Kentucky Antimicrobial Stewardship Innovation Consortium

Educational Pearl

TMP-SMX vs. *Streptococcus* spp.

Skin and soft tissue infections are typically categorized as either purulent or non-purulent. The most common causative pathogen in purulent skin and soft tissue infections is *Staphylococcus aureus*, whereas the most common causative pathogens in non-purulent skin and soft tissue infections is beta-hemolytic *Streptococcus* spp. (Group A/B/C/G streptococcus). In clinical situations where activity against both is desired, trimethoprim-sulfamethoxazole (TMP-SMX) and a beta-lactam is recommended to treat *S. aureus*, including methicillin-resistant *S. aureus* (MRSA), and beta-hemolytic *Streptococcus* spp., respectively.[1] However, is the beta-lactam really needed?

Does TMP-SMX have activity against beta-hemolytic streptococcus?
Yes, but TMP-SMX was thought to be inactive against beta-hemolytic streptococcus for a long time, explaining recommendations to combine it with a beta-lactam to cover for streptococcus causing non-purulent cellulitis. This belief stemmed from flawed microbiology practices where culture medium used in susceptibility testing contained high thymidine concentrations. Thymidine inhibits TMP-SMX, resulting in false resistance. Contemporary culture medium has low levels of thymidine. In a recent study, TMP-SMX was found to be active against 85 different beta-hemolytic streptococcus isolates. Specific species included *S. pyogenes* (n=49), *S. agalactiae* (n=20), and *S. dysgalactiae* (n=16).[2]

Does clinical data support TMP-SMX efficacy in non-purulent cellulitis?
Yes, oral TMP-SMX (85%) was found to be non-inferior to intramuscular penicillin (85%) in the treatment of impetigo in children.[3] In another randomized controlled trial, no differences in clinical cure were seen between clindamycin and TMP-SMX in patients with uncomplicated skin infections including cellulitis only, abscess only, and mixed cellulitis and abscesses.[4]

Key Takeaways: TMP-SMX monotherapy can be used to treat skin infections where *S. aureus* (including MRSA) and beta-hemolytic *Streptococcus* spp. are a concern. The addition of a beta-lactam to cover for streptococcus is not needed.

References:

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