

Periocular Dermatitis From Systemic Exposure to Nickel in a Palatal Expander and Dental Braces

Brienne D. Cressey, BS, and Pamela L. Scheinman, MD

PRECIS

Systemic contact dermatitis has variable presentations, leading to delay in or misdiagnosis. We report an unusual presentation of systemic contact dermatitis from orthodontic appliances.

DISCUSSION

Nickel is a common contact allergen with prevalence increasing between 1992 and 2004 from 14.5% to 18.8%.¹ Localized dermatitis due to cutaneous nickel exposure is common and easily recognized, whereas systemic contact dermatitis may have variable presentations. We report a case of systemic contact dermatitis (SCD) due to nickel in orthodontic appliances, presenting as an isolated dermatitis of the periocular region.

An otherwise healthy 15-year-old Asian girl with a history of atopic dermatitis was referred for persistent dermatitis in the right periocular region. She wore goggles for swimming and switched from rubber to plastic goggles without relief. She was patch tested to a modified North American Contact Dermatitis Group standard, cosmetic, fragrance, rubber, and plastic/glue series. Reactions were graded at 48 and 96 hours according to the North American Contact Dermatitis Group system. At 96 hours, clinically relevant reactions were 3+ to nickel sulfate (2.5% in petrolatum) and 1+ to aluminum chloride.

She was told to avoid prolonged handling of metal objects and drinking from canned sodas. We recommended a low-nickel diet, to which she adhered except for not abstaining from chocolate. The patient returned to clinic 1 month later with continued dermatitis despite lifestyle changes. Of note, she was wearing braces and a palatal expander. She had no oral or lip mucositis, lichenoid lesions, or erosions. A punch biopsy lateral to the right eye showed epidermal hyperplasia with spongiosis, felt to represent allergic

contact dermatitis. Her dentist confirmed that both her braces and palatal expander contained nickel. We recommended removal of these appliances given the recalcitrant nature of her dermatitis. Her rash improved, but not completely, 4 days after removal of the palatal expander. Subsequently, her braces were removed with complete clearing of her rash within 2 weeks. This was the first time her rash had cleared in 10 months. She continues to adhere to a low-nickel diet and notes flares after eating chocolate.

Systemic contact dermatitis is a cutaneous eruption in response to systemic exposure to an allergen. Route of exposure can be transepidermal, intravenous, intramuscular, inhalation, and oral ingestion. Systemic contact dermatitis has a broad spectrum of presentations, including disseminated erythematous papules, deep-seated vesicles, erythema localized to the palms and fingers, and vasculitis.² Contact dermatitis from nickel-containing orthodontic devices or dental prosthetics has been documented in the literature.³ The most common presentation of contact dermatitis from an oral agent is a lichenoid eruption or erosion of the buccal mucosa adjacent to the offending device.⁴ Systemic contact dermatitis due to nickel from an orthodontic device in the absence of oral or mucosal signs is unusual, particularly in a limited unilateral periocular distribution.^{3,5}

This case is an unusual presentation due to intraoral exposure of nickel from orthodontic devices. Nickel SCD is most often a result of oral ingestion and typically presents with vesicular hand, anogenital, or generalized dermatitis. A single area of dermatitis in the periocular region is usually associated with direct cutaneous exposure rather than a systemic one. The patient's diagnosis was delayed because of her unusual presentation. Removal of the offending devices resolved her symptoms.

ZEBRA

This case highlights that SCD to nickel can be secondary to orthodontic appliances and can present atypically in a unilateral periocular distribution.

REFERENCES

1. Rietschel RL, Fowler JF, Warshaw EM, et al. Detection of nickel sensitivity has increased in North American patch-test patients. *Dermatitis* 2008;19(1):16–19.
2. Nijhawan RI, Molenda M, Zirwas MJ, et al. Systemic contact dermatitis. *Dermatol Clin* 2009;27(3):355–364, vii.
3. Pigatto PD, Guzzi G. Systemic contact dermatitis from nickel associated with orthodontic appliances. *Contact Dermatitis* 2004;50(2):100–101.
4. Kolokitha OE, Chatzistavrou E. Allergic reactions to nickel-containing orthodontic appliances: clinical signs and treatment alternatives. *World J Orthod* 2008;9(4):399–406.
5. Mancuso G, Berdondini RM. Eyelid dermatitis and conjunctivitis as sole manifestations of allergy to nickel in an orthodontic appliance. *Contact Dermatitis* 2002;46(4):245.

From the Department of Dermatology, Tufts Medical Center, Boston, MA.

Address reprint requests to Brienne D. Cressey, Tufts Medical Center, Department of Dermatology, 800 Washington St, Box 114, Boston, MA 02111. E-mail: Brienne.Cressey@tufts.edu.

The authors have no funding or conflicts of interest to declare.

DOI: 10.1097/DER.0b013e318260d5e5

© 2012 American Contact Dermatitis Society. All Rights Reserved.