

# *Aeromonas hydrophila* bacteremia in a patient on dialysis: a case report

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**Background:** *Aeromonas hydrophila*, typically found in aquatic environments, is recognized as an infrequent yet significant etiological agent of bloodstream infections.

**Case presentation:** This case report documents a 61-year-old male undergoing hemodialysis for end-stage renal disease who presented with fever, edema, and laboratory abnormalities indicative of renal dysfunction and inflammation. Blood cultures revealed *Aeromonas hydrophila* growth, emphasizing the importance of considering this pathogen in dialysis patients with bloodstream infections. The patient's immunocompromised state due to renal disease and diabetes, coupled with frequent medical interventions like dialysis, created a conducive environment for opportunistic infections. Laboratory findings of proteinuria, glucosuria, and electrolyte imbalances further underscored the patient's susceptibility to infection. This case highlights the intricate interplay between underlying comorbidities and immune compromise in predisposing individuals to *Aeromonas hydrophila* bloodstream infection. Prompt recognition and appropriate antibiotic therapy are crucial for managing such cases.

**Conclusion:** Healthcare practitioners should maintain vigilance for unusual pathogens in immunocompromised patients, particularly those undergoing dialysis, to ensure timely diagnosis and treatment, thus optimizing patient outcomes.

**Keywords:** *Aeromonas hydrophila*, bacteremia, dialysis, end-stage renal disease, diabetes mellitus

## Introduction

*Aeromonas hydrophila*, classified as a Gram-negative bacillus, predominantly inhabits aquatic environments. According to Janda & Abbott, 2010 Although commonly linked to gastroenteritis and soft tissue infections, its association with invasive bloodstream infections is infrequent. However, immunocompromised individuals, particularly those with end-stage renal disease undergoing dialysis, face an elevated risk of such infections. According to Parker, J. L. & Shaw J. G., 2011 this susceptibility arises from compromised host defenses and frequent exposure to medical interventions, creating an environment conducive to opportunistic pathogens like *Aeromonas hydrophila*. An illustrative case report highlights the relevance of acknowledging *Aeromonas hydrophila* as a potential etiological agent in bloodstream infections among dialysis patients. This emphasizes the necessity for healthcare practitioners to include this pathogen in the differential diagnosis when faced with bloodstream infections in similar clinical contexts. The literature underscores the uncommon occurrence of *Aeromonas hydrophila* in bloodstream infections, emphasizing the importance of vigilance in high-risk populations. Immunocompromised patients on dialysis necessitate special attention due to their compromised immune status and repeated medical exposures, increasing their vulnerability to opportunistic infections.

## Case presentation

A 61-year-old male presented to the emergency department with a complaint of high-grade fever with chills, and bilateral lower limb edema. He had a past medical history significant for type 2 diabetes mellitus, hypertension, and a cerebrovascular accident resulting in left hemiparesis eight years ago. The patient was receiving hemodialysis for Chronic Kidney Disease. On examination, the cardiovascular and respiratory systems were normal. Vitals on admission were notable for a pulse of 141/minute, blood pressure of 160/80 mmHg, and temperature of 99.5°F.

Laboratory investigations revealed significant findings including proteinuria (3+) and glucosuria (1+) on urine analysis. C-reactive protein was elevated at 33.9 mg/dL. Renal function tests demonstrated serum urea of 80 mg/dL, serum creatinine of 7 mg/dL, serum potassium of 5.7 mmol/L, and serum phosphorus of 6.7 mg/dL. Other lab results included elevated alkaline phosphatase (294 U/L) and low hemoglobin (8.5 g/dL) with normal white blood cell count and relative monocytosis.

Blood cultures were obtained, and the growth of a non-lactose fermenter was observed on MacConkey's agar. Biochemical examination and Vitek 2 confirmed the organism as *Aeromonas hydrophila* with good sensitivity to commonly used antibiotics. The patient was initiated on intravenous ciprofloxacin, and dialysis was continued with appropriate adjustments for electrolyte abnormalities.

## Discussion

*Aeromonas hydrophila*, identified as an opportunistic pathogen, exhibits the capacity to induce a range of infections in humans. According to Yumoto et al., 2014 while *Aeromonas hydrophila*-related bacteremia is an uncommon occurrence, it can manifest, especially in individuals facing immunocompromised states or harboring underlying comorbidities. In this particular case, the patient's concurrent conditions of end-stage renal disease, diabetes mellitus, and frequent exposure to dialysis created a predisposing environment for the development of *Aeromonas hydrophila* bloodstream infection. The discovery of proteinuria and glucosuria in urine analysis not only indicates potential renal pathology but also raises the likelihood of the patient's increased susceptibility to infection. Furthermore, electrolyte imbalances, notably hyperkalemia and hyperphosphatemia, prevalent in end-stage renal disease patients, could exacerbate immune compromise. This intricate interplay of underlying health conditions emphasizes the multifactorial nature of the patient's vulnerability to *Aeromonas hydrophila* infection, underscoring the importance of a comprehensive understanding of the patient's medical history and physiological status in diagnosing and managing such cases.

## Conclusion

This case illustrates the importance of considering *Aeromonas hydrophila* as a potential pathogen in patients on dialysis presenting with bloodstream infections. Prompt recognition and appropriate antibiotic therapy are essential for successful management. Clinicians should be vigilant for signs of infection in immunocompromised patients, particularly those with end-stage renal disease, and initiate early diagnostic and therapeutic interventions.

## Author contribution

Jay Singh Arora: Primary treating doctor, Sandeep Shrivastava: reference for cardiac illness, Sakharam Muwel: performed culture and sensitivity test, Sakharam Muwel: performed culture and sensitivity test, Kamlesh Patel, Shitij Shrivastava, Shipra Shrivastava, Sanjay Geed: written the manuscript.

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## Conflict of interest

The author declares no conflict of interest. The manuscript has not been submitted for publication in other journal.

## Ethical concern

We have taken informed consent from the patient and also we have not disclosed the identity of the patient.

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