Letter to the Editor

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Penicillin Determinants in the Diagnosis of Immediate Hypersensitivity Reactions to β-Lactams

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Dear Sir,

The article by Lin et al. [1] provides conclusions concerning the relevance of skin test determinants of amoxicillin in subjects with hypersensitivity reactions to β-lactams. The authors state that inclusion of the amoxicillin determinants identifies a group of allergic individuals who may otherwise not be diagnosed in a conventional panel. We believe this to be the first report in the American literature to document the value of skin testing with amoxicillin determinants.

Since the first report of side chain-specific reactions [2], a number of studies have periodically appeared supporting the role of amoxicillin. Because amoxicillin is the most frequently prescribed β-lactam around the world, questions arose as to whether this antibiotic induced selective responses in other populations. There is evidence from the late 1970s of skin test responses to semisynthetic penicillins, though there were just a few and no systematic studies were undertaken at the time [3]. In fact, it was not until the late 1980s that systematic evidence was provided. Several studies demonstrated that the relevant part of the amoxicillin molecule was the side chain and that this contributed to the antigenic determinants. Since then, the European Academy of Allergy has made important efforts to establish a consensus on the diagnostic evaluation of patients with allergic reactions to β-lactams [4], as well as to improve both in vitro and in vivo assays for the diagnosis of immediate hypersensitivity to β-lactams.

One significant aspect of immediate hypersensitivity reactions to amoxicillin determinants, as compared to classical benzyl determinants, is the rate of skin test negativization. Studies indicate that subjects who are positive to amoxicillin determinants become negative sooner than those who are skin test positive to benzyl penicillin determinants, thus indicating that subjects with a selective response to amoxicillin can be missed if skin tests are made after a long time, as opposed to subjects allergic to benzyl penicillin [5].

Amoxicillin has been increasingly prescribed over the years and prescriptions of benzyl penicillin have decreased in many countries, which has resulted in certain populations being exposed just to amoxicillin and no other β-lactam. This has been reflected in the changing response pattern over the years in both skin testing and in vitro assays for quantitation of specific IgE antibodies. The significance of these changes has not been fully analyzed in many countries, and the study by Lin et al. [1] is therefore a useful contribution.

As has been reported in different studies [6], the authors also comment on the limited value of the clinical history as a predictor of β-lactam allergy [1]. Accordingly, the correct diagnosis of β-lactam hypersensitivity requires a well-validated panel of penicillin determinants that, in addition to benzyl penicillin and amoxicillin determinants, must also include other β-lactams. In addition, studies suggest that cephalosporins and clavulanic determinants should also be considered [7, 8].

The study by Lin et al. [1] raises questions as to whether patients who are skin test positive to amoxicillin can take benzyl penicillin and other β-lactams. In our experience, subjects who responded to amoxicillin were mostly selective responders, indicating that benzyl penicillin and other penicillin determinants can safely be given. In fact, and despite tolerating conventional doses of benzyl penicillin, these subjects may develop severe reactions after taking nontherapeutic doses of amoxicillin.

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References

1 Lin E, Saxon A, Riedl M: Penicillin allergy: value of including amoxicillin as a determinant in penicillin skin testing. Int Arch Allergy Immunol 2010;152:313–318.

2 Blanca M, Vega JM, Garcia J, Carmona MJ, Terados S, Avila MJ, Miranda A, Juarez C: Allergy to penicillin with good tolerance to other penicillins: study of the incidence in subjects allergic to beta-lactams. Clin Exp Allergy 1990;20:475–481.

3 Solley GO, Gleich GJ, Van Dellen RG: Penicillin allergy: clinical experience with a battery of skin tests reagents. J Allergy Clin Immunol 1982;69:238–240.

4 Torres MJ, Blanca M, Fernandez J, Romano A, Weck A, Aberer W, Brockow K, Pichler WJ, Demoly P, ENDA, EAACI Interest Group on Drug Hypersensitivity: Diagnosis of immediate allergic reactions to beta-lactam antibiotics. Allergy 2003;58:961–972.

5 Blanca M, Torres MJ, García JJ, Romano A, Mayorga C, de Ramon E, Vega JM, Miranda A, Juarez C: Natural evolution of skin test sensitivity in patients allergic to beta-lactam antibiotics. J Allergy Clin Immunol 1999; 103:918–924.

6 Solensky R, Earl HS, Gruchalla RS: Penicillin allergy: prevalence of vague history in skin test-positive patients. Ann Allergy Asthma Immunol 2000;85:195–199.

7 Antunez C, Blanca-Lopez N, Torres MJ, Mayorga C, Perez-Inestrosa E, Montañez MI, Fernandez T, Blanca M: Immediate allergic reactions to cephalosporins: evaluation of cross-reactivity with a panel of penicillins and cephalosporins. J Allergy Clin Immunol 2006;117:404–410.

8 Torres MJ, Ariza A, Mayorga C, Doña I, Blanca-Lopez N, Rondon C, Blanca M: Clavulanic acid can be the component in amoxicillin-clavulanic acid responsible for immediate hypersensitivity reactions. J Allergy Clin Immunol 2010;125:502–505.