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## **The role of penicillin in benign skin rashes in childhood: a prospective study based on drug rechallenge.**

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### **Abstract**

**BACKGROUND:** Delayed-onset urticarial or maculopapular rashes are frequently observed in children treated with  $\beta$ -lactams. Many are labeled "allergic" without reliable testing.

**OBJECTIVE:** Determine the etiology of these rashes by exploring both infectious and allergic causes.

**METHODS:** Children presenting to the emergency department with delayed-onset urticarial or maculopapular rashes were enrolled. Acute and convalescent sera were obtained for viral screening along with a throat swab. Subjects underwent intradermal and patch skin testing for  $\beta$ -lactams 2 months after presentation. Anti- $\beta$ -lactam blood allergy tests were also obtained. All subjects underwent an oral challenge test (OCT) with the culprit antibiotic.

**RESULTS:** Eighty-eight children were enrolled between 2006 and 2008. There were 11 (12.5%) positive intradermal and no positive patch tests. There were 2 (2.3%) positive blood allergy tests. There were 6 (6.8%) subjects with a positive OCT, 2 were intradermal-negative, and 4 were intradermal-positive. No OCT reactions were more severe than the index event. Most subjects had at least 1 positive viral study, 54 (65.9%) in the OCT negative group.

**CONCLUSION:** In this situation,  $\beta$ -lactam allergy is clearly overdiagnosed because the skin rash is only rarely reproducible (6.8%) by a subsequent challenge. Viral infections may be an important factor in many of these rashes. OCTs were positive in a minority of intradermal skin test-positive subjects. Patch testing and blood allergy testing provided no useful information. OCTs should be considered in all children who develop a delayed-onset urticarial or maculopapular rash during treatment with a  $\beta$ -lactam.

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