DOI: https://doi.org/10.3126/njdvl.v24i1.84063

A rare case of Post-herpetic keloid as Wolf's isotopic phenomenon

Tsering Dolma Gurung[1], Pooja Gupta[2], Maya Gurung[3]

[1]Rapti Academy of Health Sciences, Dang, [2]Maharajgunj Medical Campus, Kathmandu, [3]Pokhara Academy of Health Sciences, Pokhara

Abstract

Wolf's isotopic phenomenon is the occurrence of a different skin disease at the same site where another skin disease had healed. It has been most commonly reported at the healed herpes zoster site. Development of keloids after healing of herpes zoster as an isotopic phenomenon is an uncommon response. Timely recognition of this phenomenon can prevent unnecessary interventions and promote early appropriate management.

Key words: Herpes zoster; Isotopic phenomenon; Keloid

Dear Editor,

Wolf's isotopic phenomenon is an under-reported process with unknown prevalence. Isotopic response was first described by Wolf et al in 1955 as the development of a new skin disorder at the site of different skin disease that had already healed.1 The initial dermatosis in most of the reported cases is herpes zoster.

An eighty-year-old diabetic lady presented to Department of Dermatology with painful grouped vesicles over her right chest and back for two days. She was diagnosed as Herpes zoster and treated with oral acyclovir for seven days. The lesions crusted and healed over the period of three weeks. However, after six months, she presented with new lesions over the sites where her old lesions of herpes zoster had healed. On examination, there were linear firm plaques surrounded by hypopigmented patches distributed along the dermatomal pattern over her right chest and back [Figure 1]. She had no history of development of keloid at any other sites. A diagnosis of keloid as isotopic response was made based on the typical morphology of the lesions confined to the previously healed dermatome of herpes zoster extending beyond the initial boundary of the healed lesions. Other differential diagnoses such as morphea, sarcoidal tissue reactions, chronic graft-versus-host disease or cutaneous malignancies were considered less likely because of typical morphology, absence of sclerosis, no systemic features and no history of stem-cell transplantation. The hypopigmented patches surrounding the plaques were most likely post-inflammatory hypopigmentation following the initial herpes zoster. Although isotopic responses presenting as vitiligo or lichen sclerosus have been reported, these were unlikely because of absence of chalk-white depigmentation, sharply defined borders and atrophy. She was treated with intralesional Triamcinolone 40mg/ml monthly for 3 months following which there was partial improvement. However, the patient was subsequently lost to follow-up.

Funding: None
Conflict of Interest: None

Corresponding Author:
Dr. Tsering Dolma Gurung
Rapti Academy of Health Sciences,
Dang Ghorahi-10, Dang, Nepal
Email: tserindg@gmail.com
Tel:+9779803402874
ORCID ID: 0009-0006-6372-354X

Date of Submission: 2025- 09-03
Date of Acceptance: 2026-12-06
Date of Publication: 2026-05-01

How to cite this article
How to cite the article: Gurung TD, Gupta P, Gurung M. A rare case of Post-herpetic keloid as Wolf's isotopic phenomenon. NJDVL 2026;24(1):78-79

https://doi.org/10.3126/njdvl.v24i1.84063

Licensed under CC BY 4.0 International License which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

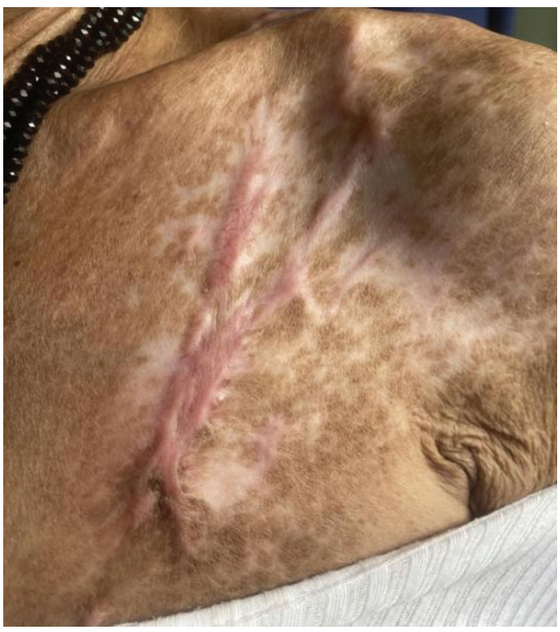

Figure 1: Linear, firm keloids with surrounding hypopigmented patches distributed along the dermatomal pattern over healed herpes zoster site on the right hemithorax.

