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

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KEYWORDS *Chromobacterium violaceum*, glucose-6-phosphate dehydrogenase (G6PD), antibiotic resistance

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

Citation Thwe PM, Ortiz DA, Wankewicz AL, Hornak JP, Williams-Bouyer N, Ren P. 2020. Closing the Brief Case: Recurrent *Chromobacterium violaceum* bloodstream infection in a glucose-6-phosphate dehydrogenase (G6PD)-deficient patient with a severe neutrophil defect. J Clin Microbiol 58:e00314-19. <https://doi.org/10.1128/JCM.00314-19>.

Editor Carey-Ann D. Burnham, Washington University School of Medicine

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See <https://doi.org/10.1128/JCM.00312-19> in this issue for case presentation and discussion.

Published 28 January 2020

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.