Case Report

Massive gastrointestinal hemorrhage secondary to typhoid colitis: A case report and literature review

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ABSTRACT

We present a case of massive lower gastrointestinal hemorrhage secondary to Salmonella enterica subtype Typhi (S. Typhi) colitis, in a 29-year-old female treated for S. Typhi bacteremia. One week post-treatment, she unexpectedly developed a large volume of rectal bleeding. Endoscopy showed colonic ulcers and ileitis, but no endoscopic hemostasis was required. Treatment was supportive with transfusions and a prolonged course of antimicrobials, with the bleeding stopping spontaneously. This case illustrates the phenomenon of delayed lower gastrointestinal hemorrhage, as a rare complication of S. Typhi infection.

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Introduction

Typhoid fever is caused by Salmonella enterica serotype Typhi. Although rare in Singapore it is an important cause of morbidity in south eastern Asia. The clinical presentation is of constipation followed by diarrhea with fever, headache, cough and relative bradycardia [1].

Gastrointestinal (GI) bleeding is not a common manifestation of typhoid fever and massive hematochezia less so. Our case, the first reported in Singapore, illustrates the importance of considering S. Typhi as a cause of massive lower gastrointestinal hemorrhage.

Case report

A 29 year old Filipino female presented with a 10 day history of diarrhea and abdominal pain. She had fever with chills but denied rectal bleeding, nausea or vomiting. She had no significant past history and did not smoke or use ethanol. The patient had been employed as a domestic aide in Singapore for 2 years and had returned from a trip back to the Philippines three months prior to admission.

She was febrile to 39 °C, had a heart rate of 98 beats per minute (bpm), and a blood pressure of 98/55 mmHg. She was dehydrated and had generalized abdominal tenderness with no guarding. Initial investigations revealed a hemoglobin of 10.6 g/dl (reference range (RF) 11.7–14.7), white cell count of 4.8 (RF 3.2–9.8) × 10^3 and platelets of 133 (RF 160–398) × 10^9. Her renal function was normal and her liver function tests revealed, albumin 2.9 (RF 3.8–4.8) g/dl, bilirubin 1.2 mg/dl (RF 0.3–1.7), aspartate aminotransferase (AST) 112 (RF 10–50) U/L, alanine aminotransferase (ALT) 37 (RF 10–70) U/L and an alkaline phophatase (ALP) 543 (RF 40–130) U/L.

Although stool and urine cultures were negative, her blood culture grew S. Typhi sensitive to ceftriaxone and ciprofloxacin.

She underwent an ultrasound scan of her hepatobiliary system in view of her abnormal liver function tests and S. Typhi bacteremia. There were no hepatic space occupying lesions, cholecystitis or biliary duct dilation although a small gallstone and some biliary sludge were present.

She was treated initially with intravenous ceftriaxone and metronidazole, and her diarrhea, fever and abdominal pain resolved. Her ALP however remained elevated at 543 U/L which prompted a consideration of endoscopic ultrasound to further evaluate her biliary tract as an outpatient. She completed eight days of intravenous ceftriaxone and was discharged in a stable condition.

She was seen in the Emergency Department the following day for a large lower GI hemorrhage. She had three episodes of loose stool with large volumes of fresh blood. She was pale, dehydrated and had a blood pressure of 100/68 mmHg with a heart rate of 110 bpm.

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Her hemoglobin had dropped to 6.1 g/dl and her coagulation screen was normal. She underwent an urgent sigmoidoscopy which revealed a large amount of blood in the rectum, sigmoid and descending colon. Aphthoid ulceration was seen (Fig. 1) but no bleeding source was detected. A subsequent colonoscopy revealed terminal ileitis with hypertrophic Peyer’s patches, and multiple small ulcers with surrounding inflammation and submucosal hemorrhages; similar changes were seen in the cecum and ascending colon. A biopsy taken from her sigmoid colon revealed mild focal active colitis.

