

Cephalexin tolerated despite delayed aminopenicillin reactions

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● **CROSS-REACTIVITY** between β -lactams may be mediated through a common side chain rather than the β -lactam ring. To study the cross-reactivity between aminopenicillins and cephalosporins, we performed skin testing, patch testing, and oral challenges to examine the potential immunologic cross-reactivity in patients with previously documented delayed intradermal skin response to ampicillin.

Patients underwent prick and intradermal skin tests with standard concentrations of penicilloyl polylysine (PPL), MDM (containing benzylpenicillin, benzylpenilloate, and benzylpenicilloate), penicillin G, ampicillin, cefazolin, and cefuroxime with histamine (positive control) and 0.9% saline (negative control). Upon negative skin test results, patients were challenged with oral penicillin VK 30 mg followed by 300 mg 1 h later.

Patients who were negative on immediate skin and oral challenge testing but developed a positive delayed (i.e., at ≥ 24 h) skin test at the ampicillin site were recalled for patch testing with ampicillin (5%), cephalexin (0.5%), cloxacillin (5%), penicillin (10 000 IU/g), and piperacillin (5%). Results were evaluated according to established criteria. Several patients were also asked to undergo an oral challenge with cephalosporins.

Of 26 patients (81% female; mean age 40 years) who developed a delayed reaction at the ampicillin intradermal test site, 16 returned for patch testing. Fourteen of 16 patients were positive at the ampicillin patch test site. Five patients were also positive at the cephalexin patch test site at 96 h. One of these five patients was positive at the cloxacillin site and another at the piperacillin site. An additional patient was positive at the penicillin patch test site.

Six patients who were positive at the ampicillin patch site were challenged with oral cephalosporins; two patients received a 5-day course of cephalexin, and four were given a single oral challenge with cefaclor. No patient developed a reaction during or after the challenge.

We were unable to demonstrate immunologic cross-reactivity between ampicillin and cephalexin on patch testing in 11 of 16 patients (68%). Furthermore, six patients tolerated oral challenge with either cephalexin or cefaclor, suggesting that a delayed reaction to ampicillin is not necessarily a contraindication to the use of cephalexin or other cephalosporins. Similar findings have been demonstrated in other studies (1–3).

There are, however, several caveats to our findings. One patient who had positive patch testing to cephalexin and ampicillin also had positive delayed reactions to cefazolin, cloxacillin, and penicillin G on intradermal skin testing. This suggests that the reaction in this particular patient may be related to the common β -lactam ring. Another patient who was positive on ampicillin skin testing but negative on patch testing developed a delayed reaction on re-exposure to amoxicillin. This suggests that skin and patch tests

complement each other but are not mutually exclusive, and a positive reaction on either test should be considered significant.

Our findings should be interpreted with caution, since we identified patients only by their delayed skin test response at the ampicillin test site. The generalizability and clinical significance of our findings, particularly in relation to clinical cross-reactivity between aminopenicillins and structurally related cephalosporins, are unknown.

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References

1. AUDICANA M, BERNAOLA G, URRUTIA I, et al. Allergic reactions to betalactams: studies in a group of patients allergic to penicillin and evaluation of cross-reactivity with cephalosporin. *Allergy* 1994;**49**: 108–113.
2. MIRANDA A, BLANCA M, VEGA JM, et al. Cross-reactivity between a penicillin and a cephalosporin with the same side chain. *J Allergy Clin Immunol* 1996;**98**: 671–677.
3. GIAMPIERO P, D'AMBROSIO C, SCHIAVINO D, et al. Clinical usefulness of patch and challenge tests in the diagnosis of cell-mediated allergy to betalactams. *Ann Allergy Asthma Immunol* 1999;**83**: 257–266.