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# An Unusual Presentation of Shigellosis: A Case Report

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## Abstract

Shigellosis is a gastrointestinal infection caused by fecal oral transmission of a bacteria within the genus Shigella. Humans represent a primary natural reservoir for Shigella species, and fecal-oral transmission can occur through both direct person-to-person contact or contaminated food and water [1]. Children and men who have sex with men are at increased risk for exposure and infection, although outbreaks are not uncommon among tourists and mass gathering attendees. Clinical presentation classically involves acute onset of dysentery, fever, and cramping abdominal pain. Outside the scope of known extraintestinal complications, such as hemolytic uremic syndrome and reactive arthritis, reports of atypical disease manifestations are rare. This report describes an unusual presentation of shigellosis in an adult who presented with symptoms more commonly associated with gastroesophageal reflux and gallbladder disease.

**Keywords:** gallbladder disease; gastroesophageal reflux; shigellosis

## Introduction

Shigellosis is a gastrointestinal infection caused by fecal oral transmission of a bacteria within the genus *Shigella*. Humans represent a primary natural reservoir for *Shigella* species, and fecal-oral transmission can occur through both direct person-to-person contact or contaminated food and water [1]. Children and men who have sex with men are at increased risk for exposure and infection, although outbreaks are not uncommon among tourists and mass gathering attendees. Clinical presentation classically involves acute onset of dysentery, fever, and cramping abdominal pain. Outside the scope of known extraintestinal complications, such as hemolytic uremic syndrome and reactive arthritis, reports of atypical disease manifestations are rare. This report describes an unusual presentation of shigellosis in an adult who presented with symptoms more commonly associated with gastroesophageal reflux and gallbladder disease.

## Case Presentation

A 56-year-old male presented to the emergency department with a 7-day history of nausea, vomiting, and severe epigastric pain. He described constant and throbbing pain with radiation to the back and chest, and had one episode of non-bloody diarrhea on arrival but denied any prior episodes or history of fever. His past medical history was significant for only hypertension, and social history was notable for a 40-pack year history with recent cessation three months prior to arrival. He did also note that he works in New York City and frequents a variety delis for lunch and wonders if he had gotten sick from any of them, but notes that no one else that he ate with had endorsed similar symptoms.

On physical exam, the patient had epigastric tenderness to palpation and halted inspiration when the right upper quadrant was deeply palpated. There was no evidence of abdominal distension, rebound tenderness, or guarding. No masses were palpated, nor was there costovertebral angle tenderness. A CT scan of the abdomen and pelvis revealed mild fat stranding adjacent to the second and third segments of the duodenum and pancreatic uncinate process. The patient met sepsis criteria at time of presentation with heart rate > 90 and white blood cell count > 12,000 and a known source, for which he was started on a broad-spectrum antibiotic, Zosyn, kept without oral intake and a weight-based sepsis bolus was administered. Blood, urine and stool cultures were drawn. The patients were then admitted for sepsis likely secondary to duodenitis versus gall bladder pathology. The patient was also managed for hypokalemia.

On initial work up liver function tests were significant for an elevated total bilirubin of 1.9, however the results of a gamma-glutamyl transpeptidase test were normal indicating pathology was not directly related to the liver. Renal function tests revealed an elevated BUN and creatinine of 28 and 1.70, respectively which demonstrated that the patient had an acute kidney injury at the time which could have contributed to the hypokalemia on his metabolic panel. Fractional excretion of sodium (FeNa) was 0.4%, suggestive of prerenal disease, which was consistent with the patient endorsing significant dehydration from the vomiting and diarrhea. Electrolyte abnormalities included both hypokalemia (2.5 mmol/L) and hyponatremia (132 mmol/L) which could also have been related to his increase gastrointestinal output in the preceding days. Ultrasound of the right upper quadrant of the abdomen revealed a mild amount of biliary sludge but no evidence of calculi. Amylase, lipase, and lactate levels were all within normal limits which shifted the diagnosis towards duodenitis rather than pancreatitis from the previously mentioned CT scan. Blood and urine culture were negative. Stool culture was positive for H.pylori and Shigella/Enteroinvasive E.coli toxin, however the EHEC and other causes of hemorrhagic diarrhea where negative indicating a result suggestive for shigella infection.

## Differential Diagnosis

The differential diagnosis for an adult with vomiting and upper ab-

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dominal pain is vast. This patient reported no diarrhea in the first 7 days of illness and remained afebrile throughout his disease course. Instead, his primary symptoms were ~~of~~ epigastric pain and vomiting which appeared more consistent with gastroesophageal reflux compared to infectious gastroenteritis. When further work-up revealed a creatinine of 1.7 and a BUN of 28 in the setting of no previous renal disease, suspicion for shigellosis was raised due to its propensity to cause hemolytic uremic syndrome. While these abnormalities in conjunction with the urine studies leading to the fractional excretion of sodium indicated a pre-renal cause of the acute kidney injury the presence of *Shigella* could lead to both a pre-renal and intrinsic renal injury.

