

CONTACT POINTS

CONTACT DERMATITIS 2008: 59: 314–322

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Contact dermatitis to polymyxin B

Contact Dermatitis 2008: 59: 314–316

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Key words: allergic contact dermatitis; colistin;
polymyxin B.

Polymyxin B is an antibiotic that targets Gram-negative bacteria. It can be commonly found in combination with

other antimicrobials in topical, ophthalmic, and otic preparations. Most cases of positive reactions occur in the setting of compounded mixtures with other well-known antibacterial sensitizers, such as neomycin and bacitracin. Polymyxin B is not included in most standard contact allergen series and is rarely tested on its own; thus, it raises the possibility that many of these allergies may be overlooked.

Case Report

A 13-year-old boy presented with a history of a pruritic, erythematous, and weepy rash along his right arm and trunk occurring 3 days after using Polysporin Pain Relief® (PPR) cream on an abrasion caused by a fall (Fig. 1). He had used this product before without any problem. The boy was referred to our clinic for evaluation of a possible allergic contact dermatitis to the adhesive in a bandage that had been applied. Prior to his appointment, he had been applying clobetasol propionate 0.05% cream to the rash, which had completely resolved over a period of 1 week, leaving him with areas of post-inflammatory hyperpigmentation.

The patient was patch tested to the North American Contact Dermatitis Research Group baseline series (Chemotechniques, Malmo, Sweden), his PPR cream (Johnson and Johnson, New Brunswick, NJ, USA), and polymyxin B sulfate 5% in petrolatum (Chemotechniques), an ingredient within the Polysporin® product. IQ Ultra Chambers on Scanpor® tape (Epitest Ltd Oy, Tuusula, Finland) were used. International Contact Dermatitis Research Group reading

criteria were used on D2 and D7 after application. Positive reactions were seen to the PPR cream (+) and the polymyxin B sulfate (++) on D7 of testing.

Discussion

Discovered in 1947 (1), the polymyxins are a group of polypeptide antibiotics that target only Gram-negative bacteria. They consist of five distinct chemical compounds (polymyxins A–E) and are all derived from various subspecies of the bacteria, *Bacillus polymyxa*. Only polymyxins B and E (colistin) are used clinically. Polymyxin E is used parenterally to treat infections caused by multiple drug-resistant organisms, such as *Pseudomonas aeruginosa* (2, 3), while polymyxin B can be commonly found in combination with other antimicrobials in topical, ophthalmic, and otic preparations.

The majority of reported reactions to polymyxin B have occurred when it is compounded with other common topical sensitizers, such as neomycin (4, 5) and bacitracin (4–6). In this setting, patients have been found to be allergic to both or all three of these agents. In addition, contact allergy to polymyxin B has been reported with oxytetracycline allergy, in an antimicrobial ointment (7). With its popularity as an agent in both ophthalmic and otic solutions, there have been reports of patients with chronic external otitis (8), unremitting otorrhea (9), and persistent periorcular/periauricular dermatitis (10), having positive reactions to polymyxin B, along with other antibiotic allergens on patch testing. While rare, polymyxin B has also been im-

plicated as the cause of anaphylactic reactions in patients using topical antibiotics (11, 12).

To our knowledge, this is the first case within the English language dermatology literature of contact allergy to polymyxin B in the absence of concomitant positive reactions to either bacitracin or oxytetracycline. The source of polymyxin B in our patient was from his PPR cream, which contains 10 000 units polymyxin B, 0.25 g gramicidin, and 50 mg lidocaine hydrochloride. Polymyxin B is not included on most contact allergen trays and, therefore, raises the question as to how many reactions are being missed. Furthermore, with its potential cross-reactivity to colistin, as they are structurally similar compounds, more severe and extensive reactions could theoretically occur.

Although polymyxin B contact allergy is uncommonly reported in the literature, this case demonstrates that it can occur independently, and perhaps, with a higher incidence than presently recognized. As such, polymyxin should be routinely considered as a potential allergen given the appropriate clinical setting.

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Fig. 1. Contact reaction to Polysporin Pain Relief® cream.

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