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Case Report

Widespread verruca vulgaris on plaque psoriasis lesions: An uncommon clinical presentation

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Abstract Psoriasis is a common, chronic, recurrent, immune-mediated disease that leads to dysregulation of epidermal proliferation. Plaque psoriasis is the most common psoriasis variant characterized with pruritic, well-defined erythematous plaques accompanied with thick silvery scales. Widespread lesions may require long-term immunosuppressive treatments that can lead to certain opportunistic infections such as verruca vulgaris. The role human papillomavirus (HPV) in psoriatic skin lesions is still unclear. It is thought that HPV is associated with the precipitation of psoriatic lesions. We report a case of a 65-year-old male patient with severe plaque psoriasis with an uncommon clinical presentation of widespread verruca vulgaris overlapping the psoriasis lesions thought to be caused by long-term treatment of methotrexate, prompting physicians to be more aware of the potential complications of using immunosuppressants for the management of various immunological diseases.

Key words
Psoriasis vulgaris; Verruca vulgaris; Methotrexate; Overlapping.

Introduction

Psoriasis is a common, chronic, recurrent, immune-mediated disease that affects the skin, nails, and joints. The World Health Organization (WHO) reported in 2016 that the prevalence of psoriasis ranged from 0.09% to 11.4% worldwide. The onset of psoriasis most commonly occurs between 20-30 years old.[1,2] Plaque psoriasis is the most common clinical variant of psoriasis characterized with pruritic, well-defined, erythematous, thick plaques accompanied with silvery scales.[3] The pathophysiology of psoriasis is related to various cellular inflammatory processes. In cases where topical treatments are insufficient in managing cutaneous lesions, the use of systemic immunosuppressive drugs such as methotrexate (MTX) may be used.[4,5] However, this can lead to opportunistic infections such as verruca vulgaris.[1] We report a case of a 65-year-old male patient with severe plaque psoriasis undergoing long-term MTX treatment with an uncommon clinical presentation of widespread verruca vulgaris overlapping on plaque psoriasis lesions.

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Case report

A 65-year-old male patient presented with generalized thick scaly red patches for several years. The patient was diagnosed with plaque psoriasis and as topical treatments were unsuccessful in managing the lesions, the patient was treated using a combination of 7.5mg MTX/week in combination with potent topical corticosteroids for the past one year. However, as lesions did not improve, MTX dosage was increased to 15mg/week two months prior. The

Figure 1 Verrucous papules and nodules over existing psoriasis lesions on the abdomen, gluteus and lower extremities.

patient started to notice the appearance of multiple warts on top of the existing lesions in the past two weeks accompanied with pruritus. Dermatological examination found multiple erythematous plaques, along with multiple verrucous papules and nodules overlapping the plaques on the abdomen, gluteus, and lower extremities (**Figure 1**). The Psoriasis Area Severity Index (PASI) of the patient was 18.4 with >10% BSA involvement.

Biopsy from one of verrucous papules revealed psoriasiform hyperplasia, hyperkeratosis, parakeratosis, hypergranulosis, papillomatous with elongated rete ridges, and numerous koilocytosis on the epidermis. In addition, dense accumulation of inflammatory lymphocyte cells was found in the upper dermis suggestive of verruca vulgaris (**Figure 2**). Lesions were then removed using electrodessication in multiple sessions along with continuation of MTX treatment. A four-week follow-up found improvement of PASI score to 6.6 and no recurrences of verruca vulgaris were observed (**Figure 3A-E)**.

