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Vitiligo in the Wake of Herpes Labialis: A Wolf's Isotopic Response

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Abstract: ***Wolf's isotopic response is the development of a new, unrelated dermatosis at the site of a previously healed skin disorder, most commonly following herpes zoster, while Herpes simplex virus has rarely been implicated. We describe a 45-year-old woman who developed well-defined depigmented perioral macules confined to the site of recurrent herpes labialis. Wood's lamp examination accentuated the lesions, and histopathology confirmed vitiligo by demonstrating loss of basal melanocytes. The temporal association and precise anatomical localisation supported a diagnosis of post-herpetic vitiligo as Wolf's isotopic response. This case expands the spectrum of herpes simplex virus-associated isotopic responses.***

Keywords: Herpes Labialis, Vitiligo, Wolf's Isotopic Response

1. Introduction

Wolf's isotopic response denotes the development of a distinct dermatosis at the site of a previously healed and unrelated cutaneous disorder. Herpes zoster is the predominant antecedent dermatosis; however, other herpesvirus infections have also been implicated as precipitating factors.[1] We describe a rare case of vitiligo arising at the site of a healed herpes labialis lesion, representing an unusual manifestation of Wolf's isotopic response.

2. Case Report

A 45-year-old female presented to the dermatology outpatient clinic with a two-month history of asymptomatic, non-progressive depigmented patches over the perioral region, predominantly involving the right upper lip with extension toward the left oral commissure. The lesions showed no surface scaling or induration (Figure 1). On detailed history, she reported an episode of grouped vesicular eruptions at the same site approximately one year earlier, accompanied by a burning sensation and fever. The clinical features were suggestive of herpes labialis, which resolved completely without residual scarring. A recurrence of similar herpetic lesions was noted two weeks before the onset of the depigmented patches.

Cutaneous examination revealed well-defined depigmented macules confined strictly to the site of the previous herpetic eruption. No similar lesions were observed elsewhere on the body. Hair, nails, and mucosae were unremarkable, and there was no personal or family history of vitiligo or autoimmune disease. Wood's lamp examination accentuated the depigmentation. Histopathological analysis revealed a loss of melanocytes in the basal layer, consistent with vitiligo (Figure 2). No evidence of active systemic infection or immunosuppression was noted.

3. Discussion

Genetics, environmental factors, and immune-mediated inflammation are all responsible for the development of vitiligo. Herpetic lesions on healing can lead to erythema multiforme, psoriasis, lichen planus, post-inflammatory hypopigmentation, and very rarely, vitiligo. Post-herpetic vitiligo should be distinguished from post-inflammatory hypopigmentation. Vitiligo has clean, well-defined borders and is pure white in colour, while post-inflammatory hypopigmentation has fuzzy, irregular borders and is dull white in colour. On examination, under a Woods lamp, vitiligo glows bright white while post-inflammatory hypopigmentation shows a muted glow. Dermoscopy helps spot pigment incontinence (tiny melanin droplets) common in post-inflammatory hypopigmentation. A biopsy can confirm melanocyte loss rather than temporary pigment reduction.[2]

Based on the temporal relationship and strict localisation of vitiligo to the site of a healed herpes labialis lesion, a diagnosis of postherpetic vitiligo occurring as a Wolf's isotopic response was made in this case. The underlying mechanism of Wolf's isotopic response may involve localised immune dysregulation, neural damage, or persistent viral antigen–mediated immune activation, resulting in melanocyte destruction responsible for a defect of intracellular melanosome transport and a failure of their transfer to keratinocytes within an immunocompromised cutaneous district.[3]

Wolf's isotopic response differs from the Koebner Phenomenon, where the same disease develops at a site of skin damage. There are only a few case reports of Wolf's isotopic response due to its challenging recognition. Isotopic response can lead to various dermatoses, including granulomatous reactions, malignant tumours, and immunologic or infectious skin disorders.[4]

While Koebner phenomenon is known to be associated with exacerbations of vitiligo, this case emphasises that vitiligo can be a rare manifestation of Wolf's isotopic response following herpes labialis. It also underscores the role of

immune changes that occur after a herpes outbreak in the development of secondary dermatoses.[5] Furthermore, this case reinforces the need for thorough history-taking in patients with localised vitiligo to identify any potential preceding triggers.

