

Spontaneous bacterial peritonitis in cirrhosis

Chirag Bhat MD, Jason Reinglas MD, Nicholas Costain MD

■ Cite as: *CMAJ* 2023 January 23;195:E120. doi: 10.1503/cmaj.221090

1 Spontaneous bacterial peritonitis is a common complication of cirrhosis with high risk of death

Bacterial infection of ascites fluid, most commonly from *Escherichia coli* or *Klebsiella pneumoniae*, causes the condition.¹ Its prevalence in patients with cirrhosis is 10.8% in North America, and nearly 25% of patients die despite appropriate antibiotic treatment.²

2 The presentation varies and patients may not have abdominal pain or fever

Spontaneous bacterial peritonitis is often a trigger for cirrhotic decompensation, which can manifest as isolated hepatic encephalopathy, gastrointestinal bleeding, renal failure, increasing ascites volume or any vital sign abnormalities, including hypothermia.^{1,3} Given its highly variable presentation, the current guideline recommends that every patient who presents urgently to hospital with cirrhosis and ascites be tested for the condition.¹

3 Prompt diagnosis is required to reduce risk of death

A paracentesis that shows ascites fluid with a polymorphonuclear leukocyte count of 250 cells/mm³ ($0.25 \times 10^9/L$) or greater confirms the diagnosis. In 1 study, delaying paracentesis by 12 hours resulted in a 2.7-fold increase in odds of death. Clinicians should perform paracentesis as soon as possible.⁴

4 Empiric antibiotic treatment requires consideration of local resistance patterns

In North America, antibiotic resistance in spontaneous bacterial peritonitis is 17.8%, with methicillin-resistant *Staphylococcus aureus* the most common resistant organism.² Empiric treatment in low-resistance areas is a third-generation cephalosporin, and in high-resistance areas is piperacillin-tazobactam.¹

5 Clinicians should prescribe albumin within 6 hours of diagnosis to confer a mortality benefit

Albumin has a number needed to treat of 6 patients to prevent 1 death, and of 4 patients to prevent 1 case of renal failure, if given within 6 hours of diagnosis of spontaneous bacterial peritonitis.⁵ The latest guideline recommends that, in addition to fluid resuscitation, albumin be given to all patients with the condition.¹ Recommended dosing is albumin 1.5 g/kg on day 1 and 1 g/kg on day 3.¹

References

1. Biggins SW, Angeli P, Garcia-Tsao G, et al. Diagnosis, evaluation, and management of ascites, spontaneous bacterial peritonitis and hepatorenal syndrome: 2021 practice guidance by the American Association for the Study of Liver Diseases. *Hepatology* 2021;74:1014-48.
2. Tay PWL, Xiao J, Tan DJH, et al. An epidemiological meta-analysis on the worldwide prevalence, resistance, and outcomes of spontaneous bacterial peritonitis in cirrhosis. *Front Med (Lausanne)* 2021;8:693652.
3. Koulaouzidis A, Bhat S, Saeed AA. Spontaneous bacterial peritonitis. *World J Gastroenterol* 2009;15:1042-9.
4. Kim JJ, Tsukamoto MM, Mathur AK, et al. Delayed paracentesis is associated with increased in-hospital mortality in patients with spontaneous bacterial peritonitis. *Am J Gastroenterol* 2014; 109:1436-42.
5. Salerno F, Navickis RJ, Wilkes MM. Albumin infusion improves outcomes of patients with spontaneous bacterial peritonitis: a meta-analysis of randomized trials. *Clin Gastroenterol Hepatol* 2013;11:123-30.e1.

Competing interests: Jason Reinglas reports travel funding from Pfizer, and grants from Pfizer and Takeda for the Scarborough Health Network. No other competing interests were declared.

This article has been peer reviewed.

Affiliations: Department of Emergency Medicine (Bhat, Costain), University of Ottawa, Ottawa, Ont.; Scarborough Health Network (Reinglas), Scarborough, Ont.

Content licence: This is an Open Access article distributed in accordance with the terms of the Creative Commons Attribution (CC BY-NC-ND 4.0) licence, which permits use, distribution and reproduction in any medium, provided that the original publication is properly cited, the use is noncommercial (i.e., research or educational use), and no modifications or adaptations are made. See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Correspondence to: Chirag Bhat, cbhat01@gmail.com