



Closing the Brief Case: *Erysipelothrix* Bacteremia and Endocarditis in a 59-Year-Old Immunocompromised Male on Chronic High-Dose Steroids

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KEYWORDS *Erysipelothrix*, endocarditis, vancomycin resistance

ANSWERS TO SELF-ASSESSMENT QUESTIONS

1. Which of the following exposures is associated with the highest risk of *Erysipelothrix rhusiopathiae* exposure and subsequent infection?
 - a. Sustaining a cut while working in an abattoir
 - b. Consuming unpasteurized dairy products
 - c. Hunting game in a wooded area
 - d. Harvesting crops on a farm

Answer: a. *Erysipelothrix rhusiopathiae* naturally resides in the digestive tract of numerous animals and is directly transmitted to humans from infected animals through injuries, cuts, and bite wounds. Occupations with significant exposures to animals and animal products, such as veterinarians, abattoir workers, and fish handlers, are at increased risk for exposure and subsequent infection with *E. rhusiopathiae*. Sustaining an injury while working with animal products would, therefore, be an exposure associated with *E. rhusiopathiae* infection, whereas consuming unpasteurized dairy products, hunting game, and harvesting crops are less likely to result in exposure.

2. *Erysipelothrix* spp. exhibit which of the following phenotypes on biochemical tests, differentiating them from other aerobic, non-spore-forming Gram-positive bacilli?
 - a. Catalase (+), beta-hemolytic, H₂S on triple sugar iron (TSI) Agar (–)
 - b. Catalase (+), motility (–), H₂S on TSI Agar (+)
 - c. Catalase (–), alpha-hemolytic, H₂S on TSI Agar (+)
 - d. Catalase (–), motility (+), H₂S on TSI Agar (–)

Answer: c. *E. rhusiopathiae* is non-motile and catalase negative and positive for H₂S production on TSI Agar. *Lactobacillus* spp., which have similar Gram stain and colony morphology to *E. rhusiopathiae*, are negative for TSI Agar but positive for esculin hydrolysis. *Listeria* spp., which have similar Gram-stain morphology, are catalase positive, produce beta-hemolytic colonies on sheep blood agar, and exhibit tumbling motility.

3. Which of the following is the treatment of choice for *Erysipelothrix rhusiopathiae*?
 - a. Penicillin
 - b. Vancomycin
 - c. Clindamycin
 - d. Gentamicin

Citation Jean S, Lainhart W, Yarbrough ML. 2019. Closing the Brief Case: *Erysipelothrix* bacteremia and endocarditis in a 59-year-old immunocompromised male on chronic high-dose steroids. J Clin Microbiol 57:e02032-18. <https://doi.org/10.1128/JCM.02032-18>.

Editor Alexander J. McAdam, Boston Children's Hospital

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See <https://doi.org/10.1128/JCM.02031-18> in this issue for case presentation and discussion.

Published 24 May 2019

Answer: a. The treatment of choice for *Erysipelothrix rhusiopathiae* infections is penicillin. *E. rhusiopathiae* is intrinsically resistant to vancomycin, which is often empiric therapy for Gram-positive organisms. Most *E. rhusiopathiae* isolates are also resistant to aminoglycosides and sulfonamides, precluding their use for treatment. However, clindamycin and fluoroquinolones can be considered in penicillin allergic patients.

TAKE-HOME POINTS

- *Erysipelothrix rhusiopathiae* is a Gram-positive bacillus that can cause a localized or systemic zoonotic infection and is significantly associated with endocarditis in bacteremic patients with exposure to infected animals.
- *E. rhusiopathiae* can be differentiated from other Gram-positive bacilli by its unique ability to produce hydrogen sulfide on triple sugar iron (TSI) agar.
- Accurate identification of *E. rhusiopathiae* is critical, as the organism is intrinsically resistant to vancomycin. Many isolates are also resistant to aminoglycosides and sulfonamides.
- The treatment of choice for *E. rhusiopathiae* infection is penicillin. Although not routinely performed, antimicrobial susceptibility testing should be considered for treatment with alternative agents in penicillin allergic patients.