

The “Jewelry Addict”: Allergic Contact Dermatitis from Repetitive Multiple Children’s Jewelry Exposures

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Abstract: A 9-year-old girl with atopic dermatitis developed persistent plaques on the lips, hands, and fingers that were unresponsive to topical steroids. Her mother reported that she was “addicted” to costume jewelry and developed rashes in reaction to a number of adornments, ranging from rubber bracelets to costume metal jewelry and belt buckles. A careful history of jewelry exposures was taken and patch testing was performed to identify allergenic sources. Patch testing revealed allergy to nickel, gold, and thiuram mix. The case illustrates the importance of investigating a range of different types of allergens when evaluating for jewelry sensitivity in children with frequent use of accessories, including rubber jewelry, plastics, dyed yarns, beads, metals, and ceramics. This article provides an overview of jewelry allergies and the potential allergens requiring screening.

Nickel allergy is the most common allergen in children and may be a lifelong source of problems, especially for girls who like costume jewelry. A recent meta-analysis of pediatric contact allergens in the PubMed database from 1966 to 2010 identified the top five allergens worldwide in children to be nickel sulfate, ammonium persulfate, gold sodium thiosulfate, thimerosal, and p-toluenediamine. Allergic contact dermatitis is more prevalent in epidemiologic studies since 1995 and is therefore of significance in pediatric dermatology (1). Nickel allergy seems to be three to four times more common today as it was in 1986, and exposures

are ubiquitous in childhood, ranging from jewelry to belt buckles to iPads to school chairs (2). Ear piercing is believed to be a leading risk factor for female development of nickel allergy. Another regional study identified nickel sulfate and potassium dichromate as the leading pediatric allergens (3). The latter brings up the point that allergies other than nickel and gold can be noted with jewelry exposures since chromate is contained in ceramic and pottery jewelry items. The case of a child with multiple jewelry exposures and an approach to allergy screening in children with suspected jewelry allergy are presented (Fig. 1).

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Figure 1. Perioral dermatitis in a child with nickel allergy who applied lip balm from a nickel-containing case.

CASE REPORT

A 9-year-old Hispanic girl presented to the clinic for evaluation of chronic dermatitis of the lips, hands, and fingers that would not resolve despite topical triamcinolone 0.1% ointment application. The mother reported rashes arising after wearing rubber bracelets, jewelry, and belt buckles. The mother reported the child to be “addicted” to costume jewelry and she repeatedly bought batches of white metal and rubber jewelry in an attempt to find one that the child would not react to. Apart from a past history of atopic dermatitis she was otherwise well. Physical examination demonstrated thick lichenified plaques on the lips and perioral region (Fig. 1), fingertips, and dorsal hands (Fig. 2) and standard atopic dermatitis lesions on the antecubital arms. Patch testing was performed using the North American Contact Dermatitis Group series. The patient was noted to have a 3+ reaction to nickel (papular variant), 2+ to gold thiosulfate, and 3+ to thiuram, all deemed to be clinically relevant given concurrent exposure and active dermatitis reactions to items containing these allergens. For example, the lip dermatitis was found to be associated with the application of lip balm from a nickel case (Fig. 1).

DISCUSSION

Metal allergy is a significant concern in children, especially for girls because of exposure through earrings and costume jewelry, with nickel and chromium being commonly found in the latter (4). Nickel and gold allergies in children are related to exposure to jewelry and dental amalgams (2,5). Children are also repeatedly exposed to nickel through exposure to ornate metal fittings such as belt buckles (6), and more recently to electronic devices such as cell phones (7), game units (8), laptops (9), and electronic tablets (10).



Figure 2. Severe hand dermatitis in a child who plays with jewelry made of nickel and rubber.

Virtually any type of jewelry can trigger allergic symptoms (Table 1). Some allergens such as latex may cause type I reactions (11). Wooden jewelry may trigger allergy through type I bark allergy (12) or delayed-type hypersensitivity to varnishes or paints

TABLE 1. Allergens Relevant to Jewelry Allergies

Allergen	Sources
Metal	
Nickel	Costume and white metal jewelry Jeans buttons Grommets Belt buckles Amalgams Jewelry Jewelry
Gold thiosulfate	
Palladium	
Rubber	
Thiuram	Rubber band bracelets
Mercapto mix	Rubber jewelry
Carba mix	
p-Phenylenediamine mix	
Plastic, resin	
Methacrylate	Plastic jewelry, assorted polymers
Isocyanate	
Latex (type I)	
Textiles, dyed yarns	
Dispersed dyes, azo dyes	Textile jewelry
Methylchloroisothiazolinone, methylisothiazolinone*	Woven necklaces Macrame
Ceramics, pottery	
Chromate	Ceramic, pottery jewelry
Turpentine	
Wood	
Cocobolo and other woods (type I)	Wooden bracelets
Varnishes/paints	

*Valsecchi R, Leghissa P, Piazzolla S et al. Occupational dermatitis from isothiazolinones in the nylon production. *Dermatology* 1993;187:109–111.

used to treat the wood. Plastic resin of isocyanate may be allergenic (13). Rubber jewelry may contain rubber allergens that are a source of allergic contact dermatitis (14). Another component of jewelry is dyed yarn, with a recent report of allergy to dispersed dyes in association with textile necklace allergic contact dermatitis in a woman (15). Ceramic and pottery jewelry may contain allergenic chromates and other metals (16), as well as turpentine, producing reactions that would be noted in cement workers (17). Table 1 summarizes allergens in jewelry to consider when testing children.

CONCLUSION

Children with persistent dermatitis should be asked about new or frequent jewelry usage and tested for suspected allergens based on the type of jewelry exposure.

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