4. Conclusion

This case expands the clinical spectrum of Wolf's isotopic response by documenting vitiligo arising after recurrent herpes labialis, a rare association. Recognition of this rare phenomenon highlights the importance of considering antecedent herpetic infections in patients presenting with localised vitiligo and may provide insights into post-herpetic immune dysregulation in melanocyte loss.

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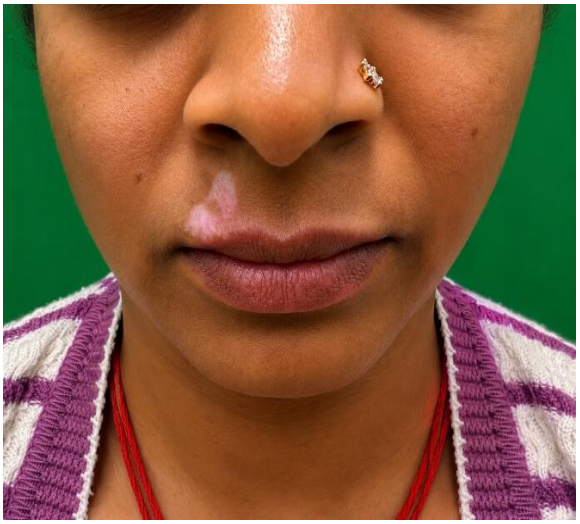

Figure 1: Clinical photograph showing well-defined depigmented macules with well -defined margins involving the perioral region, predominantly over the right upper lip, with extension to the left oral commissure. The lesions show no surface scaling or induration.

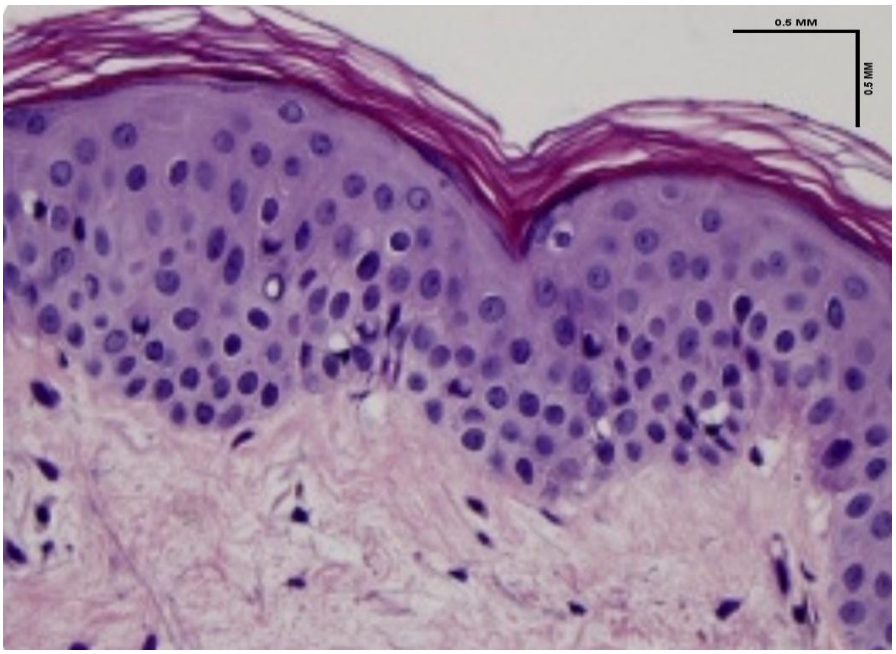

Figure 2: Histopathological image (high power magnification 400×) showing absence of functional melanocytes in the basal layer of the epidermis.