

Linear eczema on the amputation stump as a clinical clue to the diagnosis

Esen Özkaya 

Istanbul Medical Faculty, Department of Dermatology and Venereology, Istanbul University, 34093 Istanbul, Turkey

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Allergic contact dermatitis (ACD) on an amputation stump is a common differential diagnosis, and it may be challenging to decide which patients should be considered for patch testing. Herein, a patient is presented with linear eczema on his amputation stump, which was a good clinical clue to the diagnosis of ACD.

Case Report

A 29-year-old Turkish man with a lower limb prosthesis presented with a 2-week history of pruritic, linear

vesicular eczema on his amputation stump (Fig. 1a). His left leg was amputated below the knee 5 years previously. For 1 year, he had used a new prosthesis with an inner socket lining made from polyethylene foam. Inspection of the inner socket lining showed remnants of adhesive material along the seams and around the bottom (Fig. 1a, b, arrows) corresponding to the site of linear eczema.

Patch testing was performed according to ESCD patch test guidelines (1). Patch test allergens were provided by Brial Allergen (Greven, Germany) and Chemotechnique Diagnostics (Vellinge, Sweden). Pieces from uncontaminated (Fig. 1c) and contaminated (Fig. 1d) parts, grated into powder, and then mixed with white petrolatum, were patch tested for 48 h. Patch tests showed +++ positive reactions to the inner lining only if this was contaminated with the adhesive. Moreover, *p*-tert-butylphenol formaldehyde resin (1% pet.) (Fig. 1e) gave a positive

Correspondence: Esen Özkaya, Istanbul Medical Faculty, Department of Dermatology and Venereology, Istanbul University, Millet caddesi, 34093 Istanbul, Turkey. Tel: +90 212 4142238; Fax: +90 212 4142526. E-mail: profeo@istanbul.edu.tr

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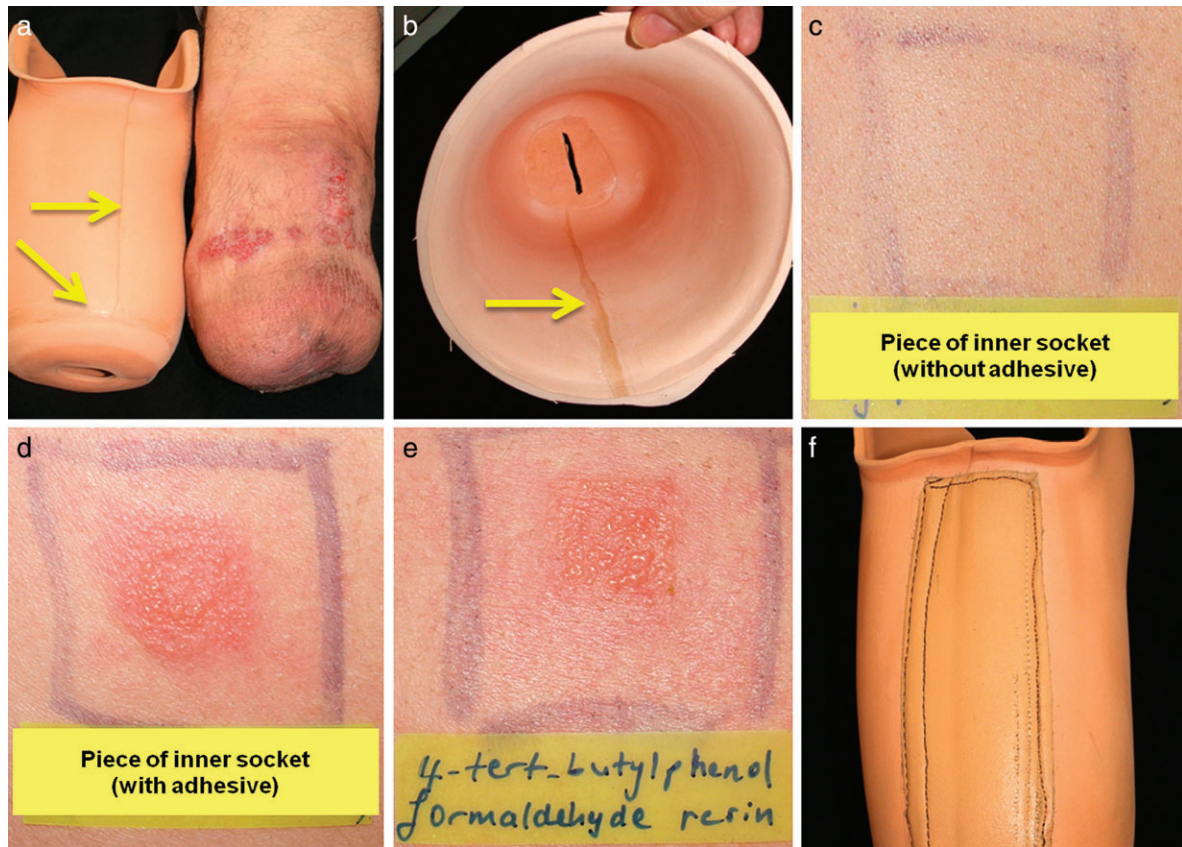


