Published in final edited form as:

Pediatr Dermatol. 2015 ; 32(4): e186–e187. doi:10.1111/pde.12608.

***Achromobacter xylosoxidans* bacteremia and cellulitis: a report of a case**

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Abstract

Achromobacter xylosoxidans is a rare, opportunistic infection most commonly encountered among immunocompromised patients during hospitalization. Primary uncomplicated bacteremia, catheter-associated infections, and pneumonia have been reported as the most common clinical presentations, but skin and soft tissue infections from *A. xylosoxidans* are rare. We describe a case of *A. xylosoxidans* presenting as cellulitis and bacteremia in an immunocompromised patient.

Keywords

Achromobacter xylosoxidans; bacteremia; cellulitis; cutaneous; immunocompromised

Case Report

A 20-year-old man with a history of relapsed acute lymphoid leukemia developed exquisite neck tenderness and septic shock during admission for reinduction chemotherapy.

Two months into his prolonged hospital course marked by severe neutropenia (absolute neutrophil count, 0–223 u/L), the patient became febrile and developed pain involving the jaw and left neck. Clinical examination was notable for exquisite tenderness of his left neck. Blood cultures were drawn, and empiric antibiotic coverage with clindamycin and gentamicin were initiated, as he was already receiving cefepime. Blood cultures grew gram-negative rods, and antibiotic coverage was changed to amikacin and imipenem.

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Conflicts of interest: The authors have no relevant conflicts of interest. Dr. Lori A. Kestenbaum is partially funded by T32-AI-055435.

IRB and informed consent: Not applicable for a single case report about a deceased patient.

The following day, he developed septic shock. Skin examination was significant for new ill-defined erythema, extending from his left neck to his left upper chest (Figure).

Blood cultures grew *Achromobacter xylosoxidans* with antibiotic sensitivities noted in the Table. Antibiotic coverage with imipenem was continued.

Culture of a neck aspirate also grew *A. xylosoxidans*. Ultrasound of the left neck revealed enlarged lymph nodes in the superficial soft tissues with no defined fluid collection, while MRI of the neck showed moderate subcutaneous edema and skin thickening with T2 hyperintensity of scattered left neck lymph nodes. An alternative source of infection was not identified. The extensive left neck and chest erythema showed no evidence of epidermal change and was diagnosed as cellulitis due to *A. xylosoxidans* given its ipsilateral localization overlying the bulky lymphadenitis caused by *A. xylosoxidans*.

Blood cultures cleared, but again the patient became bacteremic with *A. xylosoxidans*, and amikacin was added for synergy. Three days later, he died of hypotensive, bradycardic arrest.

Discussion

Achromobacter xylosoxidans is an aerobic, oxidase-positive Gram-negative bacillus that colonizes aquatic environments. Infections involving *A. xylosoxidans* are rare, as it is not a typical component of the normal human flora and is relatively nonpathogenic.

A. xylosoxidans has been described as an opportunistic and emerging pathogen, presenting as a life-threatening illness in patients with hematological neoplasias or solid tumors.¹ Infections involving *A. xylosoxidans* typically present as bacteremia, pneumonia, meningitis, urinary tract infections, abscesses, and osteomyelitis.^{1,2,3} It has also been implicated in nosocomial outbreaks associated with contaminated solutions, pressure transducers, and disinfectants.³

Skin and soft tissue infections due to *A. xylosoxidans* are very unusual. Only sporadic cases have been described, with the true incidence of infection being unknown.⁴

Treatment of *A. xylosoxidans* is difficult due to innate resistance to many available antibiotic agents, with recent research describing intrinsic beta-lactamases and efflux pumps as mechanisms of resistance.⁵ While the optimal therapeutic regimen remains unclear, carbapenems, antipseudomonal penicillins, and trimethoprim-sulfamethoxazole are generally considered the agents of choice until results of susceptibility tests are available.^{3,4} Case reports have detailed use of promising combination therapy to treat *A. xylosoxidans*, including trimethoprim-sulfamethoxazole in combination with gentamicin, piperacillin, or azithromycin.³ Despite nearly uniform resistance of *A. xylosoxidans* to aminoglycosides, combinations of aminoglycosides and beta-lactams have also demonstrated additive and synergistic effects.³ However, no large series exist to demonstrate clear benefit.

Our case highlights the importance of *A. xylosoxidans* in skin and soft tissue infections, especially among immunocompromised patients.

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Figure.
Ill-defined erythema extending from patient's left neck (red arrow) to left upper chest (black arrows).

Table

Results of antimicrobial susceptibility testing of *Achromobacter xylosoxidans* isolated from patient's blood culture.

Antibiotic	Resistance Profile	MIC (µg/mL)
Amikacin	R	64
Cefepime	I	16
Ceftazidime	S	4
Ciprofloxacin	I	64
Gentamicin	R	2
Imipenem	S	16
Meropenem	S	1
Piperacillin-tazobactam	S	0.25
Tobramycin	I	8
Trimethoprim-sulfamethoxazole	S	20