11-19-2020

A dog lover's dilemma: Airborne allergic contact dermatitis to tylosin.

Aditi Kale
Thomas Jefferson University

Anthony A Gaspari
Thomas Jefferson University

A dog lover's dilemma: Airborne allergic contact dermatitis to tylosin

Aditi Kale, BS, and Anthony A. Gaspari, MD
Philadelphia, Pennsylvania

Key words: airborne contact dermatitis; allergic contact dermatitis; patch testing; pets; Tylan; tylosin.

INTRODUCTION

Airborne allergic contact dermatitis (AACD) can be caused by airborne chemicals settling on exposed body parts. Repeated exposure to an allergen can induce AACD in the areas of exposed skin (typically, the face, hands, and forearms). AACD on the face may even be caused by indirect hand contact.[1] Many substances found in a variety of environments can cause AACD by the mechanism stated above, such as epoxy resin systems used in industrial work,[2] paints containing isothiazolinones,[3] and plants of the genus *Eucalyptus*.[4]

Patch testing is the gold standard for diagnosing allergic contact dermatitis and should be considered in patients with suspected contact dermatitis or chronic dermatitis that does not improve with treatment.[5] Preassembled test panels are used to determine which allergens may be causing symptoms, such as the North American Contact Dermatitis Group 80 (NACDG80), a panel of chemicals used to screen for the etiology of suspected contact dermatitis. There are specialized panels for workers in certain industries (for example, a dental series for patients receiving dental care or for a suspected occupational dermatitis), or the panels may include personal products. We demonstrated the need to consider pet products as a cause of AACD, along with the usual tested allergens, as these may be overlooked by physicians when considering allergens for patch testing.

CASE REPORT

A 67-year-old White woman presented in October 2019 with a 4-month history of severe pruritic facial and hand dermatitis, which began in June or July 2019. She was a retired teacher and denied any personal or family history of atopic dermatitis, asthma, or rhinitis. She did admit to allergy to amoxicillin and food allergy to lobster (although she had never undergone prick testing). Prior to presenting to our clinic, she had been evaluated by another dermatologist, who gave her a course of prednisone. A skin biopsy from her hand revealed spongiotic dermatitis (consistent with contact dermatitis). Her dermatitis flared up despite her completing a second course of oral prednisone. Her previous dermatologist prescribed prednisone, oral loratadine, and topical hydrocortisone for her face and recommended patch testing.

After providing a detailed history, she underwent patch testing with the NACDG80 panel and 2 additional items (her dog's fur and tylosin [Tylan] powder, a canine medication).

In the patch testing, she reacted to quaternium 15 (1+ at 72 hours) and 10% Tylan powder in petrolatum (1+ at 48 and 72 hours) (Fig 1). The patch testing of 5 controls to Tylan powder in petrolatum did not reveal any reactivity to this antibiotic. The Tylan powder reactivity, as well as the quaternium 15 reactivity, was considered to be possibly relevant. She was given a safe shopping list for quaternium 15 allergen avoidance and advised to discontinue the use of the Tylan powder additive in her dog's food and vacuum clean her kitchen of any residual powder in the environment.

Abbreviations used:

AACD: airborne allergic contact dermatitis
NACDG80: North American Contact Dermatitis Group 80

From the Department of Dermatology and Cutaneous Biology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia.
Funding sources: None.
Conflicts of interest: None disclosed.
IRB approval status: Not applicable.
Correspondence to: Aditi Kale, BS, 19 Bentley Lane, Ocean, NJ 07712. E-mail: aditi.kale@jefferson.edu.

JAAD Case Reports 2021;7:100-2.
2352-5126

https://doi.org/10.1016/j.jdcr.2020.11.011

Fig 1. Upon patch testing, the patient presented with a rim reaction graded as 1+ to Tylan powder at 48 and 72 hours. She did not react to her dog's fur.

After 3 months of discontinuation of the use of Tylan powder, her hand dermatitis resolved completely and her facial dermatitis greatly improved. Investigation of her personal care products did not reveal a source of quaternium 15 exposure as she had already been using unscented Dove soap, Free and Clear shampoo, and Tide Free laundry detergent at the time of the presentation.

