

H78 A Fatal Case of *Vibrio Vulnificus* Wound Infection

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Learning Overview: The goal of this presentation is to educate attendees about *Vibrio vulnificus* and to present the autopsy findings in a case of fatal *Vibrio vulnificus* wound infection.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by raising awareness of an uncommon but potentially fatal bacterial infection.

Introduction: *Vibrio vulnificus* is a Gram negative, motile rod that is part of the normal microbiome of salt water environments. People can become infected with *Vibrio vulnificus* after ingesting shellfish or being exposed to salt water environments.¹ This organism has the highest fatality rate of any foodborne pathogen and is responsible for the majority of seafood-related deaths in the United States.² A case of lower extremity necrotizing fasciitis and bacterial sepsis due to *Vibrio vulnificus* diagnosed at autopsy is presented.

Case Presentation: The decedent was a 59-year-old male with no known medical history. He was known to drink alcohol, smoke cigarettes, and had used crack cocaine in the past. He was found prone and unresponsive on his bedroom floor by his roommate. Emergency services responded to the scene and pronounced him dead. There was no evidence of trauma. Per family, he was seen in an emergency room two days prior to his death for right ankle pain.

At autopsy, the right lower extremity had purple-red discoloration of the skin with numerous areas of blistering, skin slippage, ulcerations, and degloving of the epidermis of the sole of the right foot. Histologically, sections of the skin and the subcutaneous tissue at the right ankle showed superficial dermal edema filled with numerous rod-shaped bacterial organisms. These organisms proliferated into the dermis and subcutaneous adipose tissue. There was prominent acute and chronic perivascular inflammation and areas of necrosis in the deep soft tissue. Blood and spleen cultures came back positive for *Vibrio vulnificus*.

He was also noted to have left concentric ventricular hypertrophy and a remote myocardial infarct. His liver weighed 2,300 grams and was remarkable for steatosis and fibrosis histologically which was consistent with chronic ethanol use. The lungs had emphysematous changes grossly and microscopically, which were consistent with chronic tobacco use. Lung cultures were positive for *Staphylococcus aureus* and *Klebsiella* species. Postmortem toxicology was positive for diphenhydramine (0.26mg/L).

The cause of death was bacterial sepsis due to lower extremity necrotizing fasciitis due to *Vibrio vulnificus* infection. Chronic ethanol use with hepatic fibrosis and steatosis was a contributory cause of death. The manner of death was accident (sustained unknown injury of the right ankle with probable exposure to coastal water).

Discussion: While septic infections from *Vibrio vulnificus* after ingesting undercooked or raw shellfish are more common, wound infections should not be overlooked. When open wounds are exposed to water harboring *Vibrio vulnificus*, infection may occur. These infections most commonly occur while swimming, fishing, or preparing seafood. Wound infections may progress to necrotizing fasciitis and can be fatal. Infection with *Vibrio vulnificus* is more likely to occur in individuals with chronic liver disease, diabetes mellitus, and hemochromatosis. These infections are also more likely to occur in men and older individuals.³

Wound infections from *Vibrio vulnificus* are uncommon but potentially fatal. Epidemiologic data from the Centers for Disease Control have shown an increased rate of wound infections from *Vibrio vulnificus* in the United States in the past two decades.³ Forensic pathologists should be cognizant of this microorganism and its connection to salt water environments and shellfish.

Reference(s):

1. Jones M.K., Oliver J.D. 2009. *Vibrio vulnificus*: Disease and pathogenesis. *Infect Immun* 77:1723–1733.
2. Daniels N.A. *Vibrio vulnificus* oysters: Pearls and perils. *Clin Infect Dis*. 2011;52:788–792.
3. Baker-Austin C., Oliver J.D. *Vibrio vulnificus*: New insights into a deadly opportunistic pathogen. *Environmental Microbiology*. 2018;20:423–430.

Vibrio Vulnificus, Wound Infection, Forensic Pathology