Wolf's isotopic phenomenon can be attributed to immunologic, viral or neural causes. It was thought to occur due to "locus minoris resistentiae" which means that previously diseased skin has decreased resistance to another disease.[1] Another hypothesis states that it can occur due to exaggerated immune response to tissue antigens following the first disease.[1,2] Herpes zoster damages the dermal nerves and release neuropeptides which can lead to immune dysregulation through neuro-immunologic interaction.[3]

The isotopic phenomenon can occur at healed sites of herpes zoster, varicella and thrombophlebitis.[1,4] It is observed to occur 15 days to 7 months after the healing of primary dermatosis.[4] Herpes zoster is the most commonly reported primary disease with isotopic response. It is caused by reactivation of dormant varicella zoster virus in the dorsal root ganglia.The second diseases reported to develop over healed herpes zoster sites are granuloma annulare, granulomatous dermatitis, psoriasis, vitiligo, lichenoid dermatitis, and malignancy.[3,4] Dermal fibroblast proliferation and excessive collagen deposition in form of keloids, morphea and scleroderma have also been reported in few cases.[2]

Keloids are benign skin condition as a result of excessive collagen deposition and fibroblast proliferation over trauma sites. Development of keloids after healed herpes zoster is a rare occurrence and a typical demonstration of Wolf's isotopic phenomenon. There are very few cases of post-herpetic keloid and most of them are in immunocompromised patients.[3-5] In our case also, the patient was immunocompromised elderly diabetic lady. Immunocompromised patients have altered cytokine levels and prolonged inflammation which may predispose to keloid formation. Chronic hyperglycemia in diabetic individuals may contribute to abnormal fibroblast activity and delayed remodelling, further predisposing to exaggerated scarring responses. In addition to immunocompromised status, the risk factors for development of isotopic responses include severe or prolonged initial herpes zoster infection, genetic predisposition or keloid-prone skin, pre-existing dermatoses in the affected area and local immune dysregulation. Similar to our case, most of the post-herpetic keloids reported have developed in trunk region.[4] The development of keloid doesn't depend on status of treatment of herpes zoster with antivirals.4 Although antiviral therapy reduce viral replication and complications of herpes zoster, its role in preventing isotopic responses is uncertain. This highlights the importance of early recognition and targeted treatment of these secondary lesions. Treatment options of keloids include intralesional corticosteroids, 5-Fluorouracil, bleomycin and laser therapy. However, it is a therapeutic challenge for dermatologists.

References

1. Wolf R, Brenner S, Ruocco V, et al. Isotopic response. Int J Dermatol 1995;34:341-8. https://doi.org/10.1111/j.1365-4362.1995.tb03616.x
2. Wang T, Zhang M, Zhang Y, et al. Wolf's isotopic response after herpes zoster infection: a study of 24 new cases and literature review. Acta Derm Venereol.2019 Aug 6;99(11):953-9. https://doi.org/10.2340/00015555-3269
3. Wang J, Shen H. Keloids after herpes zoster: Report of Wolf's isotopic phenomenon and literature review. Clinical, Cosmetic and Investigational Dermatology. 2023 Dec 31:2129 33. https://doi.org/10.2147/CCID.S421534
4. Jaka-Moreno A, López-Pestaña A, López-Núñez M, et al. Wolf's isotopic response: a series of 9 cases. Actas Dermo-Sifiliográficas (English Edition). 2012 Nov 1;103(9):798-805. https://doi.org/10.1016/j.adengl.2012.02.003
5. Rana GS, Gupta S, Chopra D. Postherpes Zoster Keloid Formation: A Report of Wolf's Isotopic Phenomenon. Journal of the Indian Academy of Geriatrics. 2024 Apr 1;20(2):87-8. https://doi.org/10.4103/jiag.jiag_4_24