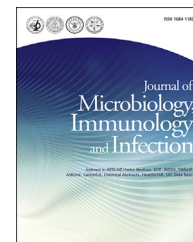




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CASE REPORT

Tigecycline salvage therapy for necrotizing fasciitis caused by *Vibrio vulnificus*: Case report in a child



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Necrotizing fasciitis caused by *Vibrio vulnificus* is rarely reported in children. We describe a 12-year-old immunocompetent boy with necrotizing fasciitis caused by *V. vulnificus*. He was cured by radical and serial debridement and salvage therapy with intravenous ceftazidime plus tigecycline. The *in vitro* antibacterial activity of combination regimens and a literature review of pediatric *V. vulnificus* infection are described.

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Introduction

Vibrio vulnificus is a halophilic, bacillary, Gram-negative bacterium that is endemic and increasingly prevalent in warm estuarine and marine environments throughout the world. The bacterium has a commensal relationship with

marine and estuarine sea life along the coast of Taiwan. Necrotizing fasciitis caused by *V. vulnificus* is rarely reported in children. Traditional therapy with a third-generation cephalosporin combined with minocycline is usually synergistic and effective. We report the case of a 12-year-old boy with rapidly progressive necrotizing fasciitis caused by *V. vulnificus* who exhibited a poor response to ceftazidime plus minocycline. However, salvage therapy with ceftazidime plus tigecycline can stabilize wound conditions. *In vitro* antimicrobial susceptibility and a time-killing study of combination therapy were assessed and

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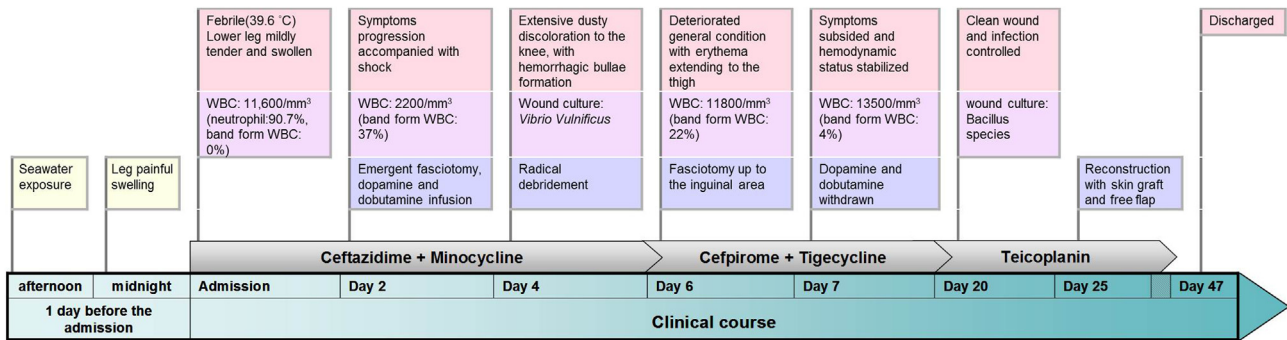


Figure 1. Summary of the clinical course in our patient.

carried out a literature review of pediatric *V. vulnificus* infection.

Case report

A 12-year-old boy without underlying disease was injured by wooden stick penetration of his left leg. The same afternoon, he handled shrimps at the fish market. Painful swelling of his left leg developed by midnight, and he was sent to the emergency department for evaluation.

On physical examination, he looked ill and was febrile, with a body temperature of 39.6°C, pulse rate of 79 beats/min, respiratory rate of 22 breaths/min, and blood pressure of 110/58 mmHg. His left lower leg was mildly tender and swollen with no obvious open wounds. Initial laboratory studies showed a hemoglobin level of 11.6 g/dL, hematocrit of 44.5%, white blood cell (WBC) count of 11,600/mm³ (neutrophils 90.7%, band form WBCs 0%, and lymphocytes 5.5%), platelet count of 262,000/mm³, and serum C-reactive protein of 0.9 mg/dL (normal range < 6 mg/dL). Blood culture results were negative. An emergency consultation with a plastic surgeon was arranged because of progression of swelling and pain. The leg was very tender and a dusky

discoloration was noted on the upper lateral part of the leg. In addition, the patient was in shock. An emergency fasciotomy was performed and intravenous ceftazidime (1 g every 8 hours) with minocycline (80 mg every 12 hours) was immediately administered. On Day 4 following admission, the dusky discoloration extended to the left knee, with hemorrhagic bullae developing circumferentially in the left leg and dorsal foot. We performed radical debridement of all the necrotic skin and subcutaneous tissue because of the uncontrolled infection. A wound culture revealed *V. vulnificus*. The patient's condition deteriorated further, with erythema extending to the left thigh and inguinal area on Day 6. Therefore, we escalated the antibiotic therapy to cefpirome (2 g every 12 hours) and tigecycline (40 mg every 12 hours) and performed another fasciotomy in the erythematous areas in the inguinal region.

The infection gradually abated. Because of the partial loss of gastrocnemius muscle with exposure of the Achilles tendon, we performed a mesh split-thickness skin graft (with 1:3 expansions) following right latissimus dorsal free flap coverage of the Achilles tendon. The patient was discharged uneventfully on Day 47 and was monitored in the outpatient clinic. Fig. 1 summarizes the clinical course of this disease.

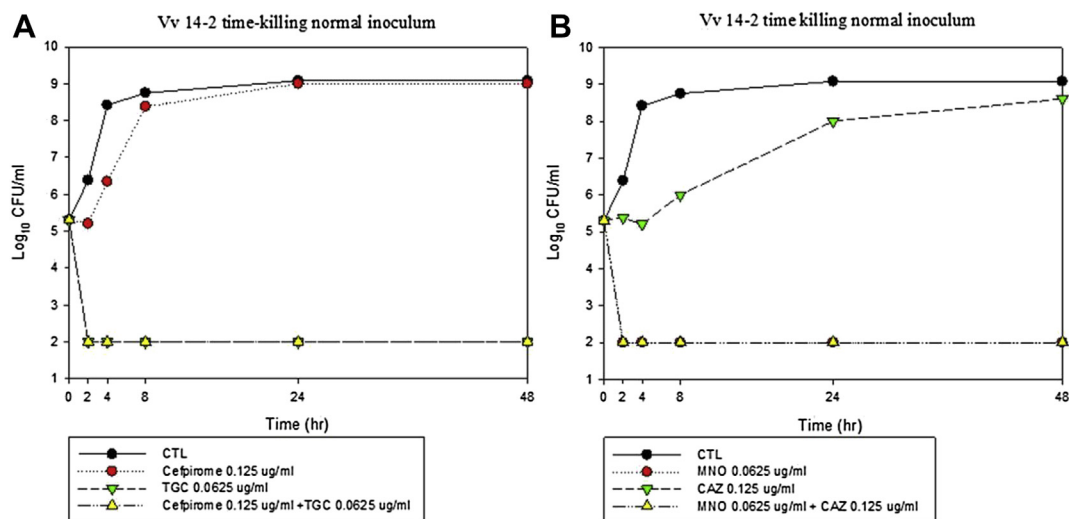


Figure 2. Time-killing curves for 2×10^5 CFU/ml *Vibrio vulnificus* (Vv 14-2) co-cultivated with (A) 1/2 MIC of cefpirome or/and tigecycline alone for 48 hours and (B) 1/2 MIC of ceftazidime and/or minocycline for 48 hours.

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