

SKIN TESTING AFTER ANAPHYLAXIS TO A TOPICAL NEOSPORIN PREPARATION

Topical antibiotic ointments are common over-the-counter medicines used extensively for everything from simple cuts to large wounds. They are also prescribed to treat or prevent infection in a variety of settings. These preparations are rarely implicated in anaphylaxis. We describe a 22-year-old man with no medical history and no medication allergies who developed anaphylaxis after topical application of Neosporin + Pain Relief (Johnson & Johnson Consumer, Langhorne, Pennsylvania) (active ingredients: neomycin, polysporin B, bacitracin, and pramoxine) to an 8 × 8-cm abrasion on his leg that developed after sliding into a base during a softball game. After applying ointment to the entire lesion, he developed flushing, generalized pruritus, and lip swelling. He attempted to take diphenhydramine for the symptoms but had difficulty swallowing the pill and called 911. Emergency medical services responded and found him to be tachycardic and hypotensive. Intramuscular epinephrine was administered en route to the emergency department, where he required a second dose of epinephrine before his blood pressure normalized and symptoms resolved. He recovered and was followed up at an allergy and immunology outpatient clinic. His history revealed that he had used a generic triple-antibiotic ointment without pramoxine on a similar open wound a few weeks earlier without any dermatologic or systemic symptoms.

Because of the unusual presentation of anaphylaxis as the initial sign of a hypersensitivity reaction to a topical combination product and the likely need to use topical antibiotics in the future, we used skin testing to determine the anaphylaxis-causing agent. The patient and a volunteer not known to be sensitive to triple-antibiotic ointment underwent prick testing on their forearms with the individual components of Neosporin + Pain Relief, including white petrolatum as negative control and bacitracin zinc, neomycin sulfate, polymyxin B sulfate, and pramoxine, all in white petrolatum, with histamine serving as a positive control. Test drugs were in a similar concentration as the commercial product. Individual ointments were placed directly on the forearm and were pricked through using a GREER-Pick (Greer, Lenoir, North Carolina). Two simultaneous tests were performed. First, the drug was pricked through then wiped off using a dry paper towel. Then, on the other arm, the drug remained on the pricked area. The test areas were observed for 15 to 20 minutes. Skin prick testing resulted in a 7-mm wheal to histamine and an 8-mm wheal to bacitracin on both arms in the test subject. All other test results in the subject were negative. The control had no reaction to the test products or negative control and a positive histamine reaction. Skin testing showed that components of topical antibiotic ointments can be separated for skin testing and that of the 4 components in Neosporin + Pain Relief, bacitracin was the likely cause of this patient's anaphylaxis. Furthermore, we believe that skin prick testing for topical antibiotic reactions can be performed safely, easily, and with little expense in an office setting.

A literature review revealed few data on testing for systemic reactions to topical antimicrobials. Only 19 cases of anaphylaxis to

topically applied antibiotics were found in the literature despite their widespread use. Although most were combination products, some of which included topical anesthetics, few reports performed testing to determine the offending agent. In the reported cases, the medications were applied to a variety of wounds: chronic venous stasis ulcers,¹ atopic dermatitis,² and new tattoos where the normal skin barrier was broken down.³ In most cases, patients experienced some symptoms of local pruritus,³ urticaria,¹ and anaphylaxis⁴ during previous use. This case is unique because it describes anaphylaxis as a presenting symptom outside the hospital. In 5 previous case reports,²⁻⁶ testing was performed to determine which antibiotic caused the anaphylaxis. The methods used to differentiate the causative agent varied from passive transfer or Prausnitz-Küstner testing in monkeys² and a human subject⁵ to skin testing,^{3,6} patch testing,⁵ and a fluorescent enzyme immunoassay using antigen-bound ImmunoCAPs.⁴ The risk of intradermal testing of an agent known to cause anaphylaxis precludes this as a safe method. Only Saryan and colleagues⁶ used prick puncture testing to separate components when anaphylaxis resulted from a combination product. Skin prick testing has an inherent risk of systemic reactions, which did not occur in this case. This article confirms that skin prick testing with individual topical preparations is efficacious, safe, and easy to perform in an office setting and demonstrates that skin prick testing with individual topical preparations can provide important clinical information and is easily performed in the office setting. This method determined the cause of anaphylaxis after application of a combination topical antibiotic/analgesic preparation.

BRIAN C. SCHROER, MD*

CHARITY C. FOX, MD†

DAVID W. HAUSWIRTH, MD†

*Department of Internal Medicine

The Ohio State University Medical Center
Columbus, Ohio

brian34osu@gmail.com

†Division of Pulmonary, Allergy, Critical Care, and Sleep
Medicine

The Ohio State University Medical Center
Columbus, Ohio

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