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Mask-induced Koebner phenomenon in an inverse psoriatic patient during COVID-19 pandemic

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Since the outbreak of the coronavirus disease 2019 (COVID-19) pandemic, people have worn masks to protect their respiratory system.¹ However, wearing masks for a long time may cause health consequences to the skin.² Here we describe a case of mask-induced Koebner phenomenon in an inverse psoriatic patient during the COVID-19 pandemic.

CASE REPORT

A 19-year-old man developed well-defined erythematous patches covered with scales in both of his ear grooves for 4 months, which worsened 4 weeks ago. The skin lesions appeared in mask-lace covered areas (Figure 1A,B, Figure S1). Meanwhile, the patient also had lesions on his scalp, belly button, perineum, and axillae (Figures S1 and S2).

He had a 1-year history of inverse psoriasis. Before the first onset of psoriasis in the ear grooves, he had worn a mask almost every day, especially when riding on the subway. His lesions in the ear grooves were aggravated after his participation in military training at the

university 4 weeks ago. He sweated a lot during military training and did not wear a mask. The patient has no family history of psoriasis and has no other special physical abnormalities. The diagnosis of inverse psoriasis in the ear grooves by mask laces was made.

He was prescribed topical tacrolimus ointment in the ear grooves and body folds, and calcipotriol betamethasone gel on the scalp. Meanwhile, he was advised to avoid using ear-hook masks. Two weeks later, the skin lesions in the ear grooves turned into pale red patches, and scales disappeared (Figure 1C,D). Most of the skin lesions in the body folds improved significantly (Figures S2 and S3).

DISCUSSION

The Koebner phenomenon was first described in 1876 by Heinrich Koebner. This phenomenon is described as the following: after nonspecific damage (such as trauma, sun exposure, some skin diseases, and so on), previously unaffected skin can develop skin lesions identical to existing

