

**Hospital:** Astria Toppenish Hospital

**Presenter:** Anthony McDonald, PharmD-candidate; Patrick O’Connor, RPh

**Case Description & Background**

Patient presented to the ED with general malaise with nausea and vomiting. On exam, it was noted that the patient’s left lower leg was “red-hot” and while she could move it, it came with great amounts of pain. Patient states that she was feeling well up until the day of presentation. Physical exam notes erythema of the left leg with some pretibial blistering. Thigh was described as very swollen and hot. Patient had strong pedal pulses bilaterally and was negative for femoral nodes. Patient denied sore throat, ear pain, dysuria, diarrhea, constipation, melena, or hematochezia.

Labs (Admit): WBC 22.6, Lactate 2.8

**Course of Treatment**

Day 1 – Admit

Dx: cellulitis of left leg. Hospitalist agrees and decides to admit the patient. Blood cultures were drawn and patient was given 925 mg acetaminophen PR for fever and was empirically started on 2 g ceftriaxone daily and vancomycin 1.5 g BID. Preliminary microbiology report from that evening revealed gram-positive cocci in blood cultures.

Day 2 – WBC 37.5

Patient remained febrile (T-max 102) with significant WBC elevation (WBC 37.5).

Day 3 – WBC 29

Patient listed as improving while still febrile (T-max 102). Surveillance cultures returned negative for MRSA. Erythema and induration noted as improving with redness also improving. Culture results returned pan-sensitive beta-hemolytic group G *Streptococcus* (GGS) at which point vancomycin and ceftriaxone were discontinued. MD requested ID consultation and started penicillin G at 4-million units q4h with the option of adding clindamycin as adjunctive therapy for redness if it doesn’t improve.

Day 4 – WBC 17.7

Patient’s fever improved throughout previous day. ID consult again noted improved condition that shows improvement most likely due to penicillin. She noted that if the patient continues to improve, she can be discharged on oral amoxicillin-clavulanic acid for 10 days.

Day 5 – WBC 13.8

Remarkable clinical improvement noted with significant changes in the erythema and induration. WBC continued to trend downwards. Pharmacy team recommended amoxicillin without clavulanic acid due to increased chances of diarrhea which was agreed upon and plans to discharge the following day were made. After a different hospitalist assumed care, the ID physician started the patient on clindamycin 900 mg q8h to help with redness.

Day 6 – Discharge

Patient was discharged in stable condition with resolution of the cellulitis. The hospitalist discharged the patient with prescriptions for amoxicillin-clavulanic acid 875 mg q12h x7 days and clindamycin 300 mg q8h x7 days.

**Questions for Discussion**

* Is clavulanic acid important in the treatment of GGS in the outpatient setting or would amoxicillin alone be an appropriate choice?
* How important is the role of clindamycin in treatment of erythema due to *Streptococcus*?

UW TASP Recommendations:

Group G and group C strep are both from the same species: *Streptococcus dysgalactiae* subsp. e*quisimilis.* This species is beta-hemolytic, like GAS, and like GAS, can be a colonizer or pathogen. It can cause pharyngitis, bacteremia, septic arthritis, osteomyelitis, meningitis, and many other infections. Like GAS, GGS can contain a virulence factors including the antiphagocytic M protein, streptolysin O, streptolysin S, streptokinase, and exotoxins.

Clavulanic acid is not needed for the treatment of Group G strep - amoxicillin alone is sufficient. Beta-lactamase inhibitors (BLIs - clavulanate, tazobactam, sulbactam) prevent drug degradation by beta-lactamases most commonly found in Gram- negative organisms. The addition of clavulanic acid to amoxicillin enhances enteric Gram-negative coverage and anaerobe activity but does not increase coverage for strep (or Gram-positive bacteria) in general. The risk of diarrhea and dysbiosis is also higher with the addition of clavulanic acid. Our recommendation is to avoid using a BL-BLI combination when a beta-lactam alone provides coverage. Some clinicians like amox-clav due to ease of dosing, but amoxicillin can be given TID so only adds one additional dose per day.

Penicillin and clindamycin in combination are recommended for necrotizing fasciitis due to group A strep (GAS) and clostridial gas gangrene or myonecrosis [1]. Although Group A strep is universally susceptible to penicillin, these deep infections involve the fascial and/or muscle compartments and can potentially lead to life threatening toxic shock syndrome as a complication from invasive group A strep. Clindamycin can suppress streptococcal toxin and cytokine production and inhibits bacterial protein synthesis in addition to the inhibition of cell wall synthesis of penicillin. The increasing profile of GAS resistance to clindamycin is a concern. The role of the combination of penicillin and clindamycin is not well-established outside of invasive Group A strep infections.

REFERENCE:

1. Stevens DL, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious Disease Society of America. Clin Infect Dis 201415;59(2):e10-52.

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