

Broad-Spectrum Beta-Lactams for Patients Allergic to Penicillin

The management of infections in patients with penicillin allergy is an important issue in the balance between efficacy, cost-containment, and prevention of resistance to antibiotics. In his thorough review, published in the current issue of *American Journal of Therapeutics*, Reddy does well to insist that a history of penicillin allergy requires a careful evaluation aimed at distinguishing anaphylactic (laryngospasm, bronchospasm, generalized hives, and hypotension) from milder reactions (fever, rash, few urticarial lesions).¹ As reactions are stereotyped, Reddy suggests that individuals with nonanaphylactic allergy history could be treated empirically with beta-lactam antibiotics without going through cumbersome skin testing and desensitization procedures. This approach is particularly valuable for patients with gram-negative infections, for whom the alternatives to piperacillin/tazobactam or cefepime, that is, aztreonam, fluoroquinolones, and aminoglycosides, are less effective.

The consequences of avoiding beta-lactams were recently studied in a sample of 552 patients with a history of allergic reactions to one or more beta-lactams, of which 76% were due to penicillin, 30% to cephalosporins, and 6% to carbapenem.² Anaphylactic reactions were reported in 9.1% of cases. A substantial minority of patients (18.7%) did not provide details or documentation of their allergy. The patients had been admitted to some of the most prominent clinical institutions in the United States, including the Mayo Clinic in Rochester, MN and the Barnes-Jewish Hospital in St. Louis, Missouri. The sample consisted of 433 patients treated with beta-lactam antibiotics for at least the first 24 hours after being given a presumptive diagnosis of gram-negative bacteremia. The primary outcomes were failure to respond to treatment, death, new admission to an intensive care unit, increased or new need for vasopressor

support, need for mechanical ventilation, or significant temperature elevation. The 119 patients from the control group were not treated with beta-lactam antibiotics.

Clinical failures occurred in a smaller proportion in the patients treated with beta-lactam antibiotics (27.4% vs. 38.7%). The frequency of hypersensitivity reactions was similar in the 2 groups (3% vs. 2.5%). Of the 16 patients with hypersensitivity reactions, 6 had a rash or itching, 3 developed leucopenia or pancytopenia, 2 had shortness of breath, and 2 an anaphylactic reaction. None of these 16 patients died, whereas the mortality of those without an allergic reaction was 16.9%.

The take home message is that nonpenicillin beta-lactams are safe in patients with penicillin allergy. Skin testing with penicilloyl-poly-lysine and native penicillin G, followed, if negative, by an oral amoxicillin challenge,³ seems to be rarely needed.

Peter Manu, MD
Hofstra Northwell School of Medicine
Hempstead, NY

REFERENCES

1. Reddy P. Empiric antibiotic therapy of nosocomial bacterial infections. *Am J Ther.* 2016;23:e982–e994.
2. Jeffres MN, Narayanan PP, Shuster JE, et al. Consequences of avoiding beta-lactams in patients with beta-lactam allergies. *J Allergy Clin Immunol.* 2016;137:1148–1153.
3. Macy E. Penicillin and beta-lactam allergy: epidemiology and diagnosis. *Curr Allergy Asthma Rep.* 2014;14:476.