

Case Report

# A case of acute appendicitis with *Vibrio fluvialis* peritonitis

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## Abstract

Human infections caused by *Vibrio fluvialis* are rarely reported. The most common clinical presentation of *V. fluvialis* infection is acute gastroenteritis with diarrhea. Reported extra-intestinal infections caused by *V. fluvialis* have included bacteremia, hemorrhagic cellulitis and cerebritis. Peritonitis is an uncommon clinical presentation of *Vibrio* infections, and most cases have occurred in patients receiving peritoneal dialysis or those with liver cirrhosis. Herein, we report the first case of acute appendicitis with *V. fluvialis* peritonitis.

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**Keywords:** Acute appendicitis; Peritonitis; *Vibrio fluvialis*

## 1. Introduction

*Vibrio fluvialis* is a curved Gram-negative rod, which can be found in coastal water and seafood. *V. fluvialis* was first isolated by Furniss et al in 1977.<sup>1</sup> It rarely causes human infection. Acute gastroenteritis with diarrhea is the most common clinical presentation of *V. fluvialis* infection, and accounted for 10% of *Vibrio* spp. gastroenteritis cases in a survey in the United States.<sup>2</sup> Additionally, *V. fluvialis* has been reported to cause extraenteric infections, such as necrotizing fasciitis and bacteremia, which were associated with minor trauma and exposure to fish, raw oysters, shellfish, crabs and seawater.<sup>3,4</sup> Herein, we report the first case of acute appendicitis with *V. fluvialis* peritonitis.

## 2. Case report

A 53-year-old woman visited the emergency department because of abdominal pain and fever for 1 day. Two days

before admission, she had anorexia and vomiting, but she denied any accompanying symptoms such as diarrhea or flatulence. She had no history of medical illness, such as cancer, diabetes mellitus, autoimmune disorder, chronic kidney disease, or liver cirrhosis, and she denied a history of participating in water activities such as boating, fishing, and swimming, or any exposure to a marine environment or animals in the 3 months before the onset of symptoms. On admission, her body temperature was 38.1°C, pulse rate 114/min, respiratory rate 20/min and blood pressure 104/67 mmHg. Physical examination revealed right lower quadrant abdominal tenderness with rebounding pain. Laboratory examination results were as follows: white blood cell count = 17,800/mL (78% neutrophils); creatinine = 0.8 mg/dL (estimated glomerular filtration rate, 87.2 mL/min); fasting glucose = 86 mg/dL, and C-reactive protein = 54.0 mg/L (normal reference <6 mg/L). Urinalysis and stool examination were normal. Abdominal sonography revealed only minimal ascites with fibrin formation over the right lower quadrant, but did not show liver cirrhosis or evidence of renal parenchyma disease. Empirical antibiotics, including cefazolin, gentamicin and metronidazole, were administered. An exploratory laparotomy was performed, and a gangrenous appendix with turbid

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ascites was noted. The patient received an appendectomy and the ascites was sent for culture. Pathology examination showed liquefactive necrosis of the full thickness of the appendiceal wall, with extensive neutrophil infiltration extending through the serosa. Four days later, aerobic bacterial culture of the ascites yielded *V. fluvialis*. Susceptibility testing revealed that this was sensitive to amikacin, ceftazidime, ciprofloxacin, cefuroxime, gentamicin, flomoxef, piperacillin/tazobactam, and ceftiprome, but was resistant to ampicillin, cefazolin, and amoxicillin-clavulanic acid. None of the blood and stool cultures grew enteric pathogens, including *Vibrio* spp. Therefore, the antibiotic treatment was changed to ciprofloxacin for 2 weeks and the patient recovered completely without complications.

### 3. Discussion

Several subsets of the *Vibrio* spp., including *V. cholerae*, *V. parahaemolyticus*, and *V. vulnificus*, are known to cause human infection such as septicemia and wound infection, especially in patients with hepatic diseases, diabetes mellitus, adrenal insufficiency, or an immunocompromised status. Peritonitis is a rare clinical entity of *V. vulnificus* infections,<sup>5,6</sup> and most cases of *Vibrio* peritonitis have occurred in patients receiving peritoneal dialysis or those with liver cirrhosis.<sup>5–10</sup> In contrast to previous reports,<sup>6–10</sup> our patient was not immunocompromised. Therefore, we recommended that *V. vulnificus* be considered in the differential diagnosis of peritonitis, even in immunocompetent patients.

*Vibrio* spp. are most commonly found in aquatic environments, and usually in temperate or subtropical areas, such as Taiwan. *Vibrio* spp. infection is commonly associated with wound exposure to seawater or ingestion of raw seafood.<sup>11–13</sup> The portal of entry of the organism in our patient was not easily clarified because of the absence of any recent contact with marine animals or environmental conditions suitable for propagation of the organism. Although the pathology of the appendix showed no microorganisms and the culture did not yield *Vibrio* spp, appendicitis can not be ruled out as the portal of entry of *V. fluvialis* peritonitis in our patient.

In conclusion, we report a case of peritonitis caused by *V. fluvialis* in an immunocompetent patient; the clinical outcome was favorable after administration of an appropriate

antibiotic and surgical management. This case further expands the spectrum of infection caused by *V. fluvialis*, and raises the possibility of *V. fluvialis* as a cause of peritonitis, even in healthy subjects.

### Conflict of interest

The authors declare no conflict of interest.

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