Clinical, Cosmetic and Investigational Dermatology

Dovepress
Taylor & Francis Group

Open Access Full Text Article

CASE REPORT

Hydroa Vacciniforme: When and How to Suspect It

Chuan Yang[1,*], Renheng Zhu[2,*]

[1]Department of Dermatology, Affiliated Hospital of North Sichuan Medical College, Nanchong, Sichuan, 637000, People's Republic of China; [2]Department of Dermatology, Leshan People's Hospital, Leshan, Sichuan, 614000, People's Republic of China

*These authors contributed equally to this work

Correspondence: Renheng Zhu, Email 763388738@qq.com

Abstract: Hydroa vacciniforme (HV) is a rare pediatric photosensitive dermatosis characterized by sun-induced recurrent lesions on exposed areas and subsequent atrophic scarring, with its pathogenesis remaining unclear. This report aims to improve clinicians' recognition of pediatric HV and provide practical references for its clinical diagnosis and management by detailing a typical case in a young child. We describe a 3-year-old male patient with recurrent erythema, blisters, erosion, crusts, and atrophic scars on the face, nasal dorsum, and auricles for over one year. His skin lesions worsened significantly after sun exposure, alleviated with strict photoprotection, and presented with obvious seasonal variations. A definitive diagnosis of HV was made based on the patient's typical clinical manifestations. The patient was treated with strict sun avoidance, oral vitamin B6, and topical fusidic acid, with notable clinical improvement during follow-up. This case highlights that the definitive diagnosis of pediatric HV relies on typical clinical manifestations combined with the exclusion of relevant differential diagnoses, which is crucial for the early identification and standardized management of this rare disease in young children.

Keywords: hydroa vacciniforme, photosensitive dermatosis, child, pediatric dermatology

Introduction

Hydroa vacciniforme (HV) is a rare idiopathic photosensitive dermatosis that predominantly affects children and adolescents, with an onset usually occurring before the age of 10 years.[1] First reported by Bazin in 1862, HV is clinically characterized by recurrent erythema, umbilicated papulovesicles, erosion, crusting, and subsequent atrophic scarring on sun-exposed skin areas, such as the face, nasal dorsum, and auricles.[2] The lesions typically worsen after ultraviolet (UV) exposure and show seasonal variations, which are key clinical clues for diagnosis.[3]

The pathogenesis of HV remains unclear. Current research suggests potential associations with genetic factors, abnormal immune responses to UV radiation, and possible viral infections (eg, Epstein–Barr virus), but no definitive causal mechanism has been established.[4] Due to its rarity and overlapping clinical manifestations with other vesicular and photosensitive diseases (eg, porphyrias, vaccinia, Kaposi's varicelliform eruption), HV is often misdiagnosed or underdiagnosed. Notably, normal blood and urine porphyrin levels are important for differentiating HV from porphyrias, which also present with photosensitivity but are accompanied by abnormal porphyrin metabolism.[5]

Although HV is not life-threatening, the recurrent skin lesions and resulting atrophic scars can have a negative impact on the patient's appearance and psychological well-being, especially in pediatric patients. However, limited clinical reports focus on young children with HV, and awareness of this disease among clinicians remains insufficient.[5] Herein, we report a case of HV in a 3-year-old male patient, detailing his clinical manifestations, diagnostic process, and treatment outcomes, to improve the clinical recognition and management of this rare disease.

Case Presentation

A 3-year-old male patient was admitted to the Department of Dermatology, People's Hospital of Leshan, due to recurrent erythema, blisters, erosion, crusting, and atrophic scarring on the face, nasal dorsum, and auricles for more than 1 year. The patient's mother provided a detailed medical history: the initial lesions appeared as erythema and small blisters on the face after sun exposure, which gradually developed into erosion and crusting. After 3–4 days of strict sun protection

https://doi.org/10.2147/CCID.S600995
Received: 3 February 2026
Accepted: 19 April 2026
Published: 24 April 2026

(avoiding outdoor activities during peak sun hours, wearing sun-protective clothing and hats), the lesions dried up, crusted, and fell off, leaving atrophic scars. The condition showed obvious seasonal variation: it was significantly more severe in summer with prolonged sunlight and milder in winter with reduced UV exposure. The patient had no history of eczema, allergic diseases, or contact with cattle, sheep, or other livestock. There was no family history of photosensitive dermatoses or similar skin disorders.

