**Background**

- *Shewanella algae* is a motile Gram-negative bacillus
- *S. algae* is a ubiquitous marine microorganism that is an uncommon cause of human disease.
- Naval Special Warfare (NSW) trainees undergo unique physiologic stresses that include prolonged immersion in marine water, most notably during a continuous five-day operational exercise on land and sea with minimal sleep, arduous conditions including poor sanitation and hygiene (“Hell Week”).
- NSW trainees may be uniquely vulnerable to disease from this pathogen.
- We describe the clinical syndromes and outcomes of *Shewanella* infection in NSW trainees.

**Results**

- Five patients were identified with clinical cultures demonstrating *Shewanella algae* consisting of one positive blood culture and five unique wound cultures.
- All isolates were sensitive to ceftriaxone, levofloxacin, piperacillin/tazobactam, trimethoprim-sulfamethoxazole and meropenem.
- The patients were all male between the ages of 21 to 26. (Table 1)
- All of the patients had no prior comorbidities and were otherwise healthy prior to starting NSW training.
- The patients were all male between the ages of 21 to 26. (Table 1)
- Four of the five patients had recently completed Hell Week, and all four presented with skin and soft tissue infections (SSTI). (Table 1)
- Two of the four patients with SSTI had concomitant bacteremia: one patient with cellulitis and *Shewanella* bacteremia, and another patient with a polymicrobial lower extremity necrotizing fasciitis and septic shock, with *Shewanella* and *Vibrio harveyi* in the wound and *V. harveyi* bacteremia. The fifth patient presented after a ruptured tympanic membrane following an eighteen-foot dive and subsequently developed otitis media. (Table 1)
- All patients responded to debridement, if appropriate, and systemic antimicrobial therapy. (Table 1)

**Methods**

- We retrospectively reviewed all cases of *Shewanella* spp. infections at Naval Medical Center San Diego between 2012-2015.

**Discussion**

- *Shewanella algae* may cause invasive and potentially life-threatening infection in immunocompetent hosts.
- Such invasive infections occur in otherwise-healthy NSW trainees in the setting of prolonged physiologic stress.
- Active surveillance is ongoing to monitor for *Shewanella* spp. infections in this population.
- Mitigation strategies are needed to minimize the risk of disease from rare pathogens in demanding military environments.

**Table 1. Case characteristics**

<table>
<thead>
<tr>
<th>Case</th>
<th>Gender/Age</th>
<th>Clinical Presentation</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26/M</td>
<td>Polymicrobial, including <em>S. algae</em>, bilateral lower extremity SSTI and acute focal bacterial nephritis</td>
<td>Completed 14 days initially with piperacillin/tazobactam and finished with levofloxacin</td>
</tr>
<tr>
<td>2</td>
<td>26/M</td>
<td>Left lower extremity <em>Vibrio harveyi</em> and <em>S. algae</em> necrotizing fasciitis</td>
<td>Wide excisional debridement with split thickness skin graft left lower extremities</td>
</tr>
<tr>
<td>3</td>
<td>22/M</td>
<td>Multiple right pre-tibia <em>S. aureus</em> and <em>S. algae</em> abscesses</td>
<td>Incision and drainage with wound vac</td>
</tr>
<tr>
<td>4</td>
<td>21/M</td>
<td>Polymicrobial, including <em>S. algae</em>, bilateral lower extremity SSTI</td>
<td>Completed 14 days initially with ceftazolin plus and then finished with clindamycin</td>
</tr>
<tr>
<td>5</td>
<td>21/M</td>
<td><em>S. algae</em> and <em>P. aeruginosa</em> otitis media following a ruptured right tympanic membrane</td>
<td>Local wound care</td>
</tr>
</tbody>
</table>

**References**


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