Fig. 1. Linear, vesicular eczema on the amputation stump (a), excess adhesive material along the seam lines and around the bottom of the inner socket of the limb prosthesis corresponding to the sites of linear eczema (a, b, arrows), a +++ positive patch test reaction with a piece of the inner socket lining contaminated with the adhesive only (c, d), a +++ positive patch test reaction with *p*-tert-butylphenol formaldehyde resin 1% pet. (e), and the edges of a new inner socket attached by suturing the two parts together instead of using an adhesive (f).

reaction, and a + positive reaction to methylidibromo glutaronitrile (0.1% pet.) was found, whereas other allergens of the extended European baseline series gave negative results on day (D) 2, D3, D4, and D7.

The negative patch test result with a piece of the inner socket that was not contaminated with the adhesive suggested that the adhesive was the cause of the positive reaction. The manufacturer confirmed the presence of *p*-tert-butylphenol formaldehyde resin in the polychloroprene-based adhesive (Denlaks® T-28; Oynurden Kimya, Istanbul, Turkey) used to glue the ends of the inner socket. No relevance was found for methylidibromo glutaronitrile. Additional patch testing with a plastics and glues series was not performed. The lesions healed completely with the use of topical corticosteroids. The ends of a new inner socket were attached by seaming the two parts together (Fig. 1f) instead of using an adhesive. The patient remained free of lesions during 4 years of follow-up.

Discussion

The patient was diagnosed with ACD caused by *p*-tert-butylphenol formaldehyde resin in the adhesive used to glue the parts of the inner socket of his limb prosthesis. ACD is seen in a significant number of patients with stump dermatitis (2–5). Active ingredients or excipients of topical drugs, moisturizers and components of the prosthesis socket, such as adhesives or rubber allergens, have been the most frequently incriminated allergens in previous reports (2–5). *p*-tert-Butylphenol formaldehyde resin is one of the main contact allergens used in soft socket adhesives. However, a clinical clue suggesting that the adhesive was the causative agent has not been mentioned before, even if patch testing with pieces of the patient's own prosthesis was additionally performed. Moreover, the authors of a previous study stated that they were unable to identify any characteristic clinical findings of stump eczema that would indicate an allergic origin (2).

This was a unique patient with stump eczema starting as linear vesicular lesions on skin areas that were in contact with the remnants of the adhesive along the junction lines of the prosthesis socket. This provided a clinical clue for predicting the causative agent correctly. As proposed recently (6), testing with the contaminated and uncontaminated material helped us to assess the clinical

relevance of *p*-tert-butylphenol formaldehyde resin in this case. This highlights the importance of following the clinical clue, owing to the presence of excess adhesives, and of additional patch testing with contaminated and uncontaminated parts of the patient's prosthesis for finding the relevant allergen, together with information from the manufacturer.

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