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CASE REPORT

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Granular parakeratosis involving the dorsum of the hands; skin reactions due to irritant agents: A case report

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Key Clinical Message: We described the first case of granular parakeratosis with an unusual presentation of brown discoloration plaques and multiple erythematous on the dorsal part of the patient's hands. Skin maceration and repeated washing could have led to the development of the lesions.

Abstract: Granular parakeratosis is a unique acquired keratinization disorder. Here, we described the abnormal presentation of granular parakeratosis. A healthy female aged 27 years old presented brown discoloration plaques and multiple erythematous on the dorsal part of her hands for 8 months. Using detergents, repeated washing, and skin maceration were considered the causes of her lesion.

KEYWORDS
contact dermatitis, dorsum of hands, granular parakeratosis

1 | INTRODUCTION

The etiology of granular parakeratosis (GP) is unclear, but it appears to be a reactive process in the skin.[1] Earlier reports cite relationships between GP and skin maceration because of occlusion, warm environments, obesity, sweating, repeated washing, or skin irritation caused by external agents.[2,3] Some reports have even described carcinomas in patients with GP.[4]

The primary lesions are erythematous to brown plaques involving the axilla and other intertriginous sites.[2,5] Moreover, GP has been described in non-intertriginous areas such as the face.[6] It seems to be reactive due to an underlying predisposition aggravated by physical irritants.[3]

In this paper, we describe the first case of GP on the dorsum of the hands. The lesions were induced by repeated washing, detergent use, and plastic occlusion of the skin. This case report followed the CARE instructions.[7]

2 | CASE REPORT

A healthy female aged 27 years old experienced brown discoloration of both dorsal aspects of her hands, which developed at 8 months. She was a housewife and had a history of xerosis. Her lesions were caused by frequent hand washing after the start of the COVID-19 pandemic. Frequent use of alcohol, soap, and hand detergents aggravated the lesions. The presence of sodium lauryl sulfate in cleansing bars and alcohol-containing hand sanitizers was a risk factor for irritant contact dermatitis. She was obsessed with washing and was being treated with citalopram and propranolol for her anxiety for 2 years. Her family medical history included asthma in her mother. A physical examination revealed multiple erythematous and brownish hyperkeratotic plaques with small sparing areas (Figure 1A). She had moderate pruritus, and her lesions were only on the dorsal aspect of both hands.

FIGURE 1 (A) Multiple erythematous and brownish hyperkeratotic plaques on the dorsal aspects of the left hand (in the small-size photo, the improved area of the left hand is marked). (B) Partially treated right hand.

