Nickel allergic contact dermatitis

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A 41-year-old man presented to the dermatology clinic with a 1-month history of erythematous, pruritic papules on the abdomen. The periumbilical skin had 2 symmetric erythematous plaques with overlying scaly, hyperkeratotic tissue and eczematous papules (Figure 1A). The lesions were confined to the skin in contact with a metallic belt buckle purchased 3 months before. Positive patch test (++) for nickel sulfate (5.0%) in petroleum confirmed contact dermatitis to nickel (Appendix 1, available at www.cmaj.ca/lookup/doi/10.1503/cmaj.220260/tab-related-content). We prescribed a 7-day course of mometasone furoate (0.1%) cream, which led to a substantial improvement (Figure 1B). We recommended that the patient avoid future contact with nickel-containing accessories and use brass or plastic fasteners, belts and buckles instead.

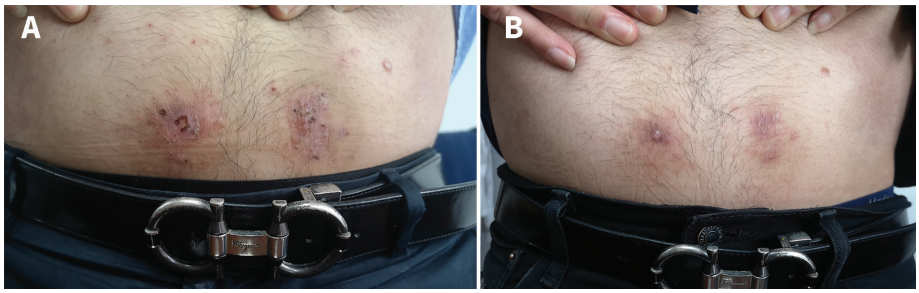

Figure 1: Nickel allergic contact dermatitis: (A) Periumbilical skin of a 41-year-old man with 2 erythematous plaques with overlying pruritic and eczematous papules. (B) A marked improvement was observed after 1 week of using a topical corticosteroid.

A meta-analysis of 20 000 people from the general population who were patch tested confirmed a 20% prevalence of contact allergy, with nickel being the most common allergen (11.4%).[1] Prevalence is higher in women and people with atopic disorders.[2] Nickel allergic contact dermatitis results from a type IV cutaneous hypersensitivity reaction, although symptoms can occur within the first 30 minutes of exposure.[3] Prolonged contact with the skin, sweat and friction can induce subclinical maceration and release of nickel into the skin.

Differential diagnoses include scabies, impetigo, psoriasis, inflammatory dermatoses, mycosis fungoides, tinea corporis, atopic dermatitis and fixed drug eruptions.[4] Presentation varies from mild dermatitis with pruritus, deep erythema with oozing and papulation, to a systemic reaction with generalized idiopathic hypersensitivity. Patch testing can confirm the etiologic agent, and skin biopsy may help if the diagnosis is uncertain. Standard treatment is to remove the source object and prescribe topical corticosteroids.[5] Calcineurin inhibitors (i.e., tacrolimus) can be considered for steroid-resistant cases, and oral steroids or antihistamines to aid in symptom resolution.

References

1. Alinaghi F, Bennike NH, Egeberg A, et al. Prevalence of contact allergy in the general population: a systematic review and meta-analysis. *Contact Dermatitis* 2019;80:77-85.
2. Warshaw EM, Zhang AJ, DeKoven JG, et al. Epidemiology of nickel sensitivity: retrospective cross-sectional analysis of North American Contact Dermatitis Group data 1994–2014. *J Am Acad Dermatol* 2019;80:701-13.
3. Saito M, Arakaki R, Yamada A, et al. Molecular mechanisms of nickel allergy. *Int J Mol Sci* 2016;17:202.
4. Tuchman M, Silverberg JI, Jacob SE, et al. Nickel contact dermatitis in children. *Clin Dermatol* 2015;33:320-6.
5. Silverberg NB, Pelletier JL, Jacob SE, et al; Section on Dermatology, Section on Allergy and Immunology. Nickel allergic contact dermatitis: identification, treatment, and prevention. *Pediatrics* 2020;145:e20200628.

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