DISCUSSION

AACD is a painful and damaging condition. It can present as severe dermatitis of the face and eyelids and can negatively impact patients by causing persistent inflammation and pain. AACD is a complex immunologic reaction that occurs after exposure to an allergen, which may be encountered in a myriad of environments, such as workplace, or in certain products, such as pet products, makeup, or shampoo.[6] Many substances that are commonly used are known to cause AACD. Tin is a commonly used element in electronic devices and dental equipment and is proven to cause AACD.[7] Disulfiram, a medication used to treat alcohol dependence, has been known to cause AACD, which can be caused by crushing its tablets.[8] Chamomile tea has also been shown as a cause of AACD due to oils arising from the vapor of a hot tea preparation.[9]

Tylosin (Tylan) is a macrolide antibiotic used to treat canine chronic enteropathies.[10] Allergic contact dermatitis has been studied in veterinary surgeons who experience incapacitating dermatitis due to antibiotics such as tylosin.[11] AACD has also been seen in veterinary pharmacy technicians who are exposed to tylosin, presenting as severe skin irritation despite using appropriate protective measures.[12] Here, we present a case of AACD in a pet owner who did not suspect this food additive as a cause of her AACD. Sensitivities to allergens, such as pet products, are important for physicians to consider when patch testing patients with contact dermatitis. Patch testing with personal care products can be used to enhance the sensitivity of patch testing. Using a standard screening series of allergens in combination with allergens derived from personal care products is necessary to avoid missing a significant number of patients with allergies to their personal care products.[13] In the case of our patient, patch testing with the NACDG80 panel alone would have resulted in missing the allergen.

Patch testing is an excellent tool to identify allergens that may be causing a patient's symptoms, but it is important for physicians to determine whether the inclusion of pet products, which may not be included in standard panels, is necessary. After obtaining a thorough history, we decided to add our patient's dog's fur and Tylan powder along with the NACDG80 panel for patch testing. Our patient had a 1+ reaction to Tylan powder at 48 and 72 hours. After discontinuing the use of Tylan powder, her hand dermatitis resolved completely and her facial dermatitis greatly improved without the use of any medications.

Future clinical practice could better serve patients by considering all potential allergens that a patient is exposed to, including personal and pet products, in patch testing. Considering pet products as allergens that potentially cause AACD and including them in patch testing could be valuable for patients. Physicians could help patients identify specific allergens causing symptoms and counsel them to avoid these allergens, clean their environment, or wear protective clothing to minimize exposure.

In conclusion, AACD to tylosin can be diagnosed by careful analysis of patient history and addition of pet products in patch testing. The patient recovered after discontinuation of the offending product.

REFERENCES

1. Handa S, De D, Mahajan R. Airborne contact dermatitis - current perspectives in etiopathogenesis and management. *Indian J Dermatol*. 2011;56(6):700-706.
2. RøMyhr O, Nyfors A, Leira HL, Smedbold HT. Allergic contact dermatitis caused by epoxy resin systems in industrial painters. *Contact Dermatitis*. 2006;55(3):167-172.
3. Amsler E, Aerts O, Raison-Peyron N, et al. Airborne allergic contact dermatitis caused by isothiazolinones in water-based paints: a retrospective study of 44 cases. *Contact Dermatitis*. 2017;77(3):163-170.
4. Paulsen E, Thormann H, Vestergaard L. Eucalyptus species as a cause of airborne allergic contact dermatitis. *Contact Dermatitis*. 2018;78(4):301-303.
5. Uyesugi BA, Sheehan MP. Patch testing pearls. *Clinic Rev Allerg Immunol*. 2019;56(1):110-118.
6. Mowad CM, Anderson B, Scheinman P, Pootongkam S, Nedorost S, Brod B. Allergic contact dermatitis. *J Am Acad Dermatol*. 2016;74(6):1043-1054.
7. Quenan S, Huber C, Pasche-Koo F, Piletta P. Airborne allergic contact dermatitis caused by tin. *Contact Dermatitis*. 2014;71(3):184-185.

8. Creytens K, Swevers A, De Haes P, Goossens A. Airborne allergic contact dermatitis caused by disulfiram. *Contact Dermatitis*. 2015;72(6):405-407.
9. Anzai A, Vázquez Herrera NE, Tosti A. Airborne allergic contact dermatitis caused by chamomile tea. *Contact Dermatitis*. 2015; 72(4):254-255.
10. Kilpinen S, Spillmann T, Westermarck E. Efficacy of two low-dose oral tylosin regimens in controlling the relapse of diarrhea in dogs with tylosin-responsive diarrhea: a prospective, single-blinded, two-arm parallel, clinical field trial. *Acta Vet Scand*. 2014;56(1):43.
11. Hjorth N, Roed-Petersen J. Allergic contact dermatitis in veterinary surgeons. *Contact Dermatitis*. 1980;6(1):27-29.
12. Malaiyandi V, Houle MC, Skotnicki-Grant S. Airborne allergic contact dermatitis from tylosin in pharmacy compounders and cross-sensitization to macrolide antibiotics. *Dermatitis*. 2012;23(5):227-230.
13. Wetter DA, Yiannias JA, Prakash AV, Davis MD, Farmer SA, El-Azhary RA. Results of patch testing to personal care product allergens in a standard series and a supplemental cosmetic series: an analysis of 945 patients from the Mayo Clinic Contact Dermatitis Group, 2000-2007. *J Am Acad Dermatol*. 2010;63(5):789-798.