**Aeromonas veronii** co-infection eye and skin: Case report

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ABSTRACT

**Introduction:** *Aeromonas* species are uncommon pathogens in sepsis and cause substantial mortality if not treated. Asia has the highest incidence of infection from *Aeromonas*, but no reports from Saudi Arabia. Also, this organism causes a combination of eye and skin infections.

**Case Report:** We here present a Bangladeshi male patient who developed bilateral eye globe rupture with thigh cellulitis, found after investigations that he was infected with *Aeromonas veronii* that grows in blood and skin culture.

**Conclusion:** This is a rare case of infection, probably the first to be reported in Saudi Arabia, caused by *A. veronii* in the eye following lower limb cellulitis. A finding of *Aeromonas* must alert the clinician to the possibility of severe sepsis.

**Keywords:** *Aeromonas veronii*, Bacteremia, Eye infection, Sepsis

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**INTRODUCTION**

*Aeromonas* species are Gram-negative, bacilli-shaped bacteria that are ubiquitous in the marine environment, such as fresh or brackish water, sewage, soil, and tap water in temperate or subtropical countries [1]. *Aeromonas veronii*, a member of the genus *Aeromonads*, is widely distributed in nature, with strong environmental adaptability [2] which has been recovered from human wounds, feces, sputum, and fish ulcerative lesions [3].

The gastrointestinal tract is the most common site of infections caused by *Aeromonas* spp. [4]. *Aeromonas* also causes some extraintestinal infections which are associated with diseases such as empyema, urinary tract infections, biliary tract infections, peritonitis, and skin and soft-tissue infections have also been reported [5–12]. Moreover, bacteremia is another common type of infection caused by *Aeromonas* species [13]. Also, *Aeromonas* species must be considered one of the causative pathogens of healthcare-associated bacteremia, particularly in immunocompromised patients. Also, it can be linked with high fatality. Cancer and initial shock are poor prognostic factors [1].

Prior research shows that the pathogenicity of *Aeromonas* includes many factors that work together. There has been a diversity of proven virulence factors, including outer membrane proteins, motility related factors, toxins, proteases, quorum sensing systems, secretion systems, and iron ion acquisition systems, among others [14, 15].

In Saudi Arabia, this is the first case report of this infection in the eye, and up to our knowledge globally, especially that the patient initially had cellulitis.

**CASE REPORT**

A 41-year-old Bangladeshi male, not known to have any chronic medical illness, presented to the emergency department with a history of bilateral vision loss for one day of duration associated with thigh swelling.
He also complained of vomiting, diarrhea, and headache for the last five days. He sought medical advice in another hospital two days before his presentation and found mange with oral antibiotics and analgesia.

The physical exam was notable mainly for his eyes which showed edematous tense lid, conjunctival chemosis, no light perception bilaterally, dislocated lens, perforated sclera, with Hazy fundus (Figure 1). Also, he had cellulitis in his left thigh (Figure 2). He was febrile and tachycardiac but maintaining his blood pressure with intravenous fluids.

The patient admitted for more investigation and to treat his sepsis, starting on broad-spectrum antibiotics in the form of (Meropenem and Vancomycin). His investigations showed neutrophilic leukocytosis, thrombocytopenia, renal impairment, and mild liver impairment.

We screen him for malaria and dengue fever, and the report was negative. Also, we screen him for HIV and it was negative. Two sets of blood culture were positive for *A. veronii* (Figures 3 and 4), and antibiotics changed upon sensitivity.

The patient was treated in Ophthalmology and Dermatology. Ophthalmology managed him with antibiotics eye drops with systematic intravenous (IV) antibiotics without any surgical intervention. It was a late presentation. A skin biopsy of the patient was taken in Dermatology, and the histopathological results were hemorrhagic subepidermal bullous, secondary to infection and the culture showed *A. veronii*.

**DISCUSSION**

There are numerous *Aeromonas* species, few of them related to human extraintestinal infections [16].

More than 85% of *Aeromonas*-implicated clinical diseases are caused by the *Aeromonas hydrophila*, *Aeromonas caviae*, and *A. veronii* biovar sobria [17]. These infections are acquired in both community
and hospital settings, and both immunocompetent and immunocompromised patients are susceptible. *Aeromonas* species can cause invasive and fatal infections in immunocompromised hosts and have been recognized as a serious threat to human beings [18]. *Aeromonas veronii* can cause infection ranging from skin to sepsis [19].

Sepsis is possibly the most relevant *Aeromonas* infection in terms of severity and frequency and is associated with several underlying diseases, especially immunocompromised or cancer patients [19].

In this case report, our patient was immunocompetent, and he did not receive any immunosuppressant medications. Although he developed sepsis in his eye, causing acute compartment syndrome with bilateral rupture globe, it is the first report for this organism to cause such complication.

*Aeromonas* species can carry and acquire antimicrobial resistance (AMR) elements, and presently multi-drug resistant (MDR). *Aeromonas* isolates are commonly found across the world. *Aeromonas veronii* strain MS-17-88 is an MDR strain isolated from catfish in the southeastern United States [20]. Our patient was initially managed with broad-spectrum antibiotics in the form of Vancomycin and Meropenem. The blood culture of two sets came with *A. veronii*, which is Carbapenem-resistant but, Cefazidine sensitive. So, we changed the Meropenem to Cefazidine. Still, unfortunately, the patient died the next day because of a septic shock.

**CONCLUSION**

Our case report highlights that infections caused by *Aeromonas* can lead to life-threatening clinical conditions and significant organ involvement like eye with laboratory alterations. The presence of infection from *Aeromonas* should also alert clinicians to the possibility of severe sepsis.

**REFERENCES**


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**Author Contributions**

Fatimah Alibrahim – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the
version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Abeer Moqebel – Conception of the work, Acquisition of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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