Physical examination revealed multiple erythema, vesicles of varying sizes, and blood crusts on the face and nasal dorsum, with some lesions showing typical umbilicated changes (Figure 1). Skin lesions extended to the bilateral auricles, as observed in lateral position photos. In addition to acute lesions, numerous atrophic scars were noted on the affected areas, consistent with the chronic recurrent course of the disease (Figures 2 and 3).

Auxiliary examinations were performed to exclude differential diagnoses: blood routine, liver and kidney function, and viral antibody screenings (varicella-zoster virus, herpes simplex virus) were all normal, ruling out infectious or systemic metabolic causes. Blood porphyrin and urine porphyrin levels were within the normal reference ranges, excluding porphyrias. Based on the typical clinical manifestations (sun-induced recurrent lesions, umbilicated papulo-vesicles, atrophic scars, seasonal variation) and laboratory findings, the final diagnosis of hydroa vacciniforme was made.

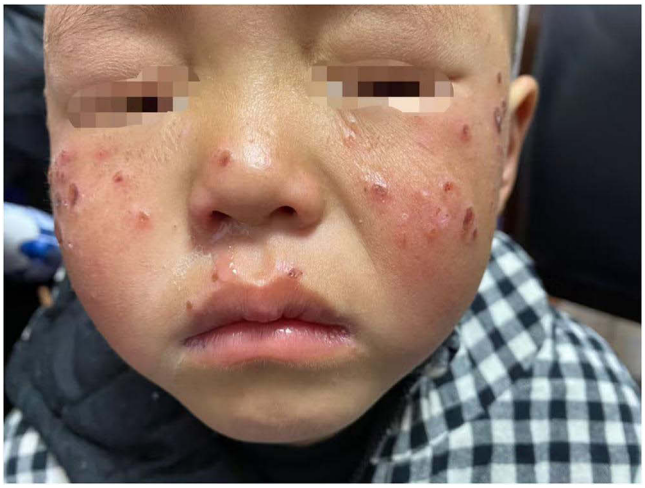

Figure 1 In a 3-year-old male patient, on the face and dorsal part of the nose, there were erythema, blisters, and blood scabs of different sizes, and some showed umbilicated changes.

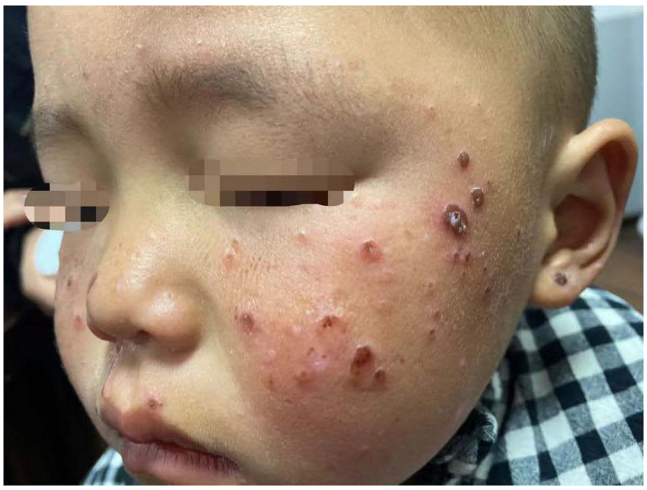

Figure 2 In the left lateral position photo, it can be seen that the skin lesions spread to the auricles.

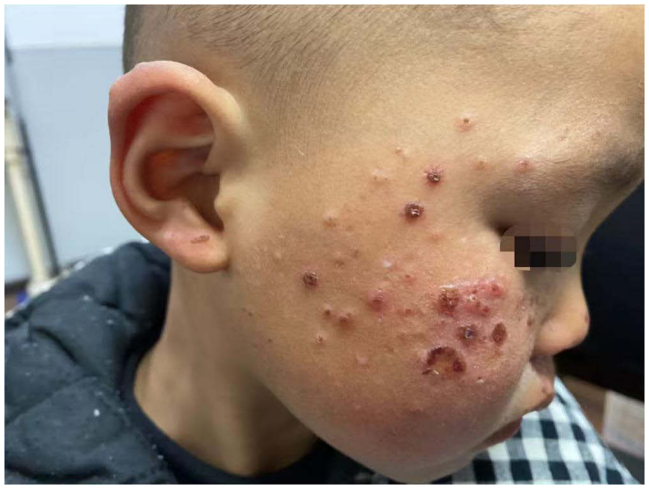

Figure 3 In the right lateral position photo, many atrophic scars can also be seen in addition to the typical skin lesions.

