

**Session Summary for 13 February 2018**

1. Didactic: Spine infections by Dr. John Lynch.
   1. Thoracic > lumbar > cervical.
   2. Lumbar is typically hematogenous.
   3. Posterior epidural abscess more common than anterior.
   4. In spinal epidural abscess:
      1. MSSA > MRSA > GNR > CoNS > Strep.
   5. Risk factors for osteomyelitis and spinal epidural abscess include immunodeficiency from EtOH, HIV, Malignancy, DM, CKD.
   6. In vertebral osteomyelitis:
      1. Staph 39%, GNR 39%, and Strep 19%.
      2. Reasonable empiric tx for both spinal epidural abscess and vertebral osteo are vancomycin and ceftriaxone.
   7. MRI is the most sensitive imaging technique for spinal epidural abscess/ vertebral osteomyelitis
   8. Treatment for spinal epidural abscess includes urgent surgical evaluation
   9. Obtain blood cultures prior to antibiotics (can be positive in up to 50% of vertebral osteomyelitis)
   10. Do not delay antibiotics for spinal epidural abscess or in an unstable patient with vertebral osteomyelitis
   11. For vertebral osteomyelitis and stable, ok to defer abx until bone biopsy is obtained.
   12. Expeditiously obtain bone bx and attempt to narrow coverage.
   13. 30% of patients will have persistent pain at 1 year following therapy.
   14. 6 weeks versus 12 weeks of therapy showed no difference in outcomes for native bone spinal osteo; so prefer 6 weeks.
   15. It is often possible to transition to oral antibiotics with high bioavailability early in the course of therapy.
2. Case presentation on UTI with *Proteus* and VRE
   1. Enterococcus and other GPC are rarely a cause of UTI. With mixed cultures GNR is the more likely pathogen.
      1. When clean catch specimens with a GPC and a GNR were compared to a catheter specimen it was shown that the GPC were typically only found in the clean catch specimen, not the catheter specimen. This suggests that in UTI with mixed GPC and GNR isolates the GNR is the pathogen (3).
   2. Amoxicillin susceptibility can be inferred in enterococcus from PCN susceptibility but not vice versa.
   3. Amoxicillin can be used for treatment of VRE cystitis even if micro reports resistance; this is due to concentration in GU tract and high levels of amoxicillin or ampicillin that can be achieved (1)(2).

**References:**

1. **Heintz, BH; and Halilovic, J. VRE urinary tract infections. Pharmacotherapy, 2010.**

Enterococci are a common cause of urinary tract infections (UTIs) among hospitalized patients. The rising prevalence of vancomycin-resistant enterococci (VRE) is of particular concern within many institutions because of its association with increased mortality and health care costs, as well as limited treatment options. Clinicians need to differentiate between VRE-associated urinary colonization, asymptomatic bacteriuria, and UTIs in order to determine the need for treatment, optimal therapeutic options, and length of therapy. Unnecessary use of antibiotics in patients simply colonized and not infected with VRE in the urine has become a large problem in both hospitals and long-term care facilities. A PubMed-MEDLINE search was conducted to identify all English-language literature published between January 1975 and March 2010 in order to summarize diagnostic criteria and treatment options for VRE UTIs. Several antimicrobials are discussed, with the specific focus on those with the potential to treat VRE UTIs and susceptibility patterns of VRE from urinary sources: ampicillin, amoxicillin, daptomycin, doxycycline, fosfomycin, imipenem-cilastatin, linezolid, nitrofurantoin, penicillin, piperacillin, quinupristin-dalfopristin, tetracycline, and tigecycline. Recommendations for empiric treatment of enterococcal UTIs and definitive treatment of VRE UTIs, including an evidence-based treatment algorithm, are proposed. Ampicillin generally is considered the drug of choice for ampicillin-susceptible enterococcal UTIs, including VRE. Nitrofurantoin, fosfomycin, and doxycycline have intrinsic activity against enterococci, including VRE, and are possible oral options for VRE cystitis. Linezolid and daptomycin should be reserved for confirmed or suspected upper and/or bacteremic VRE UTIs among ampicillin-resistant strains. Use of other antimicrobials, such as quinupristin-dalfopristin and tigecycline, should be evaluated on a case-by-case basis due to concerns of toxicity, resistance, and insufficient supportive data. Additional clinical data are needed to determine the optimal management and duration of therapy for VRE UTIs.

1. **Shah, KJ, Cherabuddi, K. Ampicillin for the treatment of complicated urinary tract infections caused by VRE: A single center university hospital experience. Int. J. Antimicrobial Agents. 2018.**

Vancomycin-resistant enterococci (VRE) are a common cause of urinary tract infections (UTIs) and are typically multidrug resistant, including ampicillin. This retrospective study evaluated outcomes of 84 adult patients hospitalized between January 2007 and December 2015 with ampicillin- and vancomycin-resistant enterococcus isolates causing UTI and treated with ampicillin. Treatment response was classified as clinical cure and microbiological eradication. Clinical cure was achieved in 88.1% (74/84) of patients. In patients with follow-up cultures, microbiological eradication was achieved in 86% (50/58) of patients. Cure rates were similar in patients with indwelling urinary catheters (n = 45) receiving catheter exchange/removal (90.47%; 19/21) versus catheter retention (87.5%; 21/24). Presence of co-morbidities, such as diabetes and chronic kidney disease, were not associated with increased risk of treatment failure. Immunocompromised patients achieved lower cure rates of 78.1% (25/32) compared with 94.2% (49/52) among those without immune impairment (P = 0.038). Presence of an underlying urinary tract abnormality was also associated with a lower cure rate of 71.4% (15/21) compared with 93.7% (59/63) in those without urinary tract abnormalities (P = 0.0135). Overall cure rates remained high in all groups providing good evidence to support ampicillin for the treatment of complicated UTI caused by ampicillin- and vancomycin-resistant enterococci.

1. **Hooton, TM; Roberts, P; Cox, ME; Stapleton, AE. Voided midstream Urine Culture and Acute Cystitis in Premenopausal Women. NEJM. 2013. 369:1883-1891**

