



# Contact Dermatitis Caused by Kissing a Corpse

A. Saad, M. Bogorodskaya, YM. Kim, J. Casselman, C. Harwell, B. Hostoffer, H. Tcheurekdjian  
Allergy and Immunology, Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH

University Hospitals  
HealthSystem

University Hospitals  
of Cleveland

## Abstract

**Background:** Formaldehyde is a common cause of allergic contact dermatitis, a type IV delayed hypersensitivity reaction characterized by a polymorphous skin reaction in response to cutaneous contact with an allergen. A naturally-occurring organic compound, formaldehyde has widespread usage as a preservative. Here we present a unique case of a woman who developed acute contact dermatitis to formaldehyde from kissing a corpse at a funeral.

**Case:** A 48 year old African American female presented with a two week history of chapped, dry, itchy, and swollen lips. Subsequently the patient admitted her boyfriend had passed away recently and during the procession she kissed his corpse. She tried treating the rash with various methods including lip balm.

**Results:** The patient underwent North American Comprehensive 80 series patch testing with inclusion of her lip balm. She tested positive to propolis, formaldehyde, and her lip balm. With avoidance of these items, the rash and swelling completely resolved.

**Discussion:** Formaldehyde is a well-recognized instigator of contact dermatitis. Excessive concentrations of formaldehyde are used to help in preservation of corpses. The rash was initially provoked by kissing of the corpse and promulgated by the lip balm. This case illustrates the need to take intricate and detailed histories when evaluating any patient with a new rash of unknown trigger.

## INTRODUCTION

Formaldehyde is a common cause of allergic contact dermatitis, a type IV delayed hypersensitivity reaction characterized by a polymorphous skin eruption with erythema, pruritus, and xerosis in response to cutaneous contact with a hapten. The pathogenesis involves processing of and presentation of antigen by Langerhans cells to naïve T cells followed by production of CD4 and CD8 antigen specific lymphocytes. The sensitization process requires about 10-14 days. Upon exposure, the antigen causes sensitized lymphocytes to release various cytokines that lead to dermatitis. A naturally-occurring organic compound, formaldehyde has widespread usage as a preservative. Here we present a unique case of a woman who developed acute contact dermatitis to formaldehyde from kissing a corpse at a funeral.

## METHODS

To elicit the actual details of the reaction we interviewed the patient on subsequent follow-up. Epicutaneous patch testing is the gold standard method for the diagnosis of allergic contact dermatitis (ACD). Therefore we conducted a patch using using the NAC-80 (North American 80 Comprehensive Series) series. The NAC-80 series includes 80 of the most common allergens where as the TRUE test (thin-layer rapid-use epicutaneous) and the NACDG (North American Contact Dermatitis Group) include only 35 allergens making the NAC-80 a much more exhaustive test. The patches were left in place for 48 hours at which time they were removed and interpretation of the results were done at 48 and 96 hours.

## RESULTS

48 year old African American female presented with a two week history of chapped, dry, itchy, and swollen lips. She tried treating her lips with ChapStick lip balm, topical neomycin and topical vitamin E, none of which helped, in fact she admits these products may have worsened her symptoms. She denied any tongue swelling, difficulty breathing, dietary changes or new personal care products. During the history taking process the patient revealed that two weeks prior her boyfriend had passed away. She went to the funeral and kissed his lips during the service. The day after the funeral, she awoke with dry and chapped lips. The patient subsequently underwent NAC-80 series patch testing with inclusion of her lip balm. She tested positive to propolis, formaldehyde, and her lip balm.

## DISCUSSION

Formaldehyde is a well-recognized instigator of contact dermatitis. Sources of formaldehyde include fabrics treated with resins, cosmetics, toiletries, household cleaners, paper products, paints and primers. In addition, corpses are treated with formaldehyde to aid in preservation of the body for the forthcoming funeral. Concentrations of formaldehyde during the embalming often exceed threshold to cause adverse reactions (0.2mg/kg/day). Moreover, our patient was also allergic to propolis, which is a key ingredient in lip balms. It is likely the dermatitis observed in our patient was initially incited by the act of a kissing the corpse and propagated by continual use of products with formaldehyde and propolis as well as her lip balm. This case demonstrates the importance of taking a detailed history since an efficient correct diagnosis has significantly improved this patient's quality of life.

## Summary

- Comprehensive history taking is essential in the diagnosis of contact dermatitis.
- Formaldehyde and formaldehyde releasing compounds are an important cause of ACD.
- Lip balms are a principal source of propolis therefore allergist need to warn patients against their use until after patch testing.

## References

1. De Groot, A. C., Flyvholm, M.A., Lensen, G., Mené, T. and Coenraads, P.J. 2009. Formaldehyde-releasers: relationship to formaldehyde contact allergy. Contact allergy to formaldehyde and inventory of formaldehyde-releasers. Contact Dermatitis. 61: 63-85. doi:10.1111/j.1600-0536.2009.01582.x
2. Latorre, N., Silvestre, J.F., and Monteagudo, A.F. 2010. Allergic contact dermatitis caused by formaldehyde and formaldehyde releasers. Actas Dermosifiliogr. 2011;102(2):86-97
3. Van Lerberghe, L. and Baeck, M. 2014. A case of acute contact dermatitis induced by formaldehyde in hair-straightening products. Contact Dermatitis; 70: 376-388. doi:10.1111/cod.12181

- Cosmetics & personal care products
- Fabrics & clothing
- Household cleaners
- Painters & primers
- Paper products

Sources of Formaldehyde



- Quaternium-15
- Imidazolidinyl urea
- Diazolidinyl urea
- DMDM hydantoin
- 2-bromo-2 nitropropane-1,3 diol

Common Formaldehyde Releasers



- Occupational (beekeepers)
- Cosmetics (lip balms, facial creams)
- Oral hygiene products
- Therapeutics

Sources of Propolis