The patient was advised to maintain strict sun avoidance as the core management measure, including avoiding outdoor activities from 10:00 AM to 4:00 PM (peak UV radiation hours), using broad-spectrum sunscreen (SPF ≥ 30, PA +++) on exposed skin when outdoors, and wearing sun-protective clothing, hats, and sunglasses. Additionally, he was prescribed oral vitamin B6 (10 mg, three times a day) to support skin barrier function and topical fusidic acid cream (applied twice a day) to prevent secondary bacterial infection of eroded lesions. Telephone follow-up at 1 month and 3 months after treatment showed that the patient's compliance with photoprotection was good, and the frequency and severity of skin lesions were significantly reduced compared with the pre-treatment period. No new atrophic scars were formed, and the existing scars showed no further progression.

Discussion

Hydroa vacciniforme is a rare photosensitive dermatosis that primarily affects pediatric populations, with a male predominance reported in some studies. The core clinical features of HV include sun-induced recurrent lesions on exposed areas, typical umbilicated papulovesicles, and subsequent atrophic scarring, which are consistent with the manifestations of the patient in this case. The seasonal variation (worsening in summer, alleviating in winter) and improvement after strict photoprotection further support the diagnosis of HV.

The diagnosis of HV is mainly based on clinical manifestations, combined with the exclusion of other differential diagnoses. The key differential diagnoses include: (1) Porphyrias: These diseases are caused by abnormal porphyrin metabolism, presenting with photosensitivity, blisters, and scarring. However, porphyrias are accompanied by abnormal blood and urine porphyrin levels, which can be distinguished from HV.[6] (2) Vaccinia: Usually occurs after vaccination or contact with vaccinia patients, with systemic symptoms such as fever, and the lesions are more widespread, not limited to sun-exposed areas.[7] (3) Kaposi's varicelliform eruption: Caused by viral infection (eg, herpes simplex virus, varicella-zoster virus) in patients with underlying skin diseases (eg, eczema), presenting with widespread vesicles, pustules, and systemic symptoms such as fever. The patient in this case had no history of eczema or viral exposure, excluding this diagnosis.[8]

The pathogenesis of HV remains unclear. Some studies have suggested that HV may be related to abnormal immune responses to UV radiation, as UV exposure can induce keratinocyte apoptosis and immune cell activation, leading to inflammatory responses and skin lesions. In addition, genetic factors may play a role, as some cases have reported family aggregation.[9] Viral infections (eg, Epstein–Barr virus) have also been proposed as potential etiological factors, but no consistent evidence has been found.[10] Further research is needed to clarify the exact pathogenesis of HV, which will help optimize treatment strategies.

The management of HV is centered on strict sun avoidance, which is the most effective measure to prevent lesion recurrence and progression.[11] Photoprotection measures include avoiding peak UV radiation hours, using sunscreens, and wearing sun-protective clothing. Symptomatic treatment is also important: oral vitamin B6 can support skin barrier

function, and topical antibiotics (such as fusidic acid cream) can prevent secondary bacterial infection.[5] In severe cases, oral corticosteroids, immunosuppressants, or phototherapy may be considered, but their use in pediatric patients requires careful evaluation of risks and benefits.

The prognosis of HV is generally good, with most patients experiencing spontaneous remission after adolescence. However, in some cases, the disease may persist into adulthood, and the resulting atrophic scars can have a long-term impact on the patient's appearance and psychological health.[1] Therefore, early diagnosis, timely intervention, and strict adherence to photoprotection are crucial to improve the prognosis of HV patients.

