



Penicillin allergy and the law



Approximately 10% of the population carries a label of penicillin allergy. However, on evaluation, only a small minority, approximately 5%, of these patients are found to be truly allergic.¹ Subsequently, many patients with a history of penicillin allergy are unnecessarily denied treatment with first-line beta-lactam antibiotics, in favor of less desirable and problematic antibiotics such as fluoroquinolones, vancomycin, and clindamycin. As a result of this prescribing pattern, being labeled penicillin allergic is associated with various poor clinical outcomes such as vancomycin-resistant enterococcus (VRE), *Clostridium difficile* colitis, and methicillin-resistant *Staphylococcus aureus* (MRSA).^{2,3} Additionally, patients with a history of penicillin allergy have increased medical costs and longer hospital stays compared with those without a history of penicillin allergy.³ The negative consequences of misdiagnosis of penicillin allergy reach public health proportion, when one considers the fact that more than 30 million individuals in the United States are mislabeled as penicillin allergic.

Although most patients with a history of penicillin allergy are not allergic, some are truly allergic and at risk of developing allergic reactions to penicillins, including fatal ones.⁴ Therefore, unless proven otherwise (such as with penicillin skin testing followed by oral challenge), it is still standard of care to avoid penicillins in patients reporting a history consistent with possible penicillin allergy. Fear of causing harm and malpractice litigation are legitimate reasons to avoid prescribing penicillins to patients with a history of penicillin allergy. Many clinicians avoid prescribing other beta-lactam antibiotics such as cephalosporins to patients with a history of penicillin allergy.⁵ However, studies have shown little to no evidence of allergic cross-reactivity between penicillins and other beta-lactams.^{6,7} Therefore, prescribing cephalosporins to patients with a history of penicillin allergy is not inappropriate, and the clinical/legal scenario of cephalosporin-related allergic reactions occurring in patients with a history of penicillin allergy is not as straightforward as penicillin-induced reactions in patients with a history of penicillin allergy. Clearly, allergic reactions to cephalosporins may occur independent of penicillin allergy and may not reflect allergic cross-reactivity.

Jeffres et al, published in this issue of *Annals of Allergy, Asthma and Immunology*, took an unusual and unique approach of analyzing US federal and state legal cases in which patients with a known history of penicillin allergy received a beta-lactam antibiotic and developed an adverse event.⁸ The authors systematically reviewed legal databases and found 27 cases fulfilling these criteria, ranging from 1959 to 2013. Eighteen cases involved receipt of penicillins, 7 cases involved receipt of cephalosporins, and 2 cases involved receipt of carbapenems. Fifteen cases had published legal outcomes, and among those, the plaintiff prevailed in only 3 of 10 (penicillins), 1 of 4

(cephalosporins), and 0 of 1 (carbapenems) cases. The authors concluded that defendants were rarely found liable in medical negligence cases in which patients with known history of penicillin allergy received beta-lactam antibiotics.

The findings are somewhat surprising, but reassuring, especially when it comes to cephalosporin treatment of patients with history of penicillin allergy, which is a common clinical occurrence. Interestingly, in cases in which the defense successfully moved for summary judgment, judges cited a lack of scientific evidence demonstrating that cephalosporins were contraindicated for patients with a history of penicillin allergy. The fear of litigation for prescribing cephalosporins or other beta-lactam antibiotics to patients with a history of penicillin allergy is not unwarranted, because antibiotic allergies are the most common medication error associated with litigation,⁹ and approximately 10% of medication-related malpractice claims involve penicillin.¹⁰ Also, cephalosporin package inserts warn against cross-reactivity between penicillins and cephalosporins. Conversely, evidence-based guidelines allow cephalosporin treatment of patients with a history of penicillin allergy.^{6,7}

This novel review of legal databases is the first of its kind, and, although noteworthy, it has several limitations. Most importantly, as the authors point out, most lawsuits are never reported or published, and there is no universal searchable database. Hence, the cases presented in the article represent only the tip of the iceberg, and knowing how many total cases fulfilling the inclusion criteria exist is impossible. Additionally, because the cases included in the analysis were not randomly selected, the results may not be representative of a larger sample.

Development of a more comprehensive database of legal cases would allow more complete and informative analyses. Although legal documents are unlikely to present data in scientific fashion as is routine in medical publications, and this may limit their usefulness, malpractice cases may unearth information that may otherwise never become known, such as fatal drug-allergic reactions. Hence, legal cases are a resource that may be worthwhile tapping into.

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