Closing the Brief Case: Disseminated *Neisseria gonorrhoeae* in an 18-Year-Old Female

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SELF ASSESSMENT QUESTIONS

1. Which of the following specimens is recommended and FDA cleared for nucleic acid amplification testing (NAAT) in suspected cases of disseminated *Neisseria gonorrhoeae*?
 - A. Whole blood
 - B. Urine
 - C. Synovial fluid
 - D. Serum

Answer: B. While patients with disseminated gonococcal infection may be bacteremic, testing of whole blood or plasma for *N. gonorrhoeae* nucleic acids is insensitive. A few studies have shown positive *N. gonorrhoeae* PCR results from joint fluid in cases of gonococcal arthritis, but this source is not FDA cleared on any *N. gonorrhoeae* NAAT platforms. Urine is the only source from the list that is FDA cleared and recommended for *N. gonorrhoeae* NAAT testing. A positive result from urine is considered supportive evidence of disseminated gonococcal infection in the right clinical setting.

2. What is the estimated sensitivity of aerobic culture for the detection of *N. gonorrhoeae* in synovial fluid?
 - A. ~10%
 - B. ~25%
 - C. ~50%
 - D. ~90%

Answer: C. Culture of synovial fluid from the affected joint is insensitive for recovery of *N. gonorrhoeae*. It is thought that the synovial fluid itself may be inhibitory to bacterial growth. Nonetheless, culture is still important to isolate colonies for susceptibility testing. Thus, culture should be performed from aspirated joint fluid in cases of gonococcal arthritis.

3. Which of the following is the recommended treatment for disseminated gonococcal infection?
 - A. Cefpodoxime plus azithromycin
 - B. Ceftriaxone plus doxycycline

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- C. Cefixime plus doxycycline
- D. Ceftriaxone plus azithromycin

Answer: D. All treatment combinations listed other than ceftriaxone plus azithromycin are alternative regimens. If susceptibility to either cefpodoxime or cefixime can be demonstrated, these oral 3rd-generation cephalosporins may be used. In the case of an allergy to azithromycin, doxycycline can be substituted.

TAKE HOME POINTS

- Gonococcal arthritis can be diagnosed through Gram staining and culture of synovial fluid, though both have very limited sensitivity.
- There are no commercially available molecular tests for *Neisseria gonorrhoeae* from synovial fluid. Molecular testing from urogenital sources and/or rectal and pharyngeal sources, if validated, offers a supportive diagnosis when cultures of joint fluid are negative.
- Culture of *Neisseria gonorrhoeae* is still important for antimicrobial susceptibility testing, particularly in cases of disseminated infection.