

Week 7

Clinical Decision-Making Discussion

What would be the alternative empiric pharmacological therapy for a 50-year-old male with a history of anaphylaxis to cephalosporins? Explain your rationale.

Alternative empirical pharmacological therapy options are necessary for a male patient who is 50 years of age and has a history of anaphylaxis to cephalosporins. Since the patient has a history of anaphylaxis to cephalosporins, then it is also risky to administer a penicillin antibiotic because penicillins have the same characteristics like mechanism of action, pharmacology, and immunologic factors as cephalosporins (Katzung & Vanderah, 2021). In this case, alternatives include Fluoroquinolones, Macrolides, Aminoglycosides, Carbapenems, or Monobactams.

Compared to cephalosporins, the antibiotic class fluoroquinolones has a distinct chemical structure. Since they are structurally unrelated, there is typically less chance of cross-reactivity. Reactions may arise from pseudoallergic responses brought on by activation of the $M\alpha$ -related G protein-coupled receptor X2 receptor on mast cells rather than from a beta-lactam-related response, making them distinct from cephalosporins in terms of their reaction mechanism (Khan et al, 2022). Nevertheless, it is crucial to remember that fluoroquinolones have a unique set of possible side effects, so before giving them cephalosporins, specific patient factors should be considered (Katzung & Vanderah, 2021).

Another option is to use macrolide antibiotics like erythromycin, clarithromycin, and azithromycin. They are less likely to cause cross-reactivity than cephalosporins because of their distinct chemical structure and mode of action (Katzung & Vanderah, 2021). Certain studies have demonstrated that macrolides cause uncommon allergic reactions (Khan, 2020). Macrolides are frequently prescribed for respiratory tract infections and may be appropriate based on the particular indication for treating the fifty-year-old patient.

Aminoglycosides are a class of antibiotics that function differently from cephalosporins as well. However, in my clinical practice, I have seen that because aminoglycosides, including gentamicin and tobramycin, are usually given intravenously and only for more severe infections, their use may be restricted based on the patient's condition.