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Closing the Brief Case: Recurrent *Chromobacterium violaceum* Bloodstream Infection in a Glucose-6-Phosphate Dehydrogenase (G6PD)-Deficient Patient with a Severe Neutrophil Defect

Phyu M. Thwe,[a] Daniel A. Ortiz,[a] Alyssa L. Wankewicz,[b] J. Patrik Hornak,[c] Natalie Williams-Bouyer,[a] Ping Ren[a]

[a]Department of Pathology, University of Texas Medical Branch, Galveston, Texas, USA
[b]Department of Infectious Diseases, University of Texas Medical Branch, Galveston, Texas, USA
[c]Department of Internal Medicine, University of Texas Medical Branch, Galveston, Texas, USA

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ANSWERS TO SELF-ASSESSMENT QUESTIONS

1. What antibiotic would be ineffective in treating *Chromobacterium violaceum* infection?
    a. Imipenem
    b. Colistin
    c. Ciprofloxacin
    d. Trimethoprim-sulfamethoxazole

    Answer: b. The organism is known to be resistant to colistin. One of the mechanisms is modification of the lipid A component in lipopolysaccharide (LPS) of the organism. Carbapenems, such as meropenem and imipenem, are shown to be effective in treating *C. violaceum* infection. Ciprofloxacin and trimethoprim-sulfamethoxazole are also reported to be effective against *C. violaceum*.

2. Which condition is not shown to be a predisposition for *Chromobacterium violaceum* infection?
    a. Chronic granulomatous disease
    b. Diabetes
    c. Factor VIII deficiency
    d. Glucose-6-phosphate dehydrogenase deficiency

    Answer: c. Chronic granulomatous disease (CGD) is one of the most commonly reported predisposing factors associated with *C. violaceum* infection due to a defect in the intracellular bactericidal activity. Additionally, individuals with G6PD deficiency with neutrophil dysfunction, like our patient, or diabetes are highly susceptible to *C. violaceum* infection. Factor VIII deficiency is a genetic disorder due to a defect in clotting factor VIII and is not known to be associated with *C. violaceum* infection.

3. What activity is associated with *Chromobacterium violaceum* infection?
    a. Inhaling cigarette smoke
    b. Eating raw oysters
    c. Drinking unpasteurized milk
    d. Swimming in a creek

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Address correspondence to Ping Ren, piren@utmb.edu.

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Answer: d. As *C. violaceum* is an environmental pathogen and is commonly found in soil and water (rivers, creeks, and streams), cuts/wounds during swimming in creeks or rivers are associated with *C. violaceum* infection. Inhaling cigarette smoke will not cause *C. violaceum* infection, as it is not an airborne pathogen. Eating raw oysters and drinking unpasteurized milk are not known to cause *C. violaceum* infection.

TAKE-HOME POINTS

- *Chromobacterium violaceum* is an environmental organism found in soil and water. Violet-pigmented colonies are the distinct morphological characteristic of the organism, although nonpigmented colonies can appear in subsequent cultures.
- The primary port of entry for *C. violaceum* infection is via open wounds from exposure to contaminated water or soil.
- Glucose-6-phosphate dehydrogenase (G6PD) deficiency, chronic granulomatous disease (CGD), and diabetes are predisposing risk factors for *C. violaceum* infection.
- *C. violaceum* is an uncommon opportunistic pathogen associated with severe sepsis and mortality.
- *C. violaceum* is resistant to several β-lactam antibiotics and colistin.