medications. He had Child C cirrhosis secondary to non alcoholic steatohepatitis detected incidentally four years before. He had presented since then few events of hepatic encephalopathy grade 2, ascites and leucopenia secondary to hypersplenism by portal hypertension. A contrast echocardiogram performed seven months earlier showed shunts compatible with pulmonary syndrome and he was placed on the liver transplant protocol.

Physical examination on admission revealed a temperature of 39.5°C, a heart rate of 100 beats per minute, a

respiratory rate of 20 breaths per minute, and blood pressure of 160/90 mmHg, conjunctival jaundice, and his oral mucosa was dry. Chest examination revealed regular heart sounds, and clear lungs. The abdominal examination noted distension, normal bowel sounds and non-tension ascites with diffuse tenderness on palpation without rebound, and an enlarged spleen. His remarkable laboratory findings were: hemoglobin of 9.0 g/L, white blood cells of 4800 per mm³, with bandemia of 17%, platelets 58,000 per mm³, creatinine 2.3 mg/dL, fractional sodium excretion was of 0.02%. The serum electrolytes, blood cultures and urine analysis were normal. A diagnostic paracentesis was performed and fluid analysis revealed total leucocytes of 190 per mm³. In ascitic culture *Salmonella* sp group A was isolated. An intravenous Ceftriaxone 1 g/bid for 7 days was administered and favorable clinical evolution was noted.

Discussion

We present an unusual case of BA in which *Salmonella* sp. group A was isolated in ascitic fluid. To our knowledge, there are no previous case reports about BA secondary to *Salmonella*. In the present case the ascites was possibly contaminated by bacterial translocation since the patient had diarrhea 3 days earlier. BA is a minimally studied entity, and is defined by the presence of < 250 polymorphonuclear (PMN) cells/mm³ in ascitic fluid and isolation of bacteria in culture in initial paracentesis. The prevalence of SBP is about 10-30% in cirrhotic hospitalized patients^{1,2} but incidence or prevalence of BA is not well defined. Prospective studies have reported very low prevalence (2.5 to 3%) of BA,^{4,6} but these studies only included asymptomatic patients with large-volume paracentesis. Other studies report a prevalence about 31% to 37.9% of all positive culture with PMN less than 250 cells/mm³.³ In a prospective study by our group (unpublished data), a BA prevalence of 12.5% was found in 118 patients with ascites assessed in the emergency department.

There is little information about microorganisms isolated in BA. In one study by Pelletier G *et al*,⁷ gram-negative bacteria was present in 50% of patients, the principal organisms cultured were *Escherichia coli*, *Klebsiella pneumoniae* and *Enterobacter cloacae* in 27% each

¹ Department of Gastroenterology. Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico.

Address to correspondence:
Dr. Gustavo López-Arce Ángeles
Department of Gastroenterology,
Instituto Nacional de Ciencias Médicas
y Nutrición Salvador Zubirán.
Vasco de Quiroga Núm. 15. Col. Sección XVI.
Del. Tlalpan. 14000.
Mexico City, Mexico.
Tel (5255) 54870900, ext: 2710
E-mail: glopezarce@gmail.com

Table I. Isolated microorganisms in SBP and BA episodes in the study performed in the Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán.

| Organism | SBP patients n (%) | BA patients n (%) |
|-------------------------------|--------------------|-------------------|
| <i>Escherichia coli</i> | 2 (28.5) | 11 (73.3) |
| <i>Staphylococcus aureus</i> | 1 (14.2) | 2 (13.3) |
| <i>Streptococcus sanguis</i> | 1 (14.2) | 2 (13.3) |
| <i>Enterococcus sp</i> | 1 (14.2) | |
| <i>K. oxytoca</i> | 1 (14.2) | |
| <i>Haemophilus influenzae</i> | 1 (14.2) | |
| TOTAL | 7 (100) | 15 (100) |
| Gram-negative rod | 4 (57.1) | 11 (73.3) |
| Gram-positive cocci | 3 (42.9) | 4 (26.7) |

SBP: Spontaneous Bacterial Peritonitis; BA: Bacterascites.

one. Similar results were obtained by Runyon *et al.*³ In our center, we observed that Gramnegative microorganisms were isolated more frequently (73.3%) than Gram-positive bacteria (26.7%). Table I shows the isolated microorganisms in (spontaneous bacterial peritonitis) SBP and BA in one study performed in our hospital.

The case presented was treated with standard therapy based in current guidelines for SBP because he had signs of systemic infection [8] and we consider that is unethical to deny treatment in these cases, because those patients seem to beneficiate with antibiotic course. Asymptomatic patients are considered as a different situation: Runyon *et al* observed that 62% of colonization resolved without antibiotics, but in patients with symptoms of infection they suggest that treatment with empirical antibiotics should be initiated until the culture is

known regardless of the PMN count in ascitic fluid.⁹ In our study, we observed mortality of 33% (5 patients) in BA group with antibiotic treatment in comparison to patients with SBP (33 vs 50% p = 0.53). Patient was discharged from the hospital without signs of infection.

References

1. Caly WR, Strauss E. A prospective study of bacterial infections in patients with cirrhosis. *J Hepatol* 1993; 18: 353-8.
2. García-Tsao G. Bacterial infections in cirrhosis: treatment and prophylaxis. *J Hepatol* 2005; 42 Suppl: S85-92.
3. Runyon BA. Monomicrobial nonneutrocytic bacterascites: A variant of spontaneous bacterial peritonitis. *Hepatology* 1990; 12: 710-5.
4. Castellote J, Girbau A, Maisterra S, Charhi N, Ballester R, Xiol X. Spontaneous bacterial peritonitis and bacterascites prevalence in asymptomatic cirrhotic outpatients undergoing large-volume paracentesis. *J Gastroenterol Hepatol* 2008; 23: 256-9.
5. Jeffries MA, Stern MA, Gunaratnam NT, Fontana RJ. Unsuspected infection is infrequent in asymptomatic outpatients with refractory ascites undergoing therapeutic paracentesis. *Am J Gastroenterol* 1999; 94: 2972-6.
6. Romney R, Mathurin P, Ganne-Carrié N, Halimi C, Medini A, Lemaitre P, Gruaud P, et al. Usefulness of routine analysis of ascitic fluid at the time of therapeutic paracentesis in asymptomatic outpatients. Results of a multicenter prospective study. *Gastroenterol Clin Biol* 2005; 29: 275-9.
7. Pelletier G, Lesur G, Ink O, Hagege H, Attali P, Buffet C, Etienne JP. Asymptomatic bacterascites: is it spontaneous bacterial peritonitis? *Hepatology* 1991; 14: 112-5.
8. Rimola A, García-Tsao G, Navasa M, Piddock LJ, Planas R, Bernard B, Inadomi JM. Diagnosis, treatment and prophylaxis of spontaneous bacterial peritonitis: A consensus document. International Ascites Club. *J Hepatol* 2000; 32: 142-53
9. Runyon BA. Management of adult patients with ascites due to cirrhosis. *Hepatology* 2004; 39: 1-16.