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CASE REPORT

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Coexistence of Nickel Allergy and Palmoplantar Pustulosis

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ABSTRACT

Nickel is a very common metal and is a common cause of allergic contact dermatitis. Although nickel allergy often causes allergic contact dermatitis at contact areas, oral exposure to nickel may cause various skin reactions and systemic disorders. Herein, we aimed to draw attention to the different presentations of nickel allergy by presenting our case with palmoplantar pustulosis with accompanying nickel allergy.

Keywords: Nickel, allergy, palmoplantar pustulosis

INTRODUCTION

Nickel allergy is a very common cause of allergic contact dermatitis. In sensitive individuals, it usually causes local reactions characterized by erythema, vesicles, scaling, and itching after cutaneous exposure to nickel (1,2). Patients with nickel allergy mostly present with chronic eczematous lesions on the hands, ears, and trunk regions that nickel comes into contact with. However, nickel can also be taken orally in cocoa, garlic, onions, apricots, chocolate, nuts, shellfish, beverages, and foods in cans. It has been shown that oral exposure to nickel may cause baboon syndrome, generalized itchy eczematous dermatitis, persistent pruritus ani, pseudoatopic dermatitis, dyshidrotic eczema, palmoplantar pustulosis, non-celiac wheat sensitivity, eosinophilic esophagitis, and irritable bowel syndrome (1-5).

Palmoplantar pustulosis (PPP) is a chronic inflammatory condition characterized by recurrent sterile pustules on the palms and soles and erythematous keratotic lesions that may cause bleeding and pain (6,7). It occurs more commonly in middle-aged women. Bilateral palms and soles are symmetrically involved. Although PPP is thought to be a local skin disease, it can cause a significant decrease in quality of life as it can cause painful lesions in functionally important areas such as hands and feet. Smoking, contact allergens, and certain medications have been reported to play a role in the development of the lesions. In some cases, PPP coexists with other diseases, i.e., seronegative arthropathies, as well as celiac and thyroid diseases. In recent years, some publications associate PPP with various metal allergies (7-11). Herein, we aimed to draw attention to the different presentations of nickel allergy that can be caused by oral exposure by presenting our case with PPP with accompanying nickel allergy.

CASE PRESENTATION

A 32-year-old housewife female patient, who had no known co-existing skin and allergic disease and no occupational/environmental exposure, presented with erythematous lesions on the palmoplantar region for 1.5 years. The lesions were not completely healed by the various topical and systemic steroids she had previously used. There was no history of psoriasis, arthropathy, celiac,

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or thyroid disease in her personal and family history. In the dermatological examination, deep vesicles and pustules, hyperkeratosis, and desquamation were observed on the erythematous background on the bilateral palmoplantar region (Figure 1A-C). Her trunk, other extremities, scalp, and nails were normal. The mycological examination was negative. The histopathological examination of the biopsy taken from the palmar region was consistent with PPP. With the clinical and histopathological findings, the patient was diagnosed with PPP. Laboratory examination did not reveal any findings consistent with any systemic disorder, including celiac and thyroid disease. In the skin tests performed on the patient, nickel allergy was +++ positive on the patch test and the general atopy tests were negative. The lesions were not completely healed by the topical agents; however, significant regression of PPP lesions was achieved with a simple nickel elimination diet and appropriate topical dermatological treatment in the patient.

