

# Necrotizing Fasciitis Caused by Inconspicuous Infection of *Aeromonas hydrophila* in an Immunocompromised Host

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**Location:** Chi-Mei Medical Center, Tainan, Taiwan

**Citation:** Liao KC, Yen PT, Liu C. Necrotizing fasciitis caused by inconspicuous infection of *Aeromonas Hydrophila* in an immunocompromised host. JSCR. 2010 7:2

## ABSTRACT

We present a case of serious necrotizing fasciitis due to *Aeromonas hydrophila* without a suggestive history of routes of pathogen invasion in a 60-year-old male. Despite prompt broad-spectrum antibiotic and extensive surgical therapies, the patient died within 72 hours following initial presentation. Our experience suggests clinicians be highly alert to the disease when an immunocompromised patient featured fulminant soft-tissue infection in the endemic area.

## INTRODUCTION

*Aeromonas hydrophila* is a motile gram-negative bacilli typically causing infection after exposure of wounds to fresh water, soil, or marine creatures, and oral consumption of contaminated food (1,2). We present an account of necrotizing fasciitis caused by *A hydrophila* in a 60-year-old immunocompromised male, without a history of wound contamination on the involved extremity. Surgeons should raise high suspicion of *A hydrophila* as an offending pathogen when signs of rapidly progressive soft tissue infection developed in an immunocompromised host (2).

## CASE REPORT

The 60-year-old man was brought to the emergency room with pain, swelling, and erythema involving his left leg of one-day duration, which was accompanied by fever and chills. His medical history was notable for cirrhosis and type-two diabetes. The patient denied a history of prior wounds on the left lower extremity. On examination, there was marked circumferential, diffuse swelling of the leg, and subsequent development of multiple hemorrhagic bullae over a large area. During the course of the day, friable and malodorous changes developed rapidly (Figure 1).



The operative findings revealed diffuse necrosis of skin, fascia, and muscle (Figure 2). The patient was prescribed parenteral piperacillin 4 grams and tazobactam 500 mg every six hours. A series of aggressive fasciectomy and debridements were undergone to prevent the infection from further spreading. During the surgery, the patient remained hypotensive and febrile, with a greater demand for vasoactive medications. The patient was resuscitated, and was subsequently transferred to the surgical intensive care unit. Histopathological examination of the specimen showed extensive necrotizing fasciitis and pyomyositis. Wound cultures grew gram-negative bacilli, which were identified as *Aeromonas hydrophila*. Although our team staff had commenced aggressive medical and surgical therapies, the patient died due to multi-organ failure on the third day of admission.



## DISCUSSION

*Aeromonas hydrophila* is a motile gram-negative bacillus found in water sources that can cause a wide range of human illness, including acute gastroenteritis, soft tissue infections, meningitis, hepatobiliary tract infections, peritonitis, pneumonia, empyema, and primary septicemia (1-5). Possible routes of transmission include intake of contaminated food, exposure of wounds to environments that contain the pathogen (1-8). Severe soft tissue infections caused by *Aeromonas hydrophila* usually involve people with chronic illness, such as cirrhosis, malignant diseases, chronic renal failure, diabetes mellitus, or steroid use (3,4).

Necrotizing fasciitis from *Aeromonas hydrophila* infection in patients with immunocompromised conditions has been reported and is an emerging concern (3,4). The prognosis and outcome of patients with necrotizing fasciitis due to *A hydrophila* infection often

rely on early diagnosis and aggressive treatment modalities (3,4). In immunocompromised hosts, severe soft-tissue infections often resist antibiotic and surgical therapies (3-5). Our literature research indicates that the fatality rate of necrotizing fasciitis attributable to *A hydrophila* in a host with compromised immunity has been reported to be as high as 50% to 100% (1-5).

There are two main mechanisms of pathogenicity in the severe soft tissue infections caused by *Aeromonas* species (9,10). First, *Aeromonas* species can produce highly toxic exotoxins, which may lead to extensive myonecrosis as well as necrotizing fasciitis. Several tissue factors can be released from pathological process of necrosis, and further contribute to disturbance of circulation, significant edema, or disseminated intravascular coagulation.

In this case, the cirrhotic and diabetic patient developed severe soft tissue infections and septic shock, even without trauma lesions on the body or wound exposure to contaminated water which introduced pathogen invasion. A fulminant clinical course was pursued, with early sepsis and organ failure. Broad-spectrum antibiotic agents were administered as soon as sepsis was identified and multiple prompt, thorough surgical measures were attempted to prevent infection from spreading. In spite of an early diagnosis and appropriate treatments, the case demonstrated rapid deterioration and mortality within 72 hours of admission. Our experience suggest that surgeons be highly alert to the rare fulminant presentations attributable to *A hydrophila* infection and prompt surgical measures be performed to aid in early recognition of the disease in the absence of an implicative history.

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