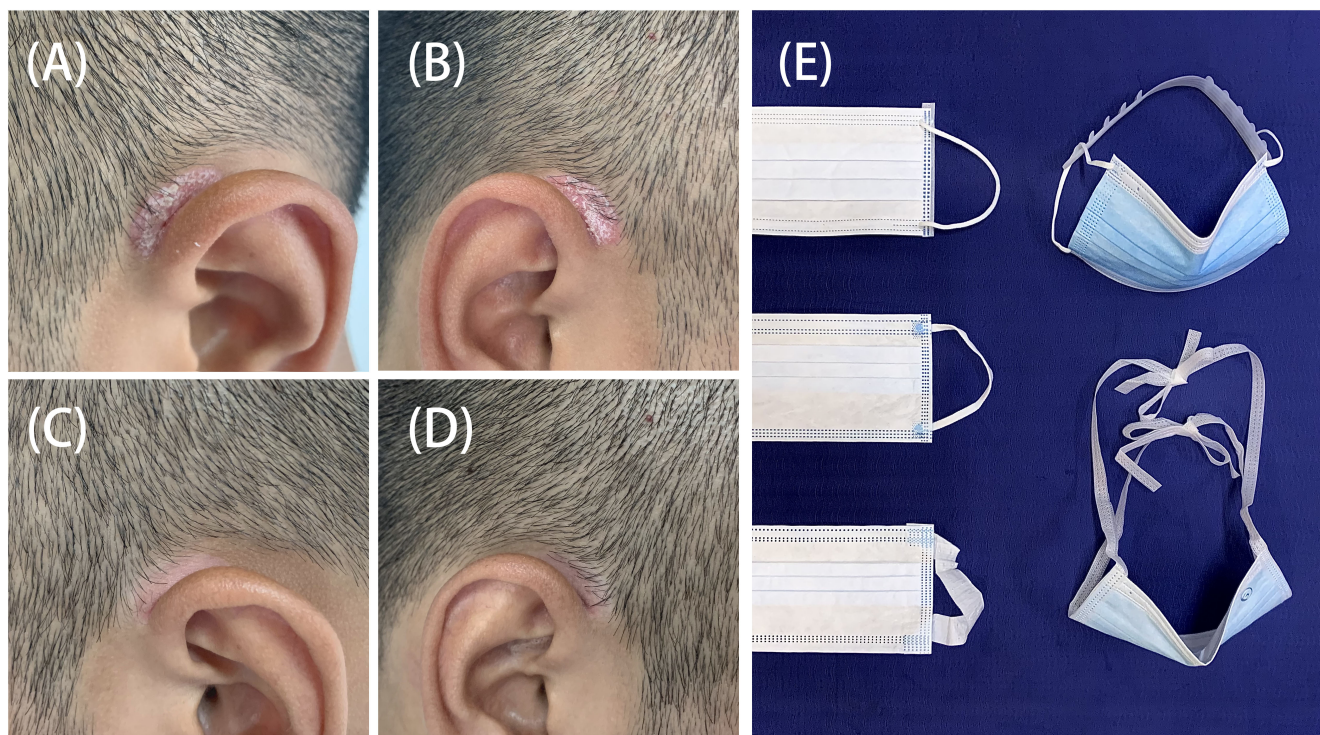


FIGURE 1 Mask-induced Koebner phenomenon and recommendations for wearing masks. (A,B) Clinical manifestations of the patient in his ear grooves. (C,D) His improvement after treatments. (E) Recommendations for wearing masks for such patient. Upper left, a common thin-lace and ear-loop style mask; bottom two on the left, a mask with wider laces and corresponding lower pressure; upper right, an ear loop-style mask modified with a plastic handle; bottom right, a head-strap mask

skin diseases.³ Mask-induced Koebner phenomenon during the COVID-19 pandemic needs our attention.⁴ In this case, the appearance of psoriasis skin lesions caused by mask laces on both side of the cefaloauricular folds is a Koebner phenomenon. The ear grooves in close contact with the mask laces are exposed to an inflammatory micro-environment,⁵ which may be similar to the sweaty and humid environment of the folds of the body. The disruption of a functional and structural permeability barrier is an important factor in the Koebner reaction of psoriasis.⁶ Therefore, changes in the local micro-environment coupled with external stimulus from the mask laces caused the patient's Koebner reaction.

Wearing a mask is inevitable throughout the COVID-19 pandemic. People with inverse psoriasis, in addition to getting medical treatment, should be advised to use masks that are less irritating to ear grooves in order to avoid Koebner phenomena. For example, (i) masks with wider laces and corresponding lower pressure on the skin of the ear grooves (Figure 1E, bottom two on the left). Moreover, unlike thin-lace masks (Figure 1E, upper left), the connection point between the laces and the mask body is on the outside of the mask for the wide one. In this way, the body of the mask can act as a buffer, so the external force of the laces on the ear grooves will be relatively lower; (ii) masks with the laces made of special materials (eg, softer or less irritating) that can reduce the friction or stimuli of the mask laces on the skin; (iii) masks with a head strap that can avoid the irritation of the mask laces to the ears (Figure 1E, bottom right); (iv) ear loop-style masks modified with a plastic handle can also reduce local pressure and friction on the ear groove (Figure 1E, upper right)⁷; and (v) mask-free breaks as frequent as possible can also be helpful.⁸

During this long-term COVID-19 pandemic, we should pay more attention to the skin damage caused or aggravated by common protective facilities, especially masks. The above are the recommendations we provide to patients with inverse psoriasis or patients in atopic/sensitive states who are worried about the ear skin external stimulations. These recommendations clearly need further improvements.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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Lichenoid contact reaction to hydroperoxides of linalool resembling morphea

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Linalool is a terpene widely found in fragrances. We report a woman presenting with morpheaic plaques with lichenoid features on histology subsequently found to have contact allergy to hydroperoxides of linalool.

lymphocytic infiltrate within the dermis. Furthermore, the dermis showed superficial and deep, perivascular, and perineural lymphocytic infiltration. The overall histological diagnosis was lichenoid interface

CASE REPORT

A 64-year-old New Zealand European female presented with discoloration and burning sensation affecting the wrists and feet bilaterally. She had a background of psoriasis and a family history of scleroderma. She reported application of perfume to the affected areas on her wrists.

On examination she had violaceous well-defined plaques with thin hyperkeratosis on the volar aspects of the wrists bilaterally (Figure 1). There was dermal induration and tethering suspicious for morphea, although the distribution was considered atypical. There was violaceous discoloration of the dorsal feet including the toes, extending to the ankles bilaterally.

Subsequent blood tests including an autoimmune screen were normal. Punch biopsy from the right wrist showed interface vacuolar change with necrotic keratinocytes in the epidermis and bandlike



FIGURE 1 A scaly, violaceous plaque on the volar aspect of the right wrist. On palpation there was induration and tethering of the skin