

A Case of Psoriasis and Pseudohernia of the Abdominal Wall at the Site of Herpes Zoster-Wolf's Isotopic Response

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Abstract: The patient, a 77-year-old Asian male presented with herpes zoster in the left lumbar and abdominal regions 9 weeks before presentation. The infection dried up after 2 weeks but was followed by an erythematous scaly rash in the same region with left-sided abdominal elevation. Pathological examination revealed continuous parakeratosis and Munro microabscesses. Abdominal computer tomography revealed no abnormalities, suggesting psoriasis with herpes zoster and Wolf's isotopic response to the pseudohernia of the abdominal wall.

Keywords: herpes zoster, psoriasis, Wolf's isotopic response, abdominal wall pseudo-inguinal hernia

Introduction

Wyburn-Mason introduced the concept known as Wolf's isotopic response (WISR) in 1955. This phenomenon describes a secondary condition or skin disorder emerging at the location of a pre-existing skin lesion whether it has been treated or remains untreated. The underlying cause of this occurrence remains a mystery and is suspected to involve a complex interplay of viral and immunological elements. The current case report involved an elderly male who experienced Wolf's isotopic response at the site of skin lesion. The patient tested positive for tuberculosis screening while undergoing pre-existing therapy for psoriasis. During the anti-tuberculosis treatment, he developed a left-sided herpes zoster in the left lumbar and abdominal region. Subsequently, a hernia-like protrusion was formed on the left side of the abdomen. Though Wolf's isotopic response is common in clinical practice in terms of incidence, herpes zoster secondary to both psoriasis and abdominal wall pseudo-hernia is rare all over the world. The report of this case will help us better understand the relationship between herpes zoster and psoriasis.

Case Presentation

A 77-year-old Asian male was diagnosed with tuberculosis 3 months before receiving biological pretreatment for an 18-year history of psoriasis. Anti-tuberculosis therapy was administered, and the patient developed herpes zoster after 2 months of treatment. He experienced severe left-sided lumbar abdominal pain, accompanied by the appearance of a new rash at the lesion site. The bulge in the left lumbar abdominal area was not detected and treated until the 13th day after the rash appeared. Anti-tuberculosis treatment was repeated after 3 months but yielded negative results. The patient had a family history of psoriasis and a poor response to conventional treatment.

During a general physical examination, the patient exhibited a visible left abdominal bulge while standing (Figure 1A). However, the bulge decreased when lying down with no palpable subcutaneous mass. The epidermis was tender on palpation, and bowel sounds were normal. During a dermatological examination, the patient presented with tan



Figure 1 Rash on the left side of the abdomen, trunk, and lower extremities of a patient with psoriasis at the site of herpes zoster and a pseudohernia of the abdominal wall. **(A)** The left side of the abdomen is elevated compared to the right side. **(B)** The left side of the waist and abdomen displays a banded distribution of brownish-brown patches and plaques, accompanied by dense red papules and plaques covered with a large number of silvery-white scales. **(C and D)** The lower limbs and buttocks emanate red plaques covered with a large number of silvery-white scales.

patches and plaques on the left lumbar abdomen, slightly above the midline. The area displayed dense red papules and plaques, as displayed in Figure 1A and B. The affected area was covered with multiple silvery-white scales, and the Auspitz sign was positive. Additionally, red plaques and scales were scattered over the trunk and lower limbs, as displayed in Figure 1B–D. The body surface area of each patient was approximately 5%.

Laboratory and ancillary investigations revealed thinning of the left abdominal wall, inflammation of the gallbladder and cystic ducts, multiple small stones, occult hypodense nodules in the middle and lower parts of the right kidney, and multiple small cystic foci in the liver. No abnormalities were detected in computed tomography scans of the entire abdomen of the remaining patient (Figure 2). Dermatopathological examination (lumbar) revealed continuous hyperkeratosis and Munro microabscesses, along with regular hyperplasia of the epidermis. The spinous layer over the dermal papillae was thin, and the superficial dermal

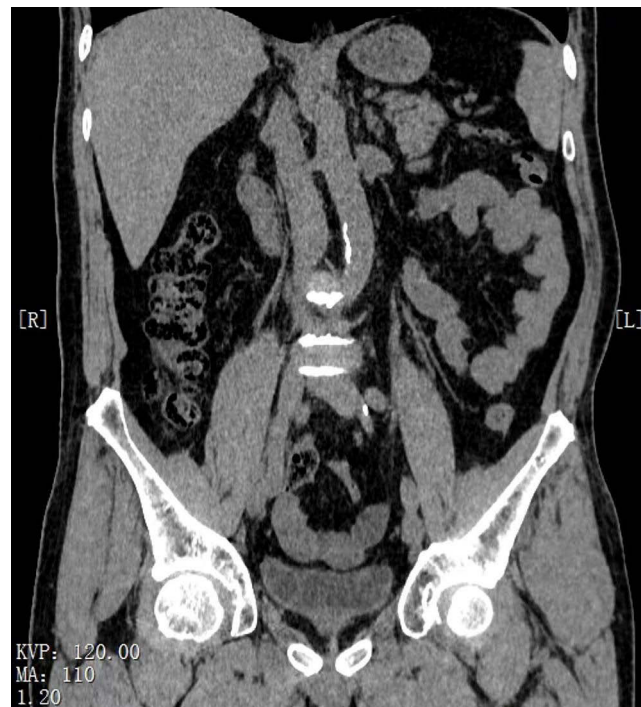


Figure 2 Computed tomography of the abdomen displays a flaccid thinning of the left abdominal wall, with no evidence of an intra-abdominal space, an effusion, or an abdominal wall hernia.