Given the patient's abdominal pain with radiation to the back, elevated liver function tests, nausea, and vomiting, pancreatitis could not initially be excluded. Evidence of fat stranding around the duodenum and pancreas on CT scan further supported pancreatic etiology but also introduced the possibility of duodenitis. Presentations of duodenitis can explain many of the patient's ambiguous lab findings including the elevated bilirubin level in the absence of gamma-glutamyl transferase elevation. This is because the pathway out of the body for bilirubin includes passing through the duodenum from the common bile duct, at an area local to where the pancreatic insertion existss. This was represented on imaging by fat stranding around the pancreas without pancreatic enzyme elevation. Acute cholecystitis was also considered given halted inhalation on deep palpation of the right upper abdominal quadrant known as Murphy's sign on physical exam, nausea, vomiting, and evidence biliary sludge on ultrasound. The stool cultures indicating evidence of shigella infection along with duodenal fat stranding in the setting of a recent history of eating at delis which give the increased opportunity for fecal oral contamination indicate a strong suspicion for shigellosis causing the dehydration that the patient experienced which can also lead to his pre-renal acute kidney injury and hypokalemia.

## Treatment

Prior to stool and blood culture results, the patient was treated empirically with piperacillin-tazobactam 3.375g in 50mL of 0.9% normal saline every 6 hours as part of empiric treatment for sepsis of likely gastrointestinal origin. Potassium repletion was administered both orally and intravenously. Symptomatic management of the patient's gastroesophageal reflux symptoms involved famotidine 20mg injection and pantoprazole 40mg tablet, while his nausea and vomiting were treated with an ondansetron 4mg injection. Maintenance fluids included normal saline with potassium chloride 20 mEq/L at 187 cc/hour which resolved his electrolyte abnormalities after he had received full sepsis bolus with saline. For the patient's shigella infection, he was treated supportively, as his symptoms appeared to rapidly improve with bowel rest and intravenous hydration. Shigella can be treated with antibiotics in more refractory cases, however this patient did not appear to have a severe case. The patient was also started on treatment for his active H. pylori infection.

## Outcome and Follow-Up

The patient remained afebrile during his 3-day hospital course. On day 2, he reported resolution of his upper abdominal pain and nausea. He complained of non-bloody diarrhea overnight but denied vomiting. His sepsis resolved, and his creatinine was decreased from 1.4 to 1.2 representing a resolution of the acute kidney injury. Repeat metabolic panel revealed correction of electrolyte imbalances. The patient was discharged the following day with strict return precautions.

## Discussion

The presentation of *Shigella spp.* in adults is most often that of bloody diarrhea with mucus, fever, and abdominal cramping. While watery diarrhea often occurs as a prodrome of dysentery in this infection, some patients never develop bloody stools. For this reason, shigellosis should be considered in any patient who presents with fever and watery diarrhea. Less common symptoms include tenesmus, ileus, agitation, and lethargy [2].

Disease course is usually mild and self-limited in immunocompetent individuals, with resolution of symptoms anywhere from 5 to 7 days after symptom onset. Rarely, there have been reports of bacteremia [3], toxic megacolon [4], pyogenic cervical spondylitis [5], keratitis [6], and shigella-associated encephalopathy [7] in adults infected with *shigella spp*. More common, however, are extraintestinal complications such as reactive arthritis and hemolytic-uremic syndrome.

The patient described in this report remained afebrile throughout the infectious course. He experienced watery diarrhea as a late manifestation of his disease that began after seven days of vomiting and severe epigastric pain. While clinical findings were consistent with acute kidney injury, there was no evidence of hemolysis or thrombocytopenia to suggest hemolytic-uremic syndrome. Clinical findings of renal damage were more consistent with prerenal azotemia due to volume depletion secondary to persistent vomiting rather than microangiopathic hemolytic anemia.

This patient was most likely infected via indirect fecal-oral transmission as his symptoms developed shortly after eating at an Eastern European meat market. Given that improper treatment can increase the likelihood of disease complications, it is important to raise clinical awareness with respect to atypical presentations of shigellosis. Use of antimotility drugs is not recommended as these medications can predispose patients to the development of toxic megacolon and antimicrobial drugs are only indicated in cases of severe disease [8]. This case demonstrates the utility of the gastrointestinal pathogen panel in the evaluation of intractable nausea and vomiting and emphasizes the importance of maintaining a wide differential.

**Declaration of Conflict of Interest:** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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