Visual Diagnosis: 13-Year-Old Girl With Pink Papules
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A 13-year-old girl presents to the clinic with pink papules on her abdomen, legs, arms, and the lateral aspects of her cheeks. The lesions have been present for 4 years, always appearing in the same area, with satellite lesions surrounding the primary site. The rash blanches on palpation. The papules are primarily located on her abdomen and become more prominent and pruritic with sun exposure. The rash is most noticeable in the periumbilical region, where the patient’s metal pants button comes in contact with her skin. The papules are accompanied by pruritus for which she gets mild relief by taking oral antihistamines and applying topical corticosteroids. However, she has been unable to completely get rid of the rash with this regimen.

The patient has an unremarkable medical history and is developing appropriately. There are no similar skin lesions on any close contacts.

On physical examination, the patient has multiple pink papules on the bilateral aspects of her cheeks, upper arms, elbows, knees, and lower legs (Fig 1). All vital signs are within normal limits. There are papules that have coalesced into plaques surrounding her umbilicus (Fig 2), with lichenification. There is evidence of excoriation, without any ulcerations or bleeding. The remainder of the physical examination findings are unremarkable.

The skin biopsy of the rash confirms the suspected diagnosis.

Figure 1. Multiple papules were noted on the arms (left) and legs (right) of the patient.

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Diagnosis: Allergic Contact Dermatitis With Id Reaction

The biopsy specimen showed perivascular inflammation containing neutrophils and eosinophils. On the basis of these histologic findings and the clinical history and physical examination of the rash, the patient is given a diagnosis of allergic contact dermatitis to nickel with id (autoeczematization) reaction.

Discussion

Nickel exposure is nearly unavoidable in everyday life because it is present in a wide variety of products, such as hairpins, jewelry, coins, spectacle frames, blue jean buttons and zippers, wire clasps, door handles, cosmetics, dental fillings, textiles, foods, and even drinking water. However, for many people this exposure can be problematic. Nickel is one of the most common causes of allergic contact dermatitis worldwide. It is the most frequently detected allergen on patch tests and in 2008 was proclaimed the contact allergen of the year by the American Contact Dermatitis Society.

Nickel allergy is increasing in prevalence among both the general population and children. A total of 26% of all patch tests in the pediatric population have a positive result for nickel sensitivity. This increase may be due to many factors, including changing environmental exposures in childhood, including the increased incidence of body piercing. Certain cultural practices, such as early ear piercing, may particularly predispose children to nickel allergy. Once acquired, nickel allergy is permanent, and when acquired in childhood or adolescence, it may even affect future career considerations if the hypersensitivity reaction is a severe one.

The clinical presentation of nickel allergy varies widely, depending on both the source of allergen and the severity of the reaction. The typical appearance is that of eczematous, erythematous papules, accompanied by pruritus. Long-term exposure can result in lichenified plaques. Recognizing the clinical patterns of nickel allergy is important in distinguishing it from atopic dermatitis. The history together with the specific anatomical site is particularly important in identifying nickel allergy. The most common presentation is infraumbilical dermatitis (ID), as seen in this case, due to exposure to metal buttons. Other signs include the earlobe sign caused by nickel-containing earrings or earring backs. Bilateral posterior thigh dermatitis is characteristic of school chair dermatitis from chairs with nickel in the hardware fastening the seat to the back. A high index of suspicion is needed; without it, the diagnosis may be delayed by months or even years, resulting in subacute or chronic patterns of dermatitis.

Another important and at times confusing aspect of nickel contact dermatitis is spread of the rash to sites distant from the site of exposure. This finding of an autoeczematous response, also known as an id reaction, is relatively common, estimated to be present in up to 50% of all cases of nickel allergy. It is believed to be due to hematogenous autosensitization by immune cells that are circulating throughout the body. Common sites include the thighs, upper arms, and elbows. Symptoms of the id reaction can be severe and can persist for months even after the allergen has been removed.

The diagnosis of nickel dermatitis can usually be based on the clinical presentation; however, a positive patch test result can be useful. Skin biopsy is not necessarily needed. Even if performed, the similarities in the histopathologic features of allergic contact dermatitis with other types of dermatitis may lead to a diagnosis of dermatitis without specifically pointing to nickel as the culprit. Allergic contact dermatitis to nickel is a type 4 delayed hypersensitivity reaction in which small antigens (metal ions) are conjugated with antigen-presenting cells, primarily Langerhans cells, in the epidermis. This complex is presented to T lymphocytes, resulting in downstream increases in inflammatory cytokines that direct the allergic response. The mechanism of sensitization is similar for all types of metals.
Differential Diagnosis
The differential diagnosis of this rash includes atopic dermatitis, cellulitis, herpes zoster, impetigo, and fixed drug eruption.

Management
The mainstay of treatment for any type of allergic contact dermatitis is avoidance of the offending agent. This can be difficult due to the pervasiveness of nickel in everyday life. Patient education should be a central part of treatment and prevention of nickel allergic contact dermatitis. Patients can use over-the-counter dimethylglyoxime kits to test objects for detectable amounts of nickel before purchasing them. Internet searches can point to many sites with information concerning nickel allergy and where dimethylglyoxime kits and low-nickel jewelry and other low-nickel products can be purchased. For symptomatic dermatitis, mid- to high-potency topical steroids or calcineurin inhibitors are useful, and antihista-mines can help alleviate pruritus. Rarely, systemic steroids may be needed, especially if widespread autoeczematization is present. In some cases of severe nickel contact dermatitis, symptoms may persist despite nickel avoidance secondary to small amounts of the allergen that occur naturally in foods (e.g., chocolate, nuts, seeds, and canned foods). In these cases, dietary nickel avoidance is recommended.

Prevention
Measures to prevent nickel contact with skin include wearing pants without metal snaps, avoiding belt buckles, covering snaps with nail polish or patches to avoid contact with skin, and avoiding piercings with nickel-containing jewelry or wearing nickel-containing jewelry. Of note, some cell phones may have nickel components on their surface and can cause a rash on the face.

Prognosis
The prognosis for nickel contact dermatitis with id reaction is very good, provided that adequate measures are taken to avoid recurrent nickel exposure. When an id component is present, resolution of the rash can be delayed by many months after the offending agent is removed. However, with strict nickel avoidance and symptomatic treatment of the rash, most patients will have complete symptom resolution.

Patient Course
The patient was counseled extensively on nickel avoidance. She was also encouraged to avoid possible sources of dietary nickel given of the severity of her symptoms. In addition, because of the severe id component, the patient was prescribed a 2-week prednisone taper. She was also given 0.05% topical fluocinonide ointment. The patient’s symptoms improved with this multipronged approach.

Summary
Allergic contact dermatitis to nickel is extremely common and is increasing in prevalence. Nickel dermatitis is characterized by an eczematous, pruritic rash at the primary site of contact. In severe cases, direct contact nickel dermatitis is accompanied by cutaneous involvement of other sites not in contact, a development known as an id reaction. Diagnosis is often made on clinical grounds; however, a positive patch test result may be used to confirm diagnosis. The mainstays of treatment are nickel avoidance and topical corticosteroids.

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