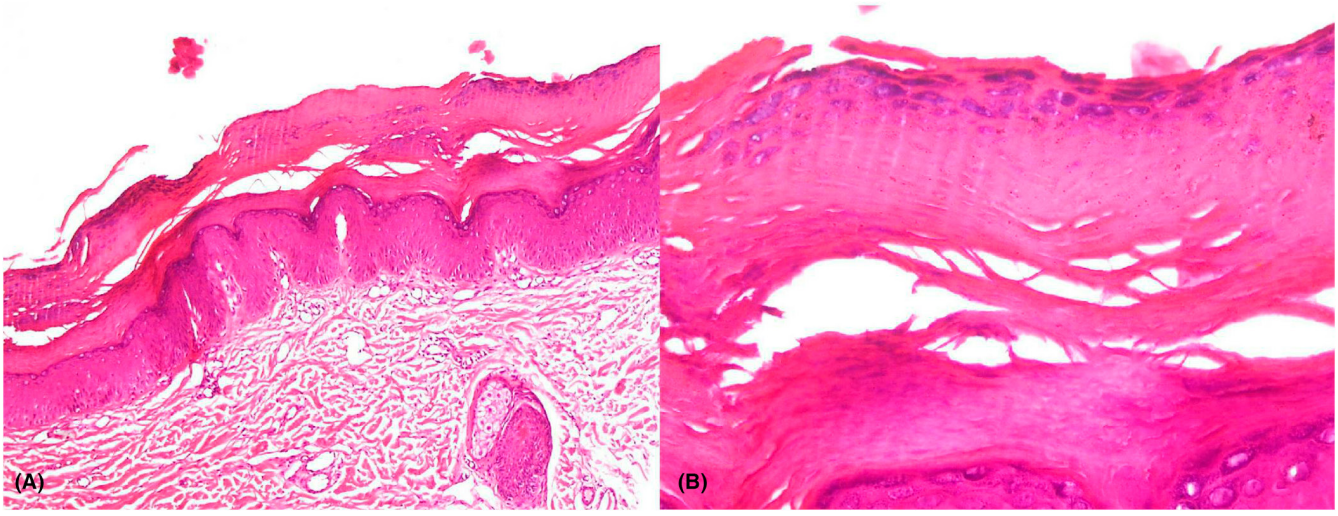

FIGURE 2 (A) Mild acanthosis, hyperkeratosis, and perivascular lymphocytic infiltration were in the superficial dermis (H&E ×10 magnification). (B) Patchy parakeratosis and basophilic keratohyalin granules were within the cornified layer (H&E ×40 magnification).

A punch biopsy was taken from the back of her hand to perform H&E staining. Histopathological examination showed hyperkeratosis, patchy parakeratosis, and basophilic keratohyalin granules within the cornified layer. Mild acanthosis and perivascular lymphocytic infiltration were seen in the superficial dermis. The clinical picture was not similar to the usual appearance of GP or the usual location. Hence, we confirmed a diagnosis of GP on histopathological findings (Figure 2). At that time, patch tests were unavailable in our country.

Her lesions began 1 week after the use of detergents and alcohol and disappeared with restricted detergent use, combined with treatment for the disorder. The cutaneous lesions entirely resolved with the peeling of the skin after 4 weeks of treatment with topical mometasone ointment (once daily for 2 weeks, then every other day for 2 weeks), tacrolimus 0.1% (once daily), and moisturizer (Figure 1B). However, her lesions recurred with repeated detergent use. Thus, she was advised to avoid detergents and plastic occlusion because the disease would recur with repeated washing and detergent use.

3 | DISCUSSION

Granular parakeratosis is a rare acquired keratinization disorder characterized by erythematous scaly patches, papules, and plaques predominantly involving the flexures.[5,8] Repeated washing, mechanical irritation, obesity, maceration of the skin, local sweating, genetic predisposition, and antiperspirant use may be predisposing factors.[2,3,9]

Repeated washing, detergent use, and maceration of the skin due to occlusion by plastic gloves during the COVID-19 pandemic could have contributed to the development of GP in our patient.

Granular parakeratosis affects both sexes and usually occurs in women over 40,[2] although pediatric patients between 3 and 24 months of age have been reported.[10] Symptoms like pruritus, burning, and tenderness were reported,[8] like in our case. The etiology of this disease is unclear, but two hypotheses have been described. The first describes it as secondary to external irritation—in particular, irritation caused by deodorants and antiperspirants that interfere with the breakdown of profilaggrin to filaggrin during epidermal differentiation; the second links it to impaired cornification unrelated to irritated agents.[2]

Abnormalities of keratinocyte maturation from the stratum granulosum to the stratum corneum and increased hyperkeratosis may result from defects in cell surface structures and induced dysregulation in the cornified envelope.[11]

The classification of GP based on the clinical and histopathological findings consists of (1) intertriginous GP, (2) GP of the eccrine ostium, (3) follicular GP, (4) granular parakeratotic acanthoma, and (5) incidental GP.[12]

There is no standard treatment for GP. However, removal of the possibly offending agent, environmental modification, and multiple treatments such as corticosteroids, vitamin D analogs, ammonium lactate antifungals, and tretinoin have been attempted with different results.[8,13] Other treatments include oral corticosteroids, isotretinoin, antibiotics, antifungals, and destructive modalities such as cryotherapy, botulinum toxin injections, and lasers.[2,8,9]

The key point from our case is the first case of GP on the dorsum of the hands. The unusual appearance of this disease makes us consider it a differential diagnosis. The patient was counseled.

AUTHOR CONTRIBUTIONS

Mohammad Shariat Nia: Writing – original draft; writing – review and editing. **Vahideh Sadat Azhari:** Methodology. **Safoura Shakoei:** Conceptualization; data curation; methodology; resources; writing – original draft; writing – review and editing.

FUNDING INFORMATION

None.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

Data are available upon request by contacting the corresponding author, Dr. Safoura Shakoei who has full access to all the data used in this study and takes complete responsibility for the integrity of the data.

ETHICS STATEMENT

Ethical approval is not required. Patient consent was obtained for hand images to be published as displayed.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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