This case enriches the clinical data of pediatric HV, especially in young children aged 3 years. It highlights the importance of recognizing the typical clinical features of HV and conducting appropriate differential diagnoses to avoid misdiagnosis. Additionally, it emphasizes the role of strict photoprotection and symptomatic treatment in the management of HV. However, this case has limitations: due to the short follow-up period, the long-term prognosis of the patient needs to be further observed. In addition, no genetic testing or viral detection was performed, so the potential role of genetic factors and EBV infections in this case cannot be excluded.

Conclusion

Hydroa vacciniforme is a rare pediatric photosensitive dermatosis with distinct clinical features. The diagnosis relies on typical sun-induced recurrent lesions, umbilicated papulovesicles, atrophic scarring, and the exclusion of other differential diagnoses through laboratory tests. Strict sun avoidance is the cornerstone of treatment, supplemented by symptomatic measures such as oral vitamin B6 and topical antibiotics, which can effectively control symptoms and prevent scar progression. Clinicians should raise awareness of HV when encountering children with recurrent photosensitive vesicular lesions and atrophic scars on sun-exposed areas, to achieve early diagnosis and intervention. Further research is needed to clarify the pathogenesis of HV and optimize treatment strategies for severe cases.

Ethical Approval

This case report was approved by the Ethics Committee of People's Hospital of Leshan. The study was conducted in accordance with the Declaration of Helsinki.

Consent for Publication

The patient's guardian has provided written informed consent for the publication of this case report and the accompanying figures. A copy of the informed consent form is available for review by the editorial office.

Acknowledgments

Chuan Yang and Renheng Zhu are co-first authors for this work. We would like to express our sincere gratitude to Dr. Shuqiong Huang and Dr. Dingbin Yang for their valuable contributions and insightful suggestions to the initial development of this manuscript.

Disclosure

The authors declare that they have no relevant financial interests or other relationships that could be perceived as influencing the work reported in this paper.

References

1. Nitiyarom R, Wongpraparut C. Hydroa vacciniforme and solar urticaria. *Dermatol Clin*. 2014;32(3):345–viii. doi:10.1016/j.det.2014.03.013
2. Saraswat N, Tripathy DM, Kumar S. Hydroa Vacciniforme. *JAMA Dermatol*. 2023;159(9):997. doi:10.1001/jamadermatol.2023.1156
3. Chen CC, Chang KC, Medeiros LJ, Lee JY. Hydroa vacciniforme and hydroa vacciniforme-like lymphoproliferative disorder: a spectrum of disease phenotypes associated with ultraviolet irradiation and chronic epstein-barr virus infection. *Int J Mol Sci*. 2020;21(23):9314. doi:10.3390/ijms21239314
4. Zhang W, Pupwe G, Vasquez L, et al. Hydroa vacciniforme lymphoproliferative disorder, a clinicopathologic and genetic analysis. *Hum Pathol*. 2025;158:105770. doi:10.1016/j.humpath.2025.105770
5. Guechchati M, Baybay H, Zeryouhi M, Tahiri Elousrouti L, Mernissi F. Hydroa vacciniforme: a rare pediatric photodermatosis. *Cureus*. 2025;17(4):e82079. doi:10.7759/cureus.82079

6. Minder AE, Kluijver LG, Barman-Aksözen J, Minder EI, Langendonk JG. Erythropoietic protoporphyrias: pathogenesis, diagnosis and management. *Liver Int*. 2025;45(1):e16027. doi:10.1111/liv.16027
7. Kramer TR. Post-smallpox vaccination skin eruption in a marine. *Mil Med*. 2018;183(9–10):e649–e653. doi:10.1093/milmed/usx133
8. Syed HA, Souissi A. Kaposi varicelliform eruption. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2025.
9. Gupta G, Mohamed M, Kemmett D. Familial hydroa vacciniforme. *Br J Dermatol*. 1999;140(1):124–126. doi:10.1046/j.1365-2133.1999.02620.x
10. Pahlow Mose A, Fisker N, Clemmensen O, Bygum A. Antiviral treatment of a boy with EBV-associated hydroa vacciniforme. *BMJ Case Rep*. 2014;2014:bcr2014206488. doi:10.1136/bcr-2014-206488
11. Rice AS, Bermudez R. Hydroa Vacciniforme. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2023.