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Case illustrated

Shewanella cellulitis and bacteremia following marine water exposure

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A 51-year-old man presented with pain, swelling, redness and a blister formation over his left leg. He recently visited the Chandeleur Islands in Gulf of Mexico, where he was fishing from a boat near the shore. He was initially seen at a local facility, where he was prescribed oral dicloxacillin, but no improvement was noted. He denied any recent trauma, cuts or bites. Physical examination revealed temperature of 38.1 °C and an erythematous and swollen left leg with fluid filled blisters with no areas of necrosis (Fig. 1A,B). Laboratory findings were significant for elevated WBC count (16 K/mm^3) with 86% neutrophils. Blood cultures and fluid aspirate from a blister yielded gram-negative rods. Blood and MacConckey agar grew non-fermenting yellowish mucoid bacterial colonies (Fig. 2) that were later identified as *Shewanella putrefaciens* by Vitek ®2 (bioMérieux). Susceptibility panel showed resistance only to penicillin. The patient was treated with piperacillin-tazobactam with marked clinical improvement and clearance of bacteremia. Then he was switched to oral levofloxacin to complete a 14-day course of treatment. At 3-week follow-up, examination revealed complete resolution of skin lesions.

Shewanella spp. is a non-fermenter gram-negative rod that is naturally present in marine water and soil. It has been also isolated from fish, sewage and carcasses [1,2]. Initially isolated at the beginning of the past century from putrefied butter, its name has changed throughout the decades from *Achromobacter putrefaciens*, *Pseudomonas putrefaciens*, *Alteromonas putrefaciens* and finally *Shewanella spp*. Human infection is uncommon; however, it can result in a wide variety of syndromes including bacteremia, cellulitis and pneumonia among others [3]. It has similar spectrum of disease to other marine bacteria known to cause disease (*Vibrio spp*. and *Aeromonas spp*.).

Of the 30 species identified, only two have been associated with human disease: *S. putrefaciens* and *S. algae*. [1,4]. Major predisposing factors include hepatobiliary disease, peripheral vascular disease, chronic leg ulcers, and immunocompromised states [1,2]. Most infections are treated with surgical drainage and antibacterials. *Shewanella* spp. has shown resistance to penicillin, but it is usually susceptible to ampicillin-sulbactam, piperacillin-tazobactam, cephalosporins, aminoglycosides and fluoroquinolones [2]. It is important to know that resistance to imipenem by a carbapenem-hydrolyzing Ambler class D beta-lactamase OXA-55 has been found in Shewanella algae [5]. Overall mortality rate can be as high as 20–30% [6]. Although rare, *Shewanella* infection should be considered in patients with exposure to marine environment.

Conflict of interest

None of the authors reports a conflict of interest, and there were no funding sources.

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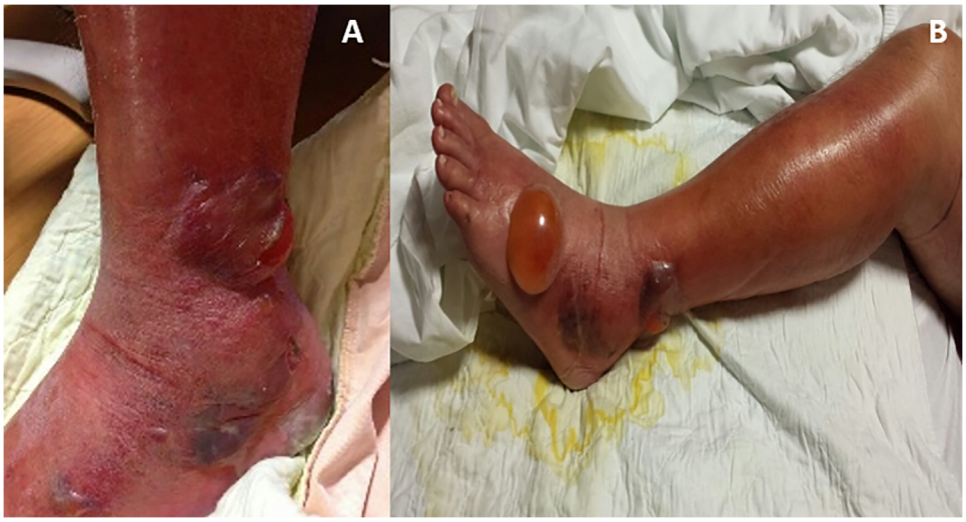

Fig. 1. A) Cellulitis on hospital day 1 with erythema, edema and blisters. B) Swelling and blisters on the same leg on hospital day 3.

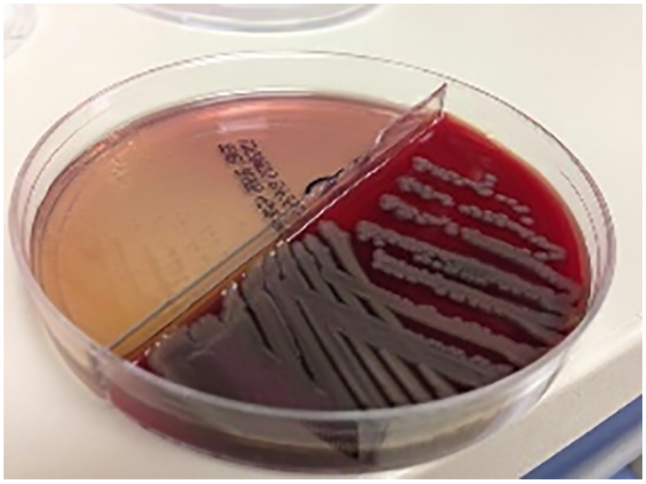

Fig. 2. Yellowish mucoid colonies of *Shewanella putrefaciens* in MacConckey (left) and blood agar (right).

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