

# Transient Reticular Erythema After Thermotherapy - A Novel Sign to Early Diagnosis of Herpes Zoster: A Case Report

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**Abstract:** Herpes zoster (HZ) is caused by the reactivation of the varicella-zoster virus, often presenting with prodromal neuralgic pain that precedes characteristic skin lesions by 1–5 days, complicating early diagnosis. This case report describes a novel dermatologic finding in a 52-year-old healthy female physician with a history of childhood varicella and prior HZ. She experienced progressive, burning pain in the right thigh and iliac fossa, initially without skin lesions. On day four, thermotherapy applied to the affected dermatome induced a transient reticular erythema resembling livedo reticularis (LR), which was absent in the unaffected limb. Subsequent Doppler ultrasonography ruled out vascular pathology, and empirical treatment for pelvic inflammatory disease was initiated. On day five, vesicles appeared in the L2-L3 dermatome, confirming HZ. Pain and paresthesia were managed with topical lidocaine, acetaminophen, and codeine, without antiviral therapy. To our knowledge, this is the first reported instance of transient reticular erythema triggered by thermotherapy during the HZ prodromal phase, suggesting possible autonomic or sympathetic dysfunction associated with viral reactivation. This observation may serve as an early HZ finding, warranting further investigation to validate its utility in differential diagnosis and clinical management.

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## 1. Introduction

Herpes zoster (HZ) results from the reactivation of the latent infection caused by the varicella-zoster virus (VZV) [1]. This disease may present as a prodromal neuralgic pain, preceding the emergence of skin lesions, usually between the first and fifth day, which makes early diagnosis challenging [2-3]. The present report describes a case of HZ in which an atypical and transient dermatologic sign was observed, provoked by thermotherapy, during the painful prodrome in the dermatome affected.

## 2. Case Report

A 52-year-old-female White doctor, previously healthy, without history of Raynaud's phenomenon or other dysautonomias, presented with progressive pain in the mediolateral region of the right thigh, described as a burning sensation, which worsened at night. She took acetaminophen to relieve the pain. On the following day, she reported the pain progression to the right iliac fossa, without associated symptoms. Her physical examination was normal, and history was marked by a varicella infection during her childhood and HZ with vesicles in thoracic dermatome. After two days of complaints, the patient looked for hospital care, where appendicitis and pelvic inflammatory disease were ruled out, considering the clinical, laboratory, and image findings.

On the fourth day of symptoms, she applied a hot compress in the area of pain, through a heat pack containing barley seeds, which had been warmed in the microwave for two minutes, according to the factory instructions of the product. In the following 5 minutes of thermotherapy, the patient noted erythema with an atypical and fleeting pattern, consistent with a reticular-like dermatomal erythema, like Livedo Reticularis (LR). She repeated the same procedure at the same time in the opposite lower limb, where nothing but a first-degree thermal burn was observed (Figure 1).

**Figure 1.** Reticular erythema on the anterior region of the right thigh after thermotherapy. On the left thigh, similar temperature and time of exposure were also applied, but observe that there was no reticular pattern.



Because of the appearance of the unknown erythema, abdominal and lower limbs Doppler venous ultrasonography was required, considering the possibility of a vascular etiology. The exam was normal. However, she was treated empirically for pelvic inflammatory disease and was treated empirically with ceftriaxone and clindamycin. One day after the picture, two vesicles appeared in the right thigh. On the following day, the patient woke up with well-recognized lesions located in the L2-L3 dermatome, so HZ diagnosis was made. Topical lidocaine was used for pain and acyclovir was not used. Over the next two weeks, the patient experienced pain and paresthesia that responded to acetaminophen and codeine.

### 3. Discussion

As far as the authors know, this has been the first description of this finding of transient reticular erythema following thermotherapy in a setting of unexplained neuritic pain, which preceded the emergence of typical HZ vesicles in one day. Classically, the beginning of HZ is represented by pain in the dermatomal distribution of the affected nerve and fever, weakness, headache, itching and paresthesia, as well [4]. In the case reported, in addition to the characteristic pain of acute neuritis, the patient presented atypical and fleeting erythema secondary to the thermotherapy, during the prodromal phase, as a reticular-like dermatomal erythema, holding similarities to LR. The LR is a skin manifestation characterized by a local or disseminated, irregular, and vascular net, with a red-blue color, and is also a consequence of some involvement of medium caliber vessels. Among its etiologies, there are vasculopathies due to vasospasm, hypercoagulation states, thrombosis, increment in blood viscosity, and vasculitis [5].

The LR differential diagnosis must be made with an igne erythema, which is a dermatosis induced by chronic exposure to direct heat, that initiates with a reticular pattern that can evolve with hyperpigmentation of the skin [6]. LR may also be seen in cases of transient neuropathy when there is an underlying vascular pathology affecting both the skin and peripheral nerves, most notably in livedoid vasculopathy and related occlusive vasculopathies [7]. Other differential diagnosis include Erythema *ab igne*, typically results from prolonged, over weeks or months, and repeated exposure to moderate (insufficient to cause a direct burn) heat levels characterized by a distinctive reticulated, often hyperpigmented pattern due to chronic infrared-induced damage [8]. In the proposed case, the reaction occurred after a single, acute application of the heat pack for 2 minutes, following the manufacturer's instructions.

Considering that the dermatome corresponded to the L2–L3 distribution, the possibility that the erythematous reaction represents a localized, transient sympathetic dysfunction cannot be excluded. Such a mechanism could resemble a "Reflex Sympathetic Dystrophy-like" phenomenon, characterized by vasomotor instability and altered cutaneous blood flow in the affected dermatome [9-10]. However, unlike classical Complex Regional Pain Syndrome (CRPS), the patient did not exhibit persistent trophic changes, edema, temperature asymmetry, or chronic dysautonomic features. Moreover, the erythema was transient and temporally associated with external heat application, suggesting that local sympathetic denervation or irritative dysfunction may have amplified the vasodilatory response to thermotherapy [9-10]. Therefore, the cutaneous findings can be interpreted as reversible, heat-modulated vasomotor phenomenon occurring in the context of acute neuritis, rather than a primary vascular pathology.

Considering our case, we suggest that the phenomenon described here may be related to sensory, autonomic, and vasomotor alterations occurring during the prodromal phase of VZV reactivation. These findings may represent an important clue for the differential diagnosis of the disease, once identified by a clinician.

### 4. Conclusion

Atypical and fleeting erythema due to thermotherapy in a painful dermatome secondary to HZ, during the prodromal phase, may be identified early by clinicians. In this case, heat exposure occurred as part of symptomatic pain relief prior to the diagnosis, and the observed erythema was an incidental finding. It is fully acknowledged that patients with possible neural involvement may have altered sensory perception, which could increase the risk of thermal injury, and as such, it is not proposed that thermotherapy can be used as a diagnostic tool for HZ, nor is it recommended the intentional application of heat in patients with unexplained pain.

The significance of reporting this observation lies in generating hypotheses for future studies that may evaluate its frequency, timing, and potential diagnostic utility, as many

clinical advances originate from careful observation of subtle physical findings. By documenting this phenomenon, we hope to contribute to a more refined understanding of the early cutaneous manifestations of HZ. Therefore, this case report describes a novel sign of HZ, which warrants further investigation in future studies.

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