POST-TRAUMATIC OSTEOMYELITIS DUE TO AEROMONAS SPECIES

We report a case of Aeromonas osteomyelitis due to injury in a sewage worker. He presented with cellulitis of the left foot. Radiographs showed evidence of osteomyelitis involving the head and neck of the fifth metatarsal. Aeromonas species was isolated from the tissue and swab from the foot. The head and neck of the fifth metatarsal were excised and the patient improved on 4 weeks of intravenous meropenem followed by 4 weeks of oral clindamycin and ciprofloxacin.

Key words: Aeromonas, osteomyelitis

Aeromonas is a low-virulence gram-negative bacillus.[1] Clinical infections include gastroenteritis, skin and soft tissue infections and bacteremia.[2] With advances in the identification and molecular taxonomy of Aeromonas species, these organisms, which are widely distributed in the environment, are increasingly being recognised as human pathogens.[2]

Aeromonas is a rare cause of cellulitis.[3] Most patients have an underlying illness. However, even healthy patients can acquire infections due to aeromonas species.
**Aeromonas hydrophila** is a widely prevalent species and is capable of affecting immunocompetent people as well.

Aeromonas infections of the foot are caused mostly by post-traumatic incidence, occurring mostly during the summer months. Serious complications such as osteomyelitis and amputation can result if the infections go untreated or are inadequately treated.  

**Case Report**

A gentleman in his mid-forties, sewage worker by occupation, sustained a penetrating injury to the left foot while climbing out of a sewer. The patient was prophylactically started on augmentin and metronidazole and had 1 week of this. However, the wound became infected and was not improving.

On presentation to the hospital, the patient was apyrexial and the white cell count was normal. The patient was a smoker and there was no other significant past history. On examination, there was cellulitis on the plantar aspect of the left foot with associated abscess.

Incision and drainage and tissue debridement of the abscess was performed. The antibiotics were then initially changed to intravenous cefuroxime and ciprofloxacin but the patient still did not show improvement. Hence, the antibiotics were changed to intravenous meropenem to provide a very broad antibiotic cover.

Tissue and swab from the left foot showed heavy pure growth of a gram-negative bacilli that was haemolytic, non-lactose fermenting and oxidase positive. It was identified as *Aeromonas* species by the VITEK system of identification. Antibiotic sensitivities showed that it was resistant to amoxicillin but sensitive to ciprofloxacin, gentamicin, augmentin, cefuroxime, cefotaxime, timentin, tazocin, imipenem and meropenem. Antibiotic deescalation was not performed because the patient had not improved on antibiotics like augmentin, cefuroxime and ciprofloxacin that were administered previously.

Radiographs showed evidence of osteomyelitis involving the head and the neck of the fifth metatarsal. The wound edges were debrided and the head and neck of the fifth metatarsal were excised.

A follow-up magnetic resonance scan of the foot was performed after the surgery, which did not show evidence of osteomyelitis in the remaining non-excised part of the shaft of the fifth metatarsal but showed a small 12 mm diameter abscess collection in the mid-shafts of the fourth and fifth metatarsals. He underwent further surgery following which the wound healed.

There was a very good liaison between the clinicians and the microbiologists throughout the course of treatment and broad spectrum antibiotics were used in the best interests of the patient. The patient improved on intravenous meropenem, which was continued for 4 weeks. Subsequent wound swabs did not grow *Aeromonas*.

The patient was discharged and advised to continue on oral clindamycin and ciprofloxacin for 4 weeks. Clindamycin was used along with ciprofloxacin because both the orthopaedic doctors and microbiologists wanted to treat this as a potentially mixed infection because the patient did not respond to many antibiotics during the course of his treatment, although this may have been due to the fact that surgery along with antibiotic therapy is the cure to these types of infections rather than antibiotics alone. At follow-up, he had made an excellent recovery, with complete healing of the wound and no evidence of continuing infection.

**Discussion**

*Aeromonas* species are gram-negative, non-spore-forming facultative anaerobic rods that are usually beta haemolytic on blood agar and ferment carbohydrates with acid and gas production. They are oxidase positive and this test distinguishes these organisms from the oxidase-negative Enterobacteriaceae. Most aeromonas soft tissue infections are caused by *A. hydrophila*. Trauma followed by exposure to fresh water usually, but not invariably, precedes infection. Identification of *Aeromonas* to the genus level is not difficult. Many automated systems (and consequently many clinical laboratories) proceed no further, reporting an *Aeromonas* isolate as “*Aeromonas* species” or “*Aeromonas hydrophila* complex”.

Fourteen species of *Aeromonas* have been described, most of which have been associated with human diseases. The most important pathogens are *A. hydrophila*, *A. caviae* and *A. veronii biovar sobria*. The organisms are ubiquitous in fresh and brackish water.

Antibiotics, such as third-generation cephalosporins, imipenem, aztreonam, cotrimoxazole, tetracycline, chloramphenicol, quinolones and aminoglycosides (except streptomycin), are usually very active against these organisms in vitro. Surgery is often necessary to cure the process.  

**References**


*L Gunasekaran, S Ambalkar, RA Samarji, A Qamruddin
Department of Microbiology, Manchester Royal Infirmary, Oxford Road, Manchester, Post Code: M13 9WL, UK

*Corresponding author (e-mail: <lakshmipriya6@hotmail.com>)
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