Discussion

The pathogenesis of psoriasis is complex and is driven by the dysfunction of a subset of T-cells including T-helper (Th)1, Th17, Th22 and regulatory T-cells (Treg) that releases various cytokines including IFN-Ɣ, tumor necrosis factor-alpha (TNF)-α, IL-23 and IL-17.[2] The increased activity of Th1 proinflammatory cytokines stimulate keratinocyte proliferation, and thus may lead to activation of latent HPV infection.[6,7] Conversely, it is also reported that environmental factors including viral infections can exacerbate psoriasis lesions.[1]

The exact correlation between HPV infections and psoriasis is still limited. One paper reports that certain proteins contained in the capsid of the HPV, specifically types 5 and 36 may trigger an immunological response when recognized by

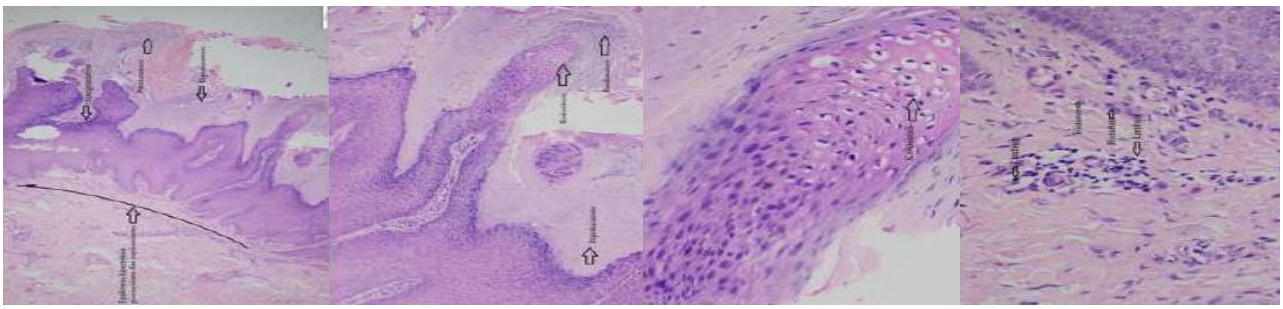

Figure 2 Histopathological results suggestive of verruca vulgaris.

Figure 3 improvements in psoriasis lesions and no recurrences observed after four weeks of treatment.

the CD4+ lymphocytes resulting in the production of several specific antibodies that lead to complement activation, neutrophil chemotaxis, and formation of the Munro microabscesses in plaque psoriasis.[5] To our knowledge, the incidence of overlapping lesions of verruca vulgaris over psoriatic lesions is rare. We hypothesize that pruritus and chronic itching in our patient lead to trauma and act as a potential entry point for HPV infection.[6,7]

Previous studies have found HPV infections in patients receiving biologic treatments such as etanercept. The exact pathogenesis of drug-induced viral infections is still unknown, but some hypothesize that it is due to the suppression of the TNF- α pathway activity.[4]

The condition should be distinguished with verrucous psoriasis, a rare and distinct variant of psoriasis, where clinically it can resemble verruca vulgaris with the appearance of verrucous plaques. Histopathological examination can help exclude the condition, where verrucous psoriasis will give mixed histopathological findings of both psoriasis and verruca vulgaris, such as hyperkeratosis, Munro's microabscesses, spongiosis, parakeratosis, and thinning of the granular layer as well as papillomatosis with dermal vascular dilation and perivascular lymphocytic infiltration. The presence of koilocytosis is the differential finding that help to distinguish verruca vulgaris with verrucous psoriasis such as in our case.[8]

In theory, psoriatic lesions are less prone to infections due to high production of antimicrobial peptides and IFN-ϒ.[6,7] However the use of long-term immunosuppressants such as MTX may facilitate secondary HPV infections or facilitate the development of previously latent HPV infection.[9-11] In such cases, this secondary infection does not warrant cessation of systemic treatments. Our patient exhibited excellent outcome in PASI score improvement after continuation of MTX treatment combined with electrodessication for removal of verruca vulgaris lesions.[12] However, careful follow-up should be given to the patient for possible recurrences. Furthermore, MTX treatment should be ceased when improvement of psoriasis is achieved.

Conclusion

Verruca vulgaris may emerge as an opportunistic infection in psoriasis vulgaris patients as a result of long-term immunosuppressive treatments. Physicians should be aware of this condition and physical treatments such as electrodessication yields high success rate in management.

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