Aeromonas Associated Acute Appendicitis

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The most common clinical presentation of Aeromonas infection is acute gastroenteritis with diarrhea. The extra-intestinal infections caused by aeromonads have been reported as bacteremia, necrotizing fasciitis, peritonitis, meningitis, pneumonia, and arthritis. Herein, we report the first case of acute appendicitis associated with A. sobria and E. coli, which was successfully treated with surgery and antibiotics.

Key words: acute appendicitis, Aeromonas sobria

Introduction

Aeromonad is a curved Gram-negative rod, and can be found in fresh water and seafood. Acute gastroenteritis with diarrhea was the most common clinical presentation of Aeromonas infection, and Aeromonas spp. has been rarely reported as causing extra-enteric infections, such as bacteremia, pneumonia, empyema, necrotizing fasciitis, arthritis, endocarditis, cholangitis, meningitis, skin and soft tissue infection (1-8). Lim reported a case of acute appendicitis associated with Aeromonas sobria gastroenteritis (9), and the diagnosis was established on the typical clinical manifestations and the growth of A. sobria from two stool specimens. However, no other specimens, such as appendix and blood, had the positive culture for A. sobria. Therefore, we report the first case of acute appendicitis associated with A. sobria, which is confirmed by the yield of A. sobria from the excised appendix with inflammations.

Case Report

A 93-year-old man visited the emergency department for abdominal pain and nausea for one day. He had medical illness of chronic obstructive pulmonary disease, hypertension, and chronic kidney disease. He denied any accompanying symptom such as diarrhea or flatulence, and 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 three months before the onset of symptoms. On admission, the vital signs were: body temperature of 35.2°C, pulse rate of 81/min, respiratory rate of 20/min and blood pressure of 139/91 mmHg. Physical examination revealed right lower quadrant tenderness with rebounding pain. Laboratory examination results were as follows: white blood cell count, 12,700/mm³ (82.3% neutrophils); creatinine, 2.13 mg/dl (estimated glomerular filtration rate, 31.0 ml/min);
fasting glucose, 115 mg/dl, C-reactive protein, 7.5 mg/l (normal reference < 6 mg/l). Urine analysis and stool examination were normal. Empirical antibiotics, including cefazolin, gentamicin and metronidazole, were administered. Exploratory laparotomy was performed, and acute supplicative appendix was noted. He received an appendectomy and the appendix was sent for culture. Pathology examination showed the appendicular wall was diffusely infiltrated by neutrophils, and focal abscess formation was noted. Four days later, aerobic bacterial culture of the appendix yielded *A. sobria*, and Extended Spectrum β-Lactamase (ESBL) - *E. coli*. Susceptibility testing revealed that *A. sobria* to be sensitive to amikacin, ceftazidime, ciprofloxacin, cefuroxime, gentamicin, flomoxef, piperacillin/tazobactam, and cefpirome, imipenem, but resistant to ampicillin, cefazolin, and amoxicillin-clavulanic acid. None of the blood and stool cultures grew enteric pathogens, including *Aeromonas* spp. Therefore, the antibiotics were shifted to ertapenem for 10 days and the patient recovered completely without complication.

**Discussion**

Several subsets of the *Aeromonas* spp., including *A. hydrophila, A. sobria, A. veronii,* and *A. caviae* are known to cause human infection, such as septicemia, and wound infection, especially in patients with hepatic diseases, diabetes mellitus, or an immunocompromised status\(^\text{10}\). In the preset case, the diagnosis of acute appendicitis associated with *A. sobria* and *E. coli* was confirmed by the pathologic and bacteriologic examinations. In contrast to previous reviews\(^\text{2,10}\), our patient who developed *Aeromonas* infection did not have similar immunocompromised condition. Therefore, we recommended that *A. sobria* be considered in the differential diagnosis of acute appendicitis, even in immunocompetent patients.

*Aeromonas* spp. are most commonly found in aquatic environments, and usually in temperate or subtropical areas, such as Taiwan\(^\text{14,15}\). In coastal areas of southern Taiwan, strains of *Aeromonas* species are prevalent bacteria, and they can even be found in 88% of seafood in the markets\(^\text{13}\). Although *Aeromonas* spp. infection is commonly associated with wound exposure to seawater or oral ingestion of contaminated or undercooked seafood\(^\text{12,13}\), 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. However, it is possible that aeromonads can be encountered in the environment, including seafood and drinking water, and further cause acute appendicitis in our patient.

In the recent report that *E. coli*, followed by *K. pneumoniae* was the most commonly identified bacteria associated with acute appendicitis\(^\text{14}\). Our case demonstrated *Aeromonas* can be one of pathogen associated acute appendicitis in Taiwan – aeromonad endemic area. In fact, acute appendicitis is most frequent caused by fecalith associated lumen obstruction. However, better understanding the update bacteriology of acute appendicitis is important. It can help surgeon to guide the use of prophylaxis antibiotics and appropriate antibiotic may prevent the postoperative surgical site infections.

In conclusion, we report a case of acute appendicitis associated with *A. sobria* in an immunocompetent elderly; the clinical outcome was favorable after appropriate antibiotic and surgical management. This case further expands the spectrum of infection caused by aeromonads, and raises the possibility of *A. sobria* associated acute appendicitis.

**References**

1. Janda JM, Abbott SL. Evolving concepts regarding the genus Aeromonas; an expanding
產氣單胞桿菌相關急性闌尾炎

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產氣單胞桿菌最常見的症狀是急性腸胃炎合併腹瀉。文獻上報導產氣單胞桿菌屬引起的腸胃道外感染有：菌血症、壞死性筋膜炎、腹膜炎、腦膜炎、肺炎和關節炎。此次我們提出首例經手術和抗生素成功治療的溫和產氣單胞桿菌和大腸桿菌相關急性闌尾炎。

關鍵詞：急性闌尾炎，產氣單胞桿菌