BACKGROUND

Only 10 to 20% of patients reporting a history of penicillin allergy are truly allergic when assessed by skin testing. The combined frequency of all rashes (including maculopapular and morbilliform) occurring in patients taking penicillin is estimated at 1% to 4%. (In comparison, rashes associated with ampicillin administration occur in 5.2% to 9.5% of treatment courses.) True anaphylactic reactions to penicillin occur in about 0.004% to 0.015% of courses and are most commonly seen in adults between ages 20 and 49 years. One trial found that the frequency of allergic reactions within 24 hours of cephalosporin administration to patients with a history of penicillin allergy and positive skin test results was 5.6% versus 1.7% for patients with a history of penicillin allergy and negative skin test results. Early reports suggested that the cross-reaction rate may be higher for “first-generation” cephalosporins than for subsequent cephalosporins; however, some early cephalosporins (e.g. cephalothin, cephaloridine, and cefamandole) have a side chain similar to that of penicillin and were often contaminated with penicillin.

CONCLUSIONS

The majority of patients who report a penicillin allergy should tolerate the newer cephalosporins. The approach to a patient with a history of penicillin allergy who requires a cephalosporin should be first to determine the likelihood that the patient had a type-1 reaction to penicillin (see below). An immediate or type-1 allergic response is IgE mediated and typically occurs within one hour of administration. Symptoms include: anaphylaxis and/or hypotension, laryngeal edema, wheezing/bronchospasm, angioedema, urticarial, and hyperperistalsis. If a detailed history does not suggest a true penicillin allergy, then a cephalosporin may be administered. If the history is concerning for a type-1 allergic response, then penicillin skin testing is recommended. When the skin test produces negative results, the cephalosporin may be administered. If the skin test result is positive and an alternate drug cannot be used, then consulting with an Infectious Disease physician is recommended. Please note that neither history nor the penicillin skin test result reliably predict the probability of allergic reactions to cephalosporins in patients with positive histories of penicillin allergy.
Taking a History of Penicillin Allergy – What to Ask

- What was the patient’s age at the time of the reaction?
- Does the patient recall the reaction? If not, who informed them of it?
- How long after beginning penicillin did the reaction begin?
- What were the characteristics of the reaction?
- Were you taking any newly prescribed medications at the time?
- Has the patient taken antibiotics similar to penicillin (for example, amoxicillin, ampicillin, cephalosporins) before or after the reaction? If yes, what was the result?

While penicillin skin testing is not currently available at UPMC Hamot, it is likely to be in the future. Obtaining and documenting an accurate allergy history is a key component to providing patients with optimal treatment. When an antibiotic allergy is documented without a reaction, the pharmacists have been reviewing medications from previous admissions to assess prior tolerance. For example, if a patient has “amoxicillin” listed as an allergy and on a prior admission tolerated pip/tazo, the reaction will state “tolerated pip/tazo”.

REFERENCES


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