

Geriatrics Nursing 2020: A Patient with *Vibrio Vulnificus* Infection and Necrotizing fasciitis-Case Report

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Abstract

Vibrio vulnificus is a gram-negative bacterium that thrives in high-salt environments. *V. vulnificus* infections disproportionately affect males and old patients, especially those with underlying conditions such as liver disease, diabetes and immune disorders. Severe wound infections are often characterized by necrotizing skin and soft-tissue infection, including fasciitis and gangrene. Taiwan is situated in a subtropical region. The residents usually introduce seawater to cultivate seafood for a living. The mortality rate of patients with wound infection and septic shock can be as high as 90%. The patient might die within 24-36 hours. This article describes the care experience of a female 72-year-old with hypertension but without any high-risk disease. She suffered from sudden onset of right hand swelling after cleaning Tilapia 12 hours. Tigecycline 100mg was administered after admission, sepsis and rapidly progressive necrotizing fasciitis was noticed. Continuous Tigecycline and wound care with sterile distilled water dressing were treated, fasciotomy and debridement was done on Day 3. The wound culture yielded *Vibrio vulnificus*. FIR (Far-Infrared Ray) energy radiation was done and the necrotic wound was dressed with Aqual-Ag+ Extra for comfortable reason. The patient was hospitalized for 15 days and three times of debridement, FTSG was performed after injury 28 days. She was prevented from amputation or surrounding tissue damage. These interventions are beneficial to maintaining a patient's life, symptom relief and lowering the mortality rate. Necrotizing fasciitis due to *Vibrio vulnificus* can produce an overwhelming toxic shock-like syndrome that results in rapid deterioration and death. It is markedly associated with chronic liver disease such as cirrhosis caused by chronic hepatitis B or C infection. Other high-risk conditions that predispose to severe infection with *Vibrio vulnificus* include hemochromatosis, current malignancy, AIDS and other immunocompromised states, and achlorhydria.

As yet, no superantigen has been implicated as a cause of this form of necrotizing fasciitis. The current literature suggests that host factors play a large role in the fulminant nature of the disease in these susceptible patients. Exposure to the organism usually occurs through ingestion of shellfish or inoculation via traumatic injury in marine environments. It is likely that our patient either could have ingested raw shellfish or was exposed while preparing seafood at his place of employment. *Vibrio vulnificus* is a halophilic, motile, comma-shaped, gram-negative bacillus from the family Vibrionaceae. It is associated with warm coastal waters such as the Gulf of Mexico and is seen during the warmer months, generally from mid-May to mid-September. The organism is isolated in high concentrations from shellfish (especially oysters), and during the summer months, it can be seen in concentrations as high as 103 to 104 CFU per gram of tissue. In some epidemiologic studies, greater than 50% of shellfish and 11% of crabs harbor the organism during warmer months. Of 422 cases of *Vibrio vulnificus* infection reported to the CDC over a 9-year period, 43% were primary septicemia, 45% were wound infections, 5% were gastroenteritis, and in 7%, the source could not be determined. The overall case fatality rate is 25%, and infection is estimated to result in 90% of all deaths related to the ingestion of seafood. Primary septicemia is seen without an apparent source of inoculation and is attributed to the ingestion of contaminated shellfish, with blood-borne dissemination through the gastrointestinal tract, particularly in patients with cirrhosis.

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