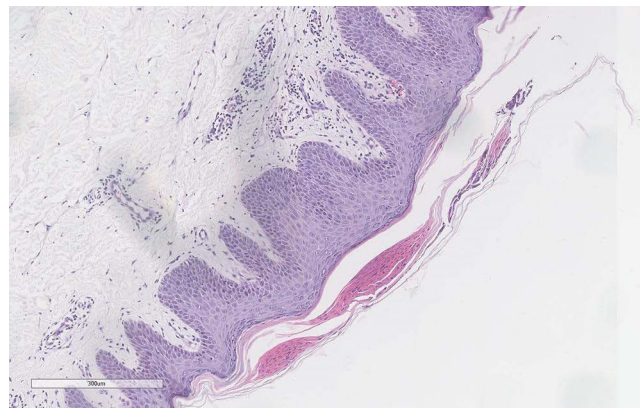


Figure 3 Pathological image of the left lumbar lesion with psoriasis and abdominal wall pseudo-incision at the site of herpes zoster. Continuous parakeratosis and Munro microabscesses, regular epidermal hyperplasia, thinning of the stratum spinosum above the papillae, dilated and congested superficial dermal capillaries, and focal inflammatory cell infiltration of superficial blood vessels with predominantly lymphocytes are observed (hematoxylin and eosin staining, $\times 100$).

capillaries were dilated and congested. Additionally, foci of inflammatory cell infiltration, predominantly lymphocytes, were observed around the superficial blood vessels (Figure 3).

Ultimately, the patient was diagnosed with moderate plaque psoriasis with a secondary diagnosis of herpes zoster with ventral wall pseudotumors. The patient was subsequently treated for psoriasis along with herpes zoster and pseudohermia, and a treatment regimen of subcutaneous secukinumab 300 mg was administered once a week, which was later changed to once a month after five doses. At the 1-month follow-up, a reduction in rash scaling and color lightening was observed. The generalized rash resolved after 2 months, resulting in hyperpigmentation. The left side of the abdominal bulge flattened after 3 months.

Discussion

In 1955, Wyburn-Mason first proposed Wolf's isotopic response (WISR), which refers to the appearance of another disease/dermatological condition at the same site unrelated to the original condition based on a treated or untreated skin lesion. The exact mechanism is unknown and may involve various viral and immunological factors. In this case, the patient developed new psoriasis-like lesions and a false hernia of the abdominal wall during herpes zoster treatment, which was consistent with Wolf's isotopic response. Herpes zoster with secondary psoriasis and abdominal wall pseudohernia is rare.

Herpes zoster is caused by the reactivation of the latent varicella-zoster virus (VZV), with an immunocompromised state acting as a significant contributing factor.¹ In this case, the patient had consumed anti-tuberculosis drugs before the onset of herpes zoster, which suppressed the immune system and led to the development of the condition. The incidence of complications or sequelae of herpes zoster is high, ranging from 13% to 47%,² with neurological involvement being the most common. Postherpetic neuralgia emerged as the most prevalent complication. In contrast, postherpetic herpes zoster abdominal wall pseudohernia is a rare motor complication with an incidence of approximately 0.17%–0.77%.³ The occurrence may be related to abdominal muscle weakness without substantial mass.

Min et al reported a strong correlation between herpes zoster and psoriasis.⁴ They discovered that psoriasis might increase the risk of herpes zoster in males because of an increase in the levels of pro-inflammatory factors and cytokines in the body, such as interleukin (IL)-6, IL-17, and IL-18. The IL-17 family members play a crucial role.⁵ We inferred that when patients with psoriasis contract VZV during infection, their bodies may activate various cytokines and chemokines by modulating the IL family and associated cellular immune factors. This may lead to the development of an inflammatory response at the lesion site, ultimately resulting in the formation of a herpes-zoster psoriasis-like rash.

Conclusion

This case report provided information about the cutaneous inflammatory response to herpes zoster and its association with sensory and motor nerve damage. This study proposed a theoretical basis for the use of immune cells in the treatment of herpes zoster, which could lead to effective clinical interventions.

Ethics Statement

All individuals provided informed consent to participate in this study and approval was provided by Medical Research Ethics Committee of Gongli Hospital of Shanghai Pudong New Area (GLYYIs2024-023). Publication of details of the case does not require the agency's approval.

Consent Statement

The authors obtained written consent from patients for their photographs and medical information to be published in print and online and with the understanding that this information may be publicly available.

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Disclosure

The authors have no conflicts of interest to declare.

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