

Methacrylate Allergy Presenting as a Persistent Eczematous Plaque on the Dorsal Hand of a Dental Assistant: Peculiar Behaviours Make for Bizarre Patterns of Dermatitis

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Allergic contact dermatitis (ACD) due to acrylates typically affects the finger pads of sensitized individuals working in fields such as dentistry¹ or windshield chip repair. However, dental assistants who adopt the practice of placing a few drops of acrylate bond solution on the back of their gloved hand may become sensitized and consequently develop recurrent dermatitis at this atypical site.

We report the case of a 30-year-old female who had been suffering for the past year from a pruritic/burning sometimes blistering pink plaque that covered most of her left dorsal hand (Figure 1). The lesion first appeared 5 months after she began working as a dental assistant, and it resolved each time she went on holiday. The patient suspected that her dermatitis was due to sensitivity to rubber gloves and was frustrated because she did not improve by changing brands. Upon further questioning, the patient explained that during her training she had learned the practice of placing a few drops of bond solution on the back of her gloved hand. She had adopted the practice because it facilitated the work of the dentist. However, she had stopped this practice 6 months ago, since her office had switched to using a pen-type apparatus (ExciTE-F VivaPen), which is prefilled, thus allowing the bond solution to be delivered directly to the tooth. The patient was unaware that acrylates pass easily through ordinary latex and nitrile gloves. We advised the patient to take a leave of absence from work, and she was booked for patch testing.

Prior to patch testing, a careful cutaneous examination revealed presence of healing lesions on her right first and second finger pads (Figure 2). She explained that this was where her gloved fingers contacted the tip of the ExciTE-F VivaPen during cleaning. The patient was patch tested using IQ Ultra Chambers and the NAE-65 North American Extended screening series, as well as the dental, acrylate, and rubber series (all from Chemotechnique Diagnostics Inc, Vellinge, Sweden). Responses were evaluated at 48 and 72 hours, using the International Contact Dermatitis Research Group scoring system, and strong positive reactions were observed to several acrylic compounds, including 2-hydroxyethyl methacrylate (Figure 3). A delayed read (eg, 7 days) was not performed.

A key question about this case is why the patient continued to experience dermatitis on her left dorsal hand despite



Figure 1. Initial presentation, showing solitary eczematous plaque on the left dorsal hand of a dental assistant.

the fact that she had stopped placing the bond solution in this area 6 months prior. Exposure to acrylates had continued to occur each time she wiped the VivaPen, this triggered a recall or local skin memory reaction (“flare-up phenomenon”²), which perpetuated the original plaque on her left hand. Unfortunately, our patient had to abandon her career in dentistry less than a year after graduating from a private training program. Although this was her personal decision, it is important to note that dental assistants with a similar history can potentially continue to work provided that they wear protective gloves (eg, North Silver Shield/4H). Also, in some jurisdictions, such individuals can assume Workers Insurance Board modified positions where they are restricted from



Figure 2. Allergic contact dermatitis (ACD) on the right first finger pad. This appeared once the patient began cleaning the ExciTE-F VivaPen's tip with her gloved hand, but the patient hardly noticed it since the left dorsal hand continued to be severely affected.

using acrylates. However, this was not possible for our patient since neither she nor her employer had Workers Insurance coverage.

Conclusion

Dental personnel are routinely exposed to potentially allergenic chemicals such as bonding agents, preservatives, and disinfectants.¹ However, a lack of knowledge about ACD in the workplace and delay in seeking proper care often places these individuals at risk of developing severe dermatitis. In extreme cases this may necessitate a career change. Unilateral dorsal hand dermatitis in dental personnel may be due to acrylate allergy, and understanding the recall phenomenon provides insight about why bizarre patterns of dermatitis might persist after direct allergen exposure has stopped.

Bahman Sotoodian, MD
Eunice Chow, MD, FRCPC
John F. Elliott, MD, PhD, FRCPC
University of Alberta, Edmonton, AB, Canada
john.elliott@ualberta.ca



Figure 3. Patch test response to 2-hydroxyethyl methacrylate at 48 hours. Reaction was read as 3+ at 72 hours.

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