

Formation of Keloid Following Herpes Zoster: A Rare Case of Wolf's Isotopic Phenomenon

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ABSTRACT

Introduction: When a new skin lesion occurs at the site of another lesion, which may be unrelated and can be already healed it is referred to as Wolf's Isotopic Phenomenon. It is generally seen in Post Herpes Zoster infection (Shingles). In this case, Keloid is the new skin disease over an already healed skin lesion of Shingles. In spite of various theories, the pathogenesis of Wolf's Isotopic phenomenon in Herpes Zoster is still not clear. In this journal we have reported the case of a 50-year-old female who had developed Keloids on the same site where she had history of Herpes Zoster infection.

Herpes Zoster infection is defined by the reactivation of the old infection of Varicella Zoster Virus and it spreads along the sensory nerves presenting as blistering rashes associated with pain along the dermatomes. The occurrence of an unrelated new lesion on the same site as an old lesion is called as Wolf's Isotopic Phenomenon. Besides Herpes Zoster, it is also reported in Psoriatic lesions, Granulomas, Tumours of Skin or Lichen Planus

Generally, at the site of Trauma or any surgical injury, Keloids can be formed due to proliferation of Fibroblasts and deposition of Collagen excessively. In addition, keloid in a post herpes zoster infection is reported very rarely, that is <1%.

Case Report: The patient was a female of age 50-years who came to the OPD having complaints of Tingling sensation and numbness of Right Upper Limb and presence of a Keloid on the chest, since 4-months. She had history of Herpes Zoster infection 6-months ago for which she was diagnosed on the basis of vesicular rash on the sternum and chest wall on the right side and also on the back. For which she was treated in outside hospital. She took Acyclovir for 7-days. She then observed formation of Scar tissue after 2-months on the chest wall in front of the sternum and on the back.

The Scar then expanded and progressed on the chest towards the right side and on the right arm, also on the back in the form of plaque and formed a Keloid. The Keloid was situated along the Sternal wall and lying along the T2-T3 Dermatome extending towards the right side both anteriorly and posteriorly along the same dermatome.

Discussion: The appearance of keloids (excessive fibrous scar tissue) in the exact area where herpes zoster (shingles) previously occurred is referred as Wolf's Isotopic Phenomenon. First described in 1955, it refers to a new dermatological lesion forming in the same site as another previously unrelated and healed lesion. The development of keloids after herpes zoster is uncommon, but several mechanisms have been proposed: Post-inflammatory scarring tendency, Local immune dysregulation

Conclusion: The reported cases of Wolf Isotopic Phenomenon in patients of Herpes Zoster are very rare and hence the risk may be underestimated. Further research and studies are important to understand the Pathogenesis and epidemiology and will also help in management of such Cases..

Keywords: Keloid scar, Herpes Zoster infection, Post Herpetic Neuralgia, Wolf's Isotopic Phenomenon.

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INTRODUCTION

Herpes Zoster infection is defined by the reactivation of the old infection of Varicella Zoster Virus, and it spreads along the sensory nerves presenting as blistering rashes associated with pain along the dermatomes. The occurrence of an unrelated new lesion on the same site as an old lesion is called as Wolf's Isotopic Phenomenon. Besides Herpes Zoster, it is also reported in Psoriatic lesions, Granulomas, Tumours of Skin or Lichen Planus

Generally, at the site of Trauma or any surgical injury, Keloids can be formed due to proliferation of Fibroblasts and deposition of Collagen excessively. In addition, keloid in a post herpes zoster infection is reported very rarely, that is <1%.

CASE PRESENTATION

The patient was a female of age 50-years who came to the OPD having complaints of Tingling sensation and numbness

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of Right Upper Limb and presence of a Keloid on the chest, in the last 4-months. She had history of Herpes Zoster infection 6-months ago for which she was diagnosed on the basis of vesicular rash on the sternum and chest wall on the right side



Figure 1: Keloid over Right breast.



Figure 2: Keloid over Back.

and also on the back. For which she was treated in outside hospital. She took Acyclovir for 7-days. She then observed formation of Scar tissue after 2-months on the chest wall in front of the sternum and on the back.

The Scar then expanded and progressed on the chest towards the right side and on the right arm, also on the back in the form of plaque and formed a Keloid. The Keloid was situated along the Sternal wall and lying along the T₂-T₃ Dermatome extending towards the right side both anteriorly and posteriorly along the same dermatome.

The patient presented with Burning sensation at the site of the keloid lesion on the chest wall and tingling sensation and numbness of the Right upper limb suggestive of Post Herpetic Neuralgia. The patient denied having any history of itching over the keloid-like lesion.

The neurological examination showed decreased sensation of crude touch, fine touch in the right arm while other sensations were intact. There was also no motor deficit. The patient was then started on a combination of Gabapentin, Nortriptyline and Duloxetine for symptomatic relief from Post-Herpetic Neuralgia.

DISCUSSION

The appearance of keloids (excessive fibrous scar tissue) in the exact area where herpes zoster (shingles) previously occurred is referred as Wolf's Isotopic Phenomenon. First described in 1955, it refers to a new dermatological lesion forming in the same site as another previously unrelated and healed lesion. The development of keloids after herpes zoster is uncommon, but several mechanisms have been proposed:

Post-inflammatory scarring tendency: Herpes zoster causes *necrosis* and *ulceration* of skin. In genetically predisposed individuals (especially those with darker skin types), excessive collagen deposition during healing can lead to keloid formation.

Local immune dysregulation: The viral infection may alter local immune response, nerve supply, and cytokine milieu. This dysregulation could stimulate abnormal fibroblast proliferation and collagen synthesis. **Neuro-immunologic factors:** Varicella-zoster virus damages local sensory nerves. Altered neuropeptide release (like substance P, CGRP) may promote fibroblast activity and aberrant wound healing. It occurs weeks to months after resolution of zoster lesions. The lesions are firm, raised, smooth, shiny plaques, or nodules and appear along the dermatomal distribution of the prior zoster rash.

They are usually asymptomatic, but may be itchy or painful. Management is similar to standard keloid treatment: Intralesional corticosteroids (triamcinolone acetonide), Silicone gel/sheeting, Laser therapy or cryotherapy in select cases, Surgical excision (only with adjunctive therapy, as recurrence is common).

CONCLUSION

The reported cases of Wolf Isotopic Phenomenon in patients of Herpes Zoster are very rare and hence the risk may be underestimated. Further research and studies are important to understand the Pathogenesis and epidemiology and will also help in management of such Cases.

CONSENT STATMENT

A Written Informed Consent was taken from the patient and her relatives for using her case history and photographs in the journal.

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