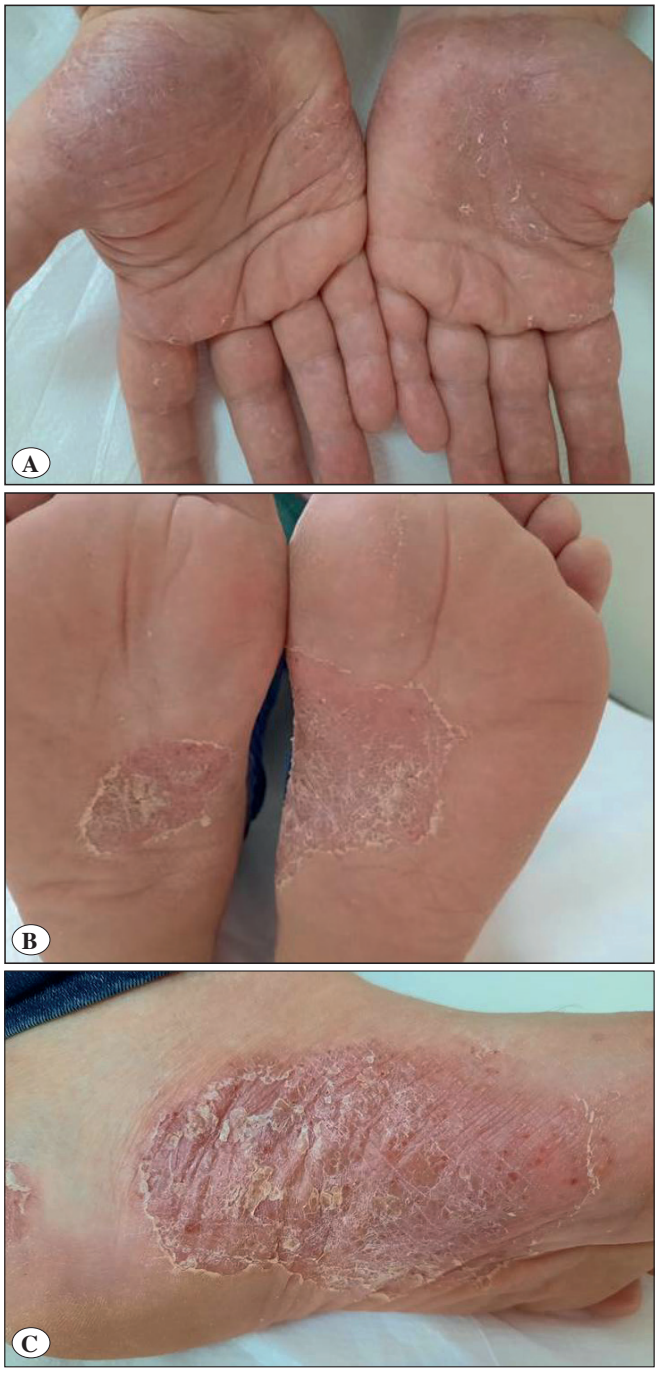

Figure 1. A-C) Deep vesicles and pustules, hyperkeratosis, and desquamation on erythematous background on the bilateral palmoplantar region.

DISCUSSION

The etiopathogenesis of PPP has not yet been fully clarified, although it is known that genetic, immunological, and environmental factors play a role in its development. Some authors classify it as a variant of psoriasis, others as a separate entity. Different aspects of PPP from psoriasis are the absence of psoriasis in the family, the late onset of the disease, the absence of typical psoriatic lesions, and the presence of an increased incidence of allergies to metals (7). Clinical observations confirm the role of contact allergens in the development of lesions. The literature associates PPP with metal allergies (nickel, iron, titanium, cobalt, zinc, and copper). Clinical studies have shown that 25.2% of patients diagnosed with PPP develop a contact allergy to one or more substances, mostly including allergies to nickel, rubber additives, Peru balsam, chromium, mercury, and various fragrances (7). In addition, due to the large number of reports in recent years, many authors have considered PPP to be a reactive process (a subtype of systemic contact dermatitis) (7-11).

Although PPP involves a limited area, the disorder can cause significant impairment of the patients' functioning and adversely affects social interactions. Lesions on the soles of the feet may cause difficulty walking, and hand involvement may interfere with other activities.

PPP tends to have a chronic course consisting of periods of exacerbation and partial remission. First-line therapeutic options include topical corticosteroids, oral retinoids, and photochemotherapy; however, the treatment of the disease is often challenging, as responses to individual treatments are variable and unpredictable. As there may be associated

disorders, finding the cause of the disease is essential to administering effective treatment.

In conclusion, some cases of PPP may have underlying contact allergies, and performing patch tests in PPP patients who do not respond to treatment can be helpful in medical care. Avoiding contact allergens is also an important part of the treatment (7-10).

Conflict of Interest

The authors have no conflict of interest to declare.

Authorship Contributions

Concept: **Nilay Duman, Özlem Göksel,** Design: **Nilay Duman, Özlem Göksel,** Data collection or processing: **Nilay Duman, Sinem İnan, Serpil Akten, Özlem Göksel,** Analysis or Interpretation: **Nilay Duman, Sinem İnan, Serpil Akten, Özlem Göksel,** Literature search: **Nilay Duman, Sinem İnan, Serpil Akten, Özlem Göksel,** Writing: **Nilay Duman, Özlem Göksel,** Approval: **Nilay Duman, Sinem İnan, Serpil Akten, Özlem Göksel.**

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