



# Antibiotic Allergy from the Perspective of Infectious Disease Physicians

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To Editor,

Antibiotics are the most common class of medications that patients reportedly become allergic to. The estimated rate of real antibiotic allergy varies widely in the literature (1, 2). A high number of allergic reactions are unconfirmed and often self-reported (3). Nevertheless, these patients are labeled as allergic to antibiotics. A label for antibiotic allergy in clinical settings changes the management of future infectious diseases for that patient. Infectious disease physicians have a key role in deciding the antibiotic of choice in hospitalized patients. The patient's history of antibiotic allergy and the physicians' knowledge of antibiotic allergy have an impact on the antibiotic management plan. It is therefore undeniable that labeling patients with an antibiotic allergy is an important issue in daily clinical practice. Antibiotic options for patients reporting an antibiotic allergy are very limited and many physicians prescribe broad-spectrum antibiotics, which may result in increased adverse events and antibiotic resistance (4). It is very important to diagnose antibiotic allergy correctly to come up with an effective treatment in suspected antibiotic allergy cases. All in all, to better understand infectious disease physicians' management plans and knowledge of antibiotic allergies, it is important to implement a better and standardized algorithm for antibiotic allergic hospitalized patients in the future. The aim of this study was to determine the attitudes and experiences of adult / pediatric infectious disease specialists on antibiotic allergy management. Therefore, after getting approval from the

local ethics committee (Koç University Ethics Committee, 2019.021.IRB2.010), a 20-item questionnaire in open-label and multiple choice formats has been developed and sent to members of The Infectious Diseases and Clinical Microbiology Society of Turkey (KLİMİK) by using the society e-mail network. Specialists included adult and pediatric infectious disease specialists across Turkey who prescribe antibiotics for 30 or more patients per year. Out of 800 KLİMİK members who meet the inclusion criteria, 124 specialists and registrars practicing as adult (95%) or pediatric (5%) infectious disease physicians have responded to the e-mail by answering questions.

Fifty percent of the responders reported that they saw more than four allergic reactions per year due to antibiotics. Ampicillin-sulbactam (45%), amoxicillin-clavulanate (29%), ciprofloxacin (25%), and ceftriaxone (22%) were the most common antibiotics reported by the physicians to cause allergic reactions. Antibiotic allergy was more common in adults (49%) and young adults (31%) whose ages were between 18-65 years. Antibiotic allergy prevalence was higher in patients using antibiotics via the intravenous (IV) route. The most common findings included urticaria (73%), maculopapular rash (72%), and diarrhea (47%). Allergic reactions were also more common in hospitalized patients who were using multiple antibiotics.

Seven percent of the physicians reported death due to antibiotic use within 5 years. Eighty-eight percent of the

physicians were questioning their patient's allergy history before prescribing any antibiotics. They edited the antibiotic prescription when the patient had a prior history of anaphylaxis, urticaria, antibiotic allergy, or asthma. Eighty-eight percent of the physicians were not using the penicillin test to confirm the allergy diagnosis. The group that performs penicillin testing was using benzathine penicillin and procaine penicillin for testing. Fifty-six percent of the physicians were not using cephalosporins whereas 21% of them were not using carbapenems in penicillin-allergic patients. Forty five percent of the patients had used the suspected antibiotic before and 41% of the patients did not remember the use of the suspected drug. Only 29% of the physicians were consulting with the allergy department about their patients who reported antibiotic allergy. Sixty percent of the physicians were using antihistamines and steroids for the emergency treatment of anaphylaxis.

The present survey showed that infectious diseases physicians in Turkey have a high exposure rate to allergic reactions due to antibiotics. Penicillin has been reported as the most common antibiotic that causes allergic reactions. Antibiotic allergy was more common in adults and hospitalized patients who were using multiple IV antibiotics. However, the evaluation rate of the individuals with a reported penicillin allergy or allergy to other antibiotics is very low. The cooperation rate with the allergy department is also low. Due to a fear of experiencing a potentially severe or fatal allergic reaction after penicillin reuse, clinicians tend to avoid prescribing penicillin, cephalosporin, and carbapenems. However, studies have shown that allergy labeling is associated with an increased length of stay, receiving multiple antibiotics, worse outcomes, and increased use of broad-spectrum drugs in hospitalized patients with a penicillin allergy history (3, 5, 6). An accurate assessment is therefore very important. Such an accurate assessment involves an understanding of the allergy and risk assessment. The diagnosis should be based on a careful history, physical examination with skin testing, and graded challenges (3). According to the risk assessment, alternative drugs or desensitization protocols can also be used.

The Infectious Diseases Society of America (IDSA) proposes the incorporation of antibiotic allergy assessment into stewardship programs (7). The antibiotic allergy de-labeling programs have been shown to be effective in removing >90% of patient labels (8). There needs to be strong cooperation with allergy and infectious disease

divisions to prepare standardized care algorithms in patients with an antibiotic allergy label. In this survey, only 29% of the responders were consulting with the allergy department about their patients who reported antibiotic allergy, eighty eight percent of physicians were not using the penicillin test to confirm an allergy diagnosis, and the group doing penicillin testing was not using correct reagents for testing. Only 19% of the responders were using IM adrenaline for emergency treatment of anaphylaxis. Clinicians should review their antibiotic allergy and anaphylaxis management knowledge to provide better care for these patients.

In conclusion, while further work is necessary to improve the standards of evaluation for antibiotic allergies within the daily infectious disease clinical practice, the survey results suggest that there is an educational gap in antibiotic allergy management in Turkey. Clinical guidelines and cooperation with the allergy department will help to improve care for patients who are labeled with an antibiotic allergy in infectious disease clinical practice.

#### Implications of the survey:

- Antibiotic allergy label is a significant health issue in infectious disease clinics.
- Appropriate assessment and allergy testing is necessary for suspected antibiotic allergy cases.
- Penicillin allergy assessment and anaphylaxis management guidelines can be used routinely in infectious disease clinics.
- Cooperation with the allergy department is needed for better care of patients with antibiotic allergy labels.

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