She continued to bleed actively, CT angiography with a view toward embolization or colectomy were considered in the event of hypotension, a surgical opinion was therefore sought. Fortunately she remained hemodynamically stable and the bleeding spontaneously resolved. She required a total of 10 units of red cell transfusion and although her blood and stool culture was negative she received an additional fourteen days of intravenous ceftriaxone. The patient was discharged stable after completing her course of antibiotics, with a hemoglobin of 9.2 g/dl. She did not have a repeat colonoscopy and stool cultures remained negative two months after discharge (Figs. 2–4).

**Discussion**

Descriptions of typhoid related lower GI hemorrhage date back to Sir William Osler’s texts at the turn of the 20th century and a comprehensive analysis of 360 cases in 1946 [2,3]. A report from Mexico in 1986 is also noteworthy [4].

In a study of patients with hematochezia secondary to typhoid colitis, Lee et al. [5] demonstrated that the terminal ileum was the most commonly involved site followed by the ileocecal valve, ascending colon, and transverse colon respectively. They also found that punched out ulcers were common and the left colon was spared [5]. These findings are consistent with those in our patient although her ulcers were in the sigmoid colon. We postulate that her bleeding arose in the colon given the endoscopic finding of ulcers, however a terminal ileal source of bleeding is also a possibility. The possibility that the colonoscopic finding of ulcers portends bleeding should therefore be considered, although data are needed to validate this hypothesis.

*S. Typhi* is a gram negative bacillus which is transmitted via the fecal-oral route and modulates the host immune response to invade intestinal and colonic epithelia [1]. It proliferates intracellularly, initially in the second part of the Peyer’s patches from where it disseminates to the liver, spleen and reticuloendothelial
Further proliferation occurs in these organs over the next seven to 21 days following which organisms are released into the bile and re-infect the ileal lymphoid tissue leading to the classical bowel pathology associated with S. Typhi infection [1].

It is noteworthy that S. Typhi bacteremia was reported in several patients with massive hematochezia, one series described three patients, all of whom were bacteremic [2]. It is possible that disseminated S. Typhi may be a risk factor for lower gastrointestinal bleeding, however more data are required to confirm this, especially since many of the older reports do not include blood culture results. It may also be of interest to ascertain the frequency of gastrointestinal bleeding with infection by different subtypes of the organism, another area with a paucity of clinical data.

The management of gastrointestinal bleeding secondary to S. Typhi is largely conservative and as in our patient, appropriate antimicrobial therapy with hemodynamic and transfusion support is usually adequate. The antimicrobial of first choice is ceftriaxone with fluoroquinolones a second option if a sensitive strain is detected [6].

In cases of severe, life threatening hemorrhage, more invasive measures may be required to control the bleeding. The successful use of selective angiography and platinum coil embolization to manage massive lower gastrointestinal bleeding due to S. Typhi has been reported from the United Kingdom [7]. Given that enteric fever is largely a disease of the developing world, many centers may not have access to radiological intervention, possibly accounting for the lack of more data in this area. Surgical intervention can be an important option and can be life saving if bleeding is refractory to conservative therapy [2].

The pathological processes underlying the bleeding may have been in progress during or even before her initial admission. It should therefore be considered whether the events of the second admission could have been foreseen. Bacteremia may be considered a predictive factor for colitis and bleeding given that some reports suggest an association. Other potential predictive factors may include systemic inflammatory response syndrome criteria and hepatosplenomegaly, which indicate disseminated disease. Bacterial patients may therefore be considered for longer in patient observation and closer outpatient follow up after discharge.

**Conclusion**

Our case illustrates that S. Typhi should be considered in the differential diagnosis of massive lower gastrointestinal hemorrhage, especially in the setting of recent travel in South or South East Asia. Early clinical suspicion and initiation of appropriate antibiotics could be crucial in the final outcome of patients affected by this unusual complication of typhoid fever.

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