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Case Report

A Challenging Eruption in a Child: A Case Report of Pityriasis Lichenoides et Varioliformis Acuta

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Abstract

Inflammatory skin eruptions are common in dermatology. Pityriasis Lichenoides (PL) is a rare heterogeneous dermatosis with unclear etiology, potentially triggered by infections, vaccines, medications or immune dysregulation. The acute form, Pityriasis Lichenoides et Varioliformis Acuta (PLEVA), presents with sudden papular eruptions that may undergo central necrosis and sometimes resolving with scarring. Diagnosis and management, especially in children, are challenging. Although a few adult cases temporally associated with COVID-19 vaccination have been described, pediatric reports are still scarce.

We present a 9-year-old boy with a 2.5-month history of erythematous papular and maculo-purpuric lesions on the face and limbs. Fifteen days prior to the onset of the eruption, he had received the first dose of a mRNA COVID-19 vaccine. The patient initially received antibiotics for presumed impetigo and varicella, with no improvement. Physical examination revealed lesions with central crusting, while extensive laboratory investigations were unremarkable. Skin biopsy confirmed the diagnosis of PLEVA. Topical corticosteroids and tacrolimus provided partial improvement, but a subsequent flare required systemic cyclic oral azithromycin, leading to complete resolution after eight cycles. A relapse four months later was successfully treated with narrowband UVB phototherapy

This case highlights the diagnostic and therapeutic challenges of PLEVA, particularly in children. It also reinforces the importance of clinical suspicion and skin biopsy in atypical or treatment-resistant eruptions. While the temporal association with mRNA COVID-19 vaccination supports a possible trigger, the incidence of such reactions remains exceedingly low relative to the global scale of vaccination. The condition remains rare and should not generate alarm or vaccine hesitancy.

Keywords: Case Report; Pityriasis Lichenoides et Varioliformis Acuta; COVID-19 Vaccine; Pediatric Dermatology; Cutaneous Adverse Events

Abbreviations:

CMV: Cytomegalovirus; COVID-19: Coronavirus Disease 2019; HIV: Human Immunodeficiency Virus; mRNA: messenger Ribonucleic Acid; PL: Pityriasis Lichenoides; PLC: Pityriasis Lichenoides Chronica; PLEVA: Pityriasis Lichenoides et Varioliformis Acuta; RNA: Ribonucleic Acid; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; UVB: Ultraviolet B

Introduction

Inflammatory skin eruptions are a common presentation in dermatology and may arise from a wide range of causes. Among the rarer inflammatory dermatoses, Pityriasis Lichenoides (PL) represents a heterogeneous spectrum of disease with variable clinical expression. Its etiology remains unclear, although antigenic stimuli such as infections, vaccines, medications or immune

dysregulation have been proposed as potential triggers [1,2]. PL is traditionally classified into two main clinical forms: Pityriasis Lichenoides et Varioliformis Acuta (PLEVA), which includes the febrile ulceronecrotic variant known as Mucha-Habermann disease and Pityriasis Lichenoides Chronica (PLC) [2,3]. The distinction between these forms is based primarily on lesion morphology rather than the duration of the disease [3].

PLEVA typically presents with a sudden, generalized eruption of papules that often develop central necrosis and may resolve with scarring. The lesions are either mildly pruritic or not associated with significant pruritus [2,3]. The differential diagnosis includes varicella, impetigo, psoriasiform eruptions, lichenoid dermatoses, cutaneous vasculitis and early-stage cutaneous T-cell lymphoma [2,3], highlighting the importance of clinicopathologic correlation for accurate diagnosis.

PLEVA affects individuals across all age groups but is more commonly observed in children and young adults, particularly in the second and third decades of life. Cases have also been reported in infancy [3,4]. A slight male predominance has been suggested, although findings are inconsistent [2,5].

Histopathology remains the diagnostic gold standard, though overlapping features with other dermatoses can make diagnosis challenging [2,3]. Management is often challenging due to the disease's unpredictable and potentially self-limiting course and evidence-based treatment recommendations remain limited, particularly in the pediatric population, as most studies have focused on adults [1,4,6]. The aim of this article is to report a case of PLEVA in a 9-year-old child temporally associated with COVID-19 vaccination.

Case Report

A 9-year-old male child with a history of mild, well-controlled allergic rhinitis and no other relevant medical history, born to non-consanguineous parents and without a family history of significant hereditary diseases was referred to the pediatric dermatology outpatient clinic for evaluation of a cutaneous eruption with a 2.5-month history. Prior to referral, the patient had received oral antibiotic therapy for suspected impetigo and varicella was initially considered in the differential diagnosis. Notably, the patient had received the first dose of the mRNA COVID-19 vaccine 15 days before the onset of the skin lesions. At physical examination, the eruption was characterized by multiple erythematous papular or maculo-purpuric lesions some with central erosion or crusting predominantly located on the face and limbs. The lesions were not associated with significant pruritus and no systemic signs or alterations in overall health were observed.

Histopathology

An incisional skin biopsy was performed revealing focal parakeratosis, mild irregular acanthosis, vacuolization of the basal layer of the epidermis, apoptotic keratinocytes and exocytosis of lymphomononuclear cells and red blood cells. In the superficial and deep dermis. There was a moderately dense predominantly perivascular lymphomononuclear infiltrate with mild pleomorphism, marked extravasation of red blood cells and focal vasculitic changes. No atypical large lymphoid cells were identified. These histopathological findings were consistent with PLEVA.

Laboratory Findings

Extensive laboratory investigations were conducted, including complete blood count with differential, C-reactive protein, erythrocyte sedimentation rate, liver and renal function tests, serum protein electrophoresis, serum immunoglobulins, autoantibodies and antistreptolysin O titers, all within normal limits. Serologies for hepatitis viruses, Cytomegalovirus (CMV) and Epstein-Barr virus showed no evidence of recent infection; only past CMV infection was noted. HIV 1 and 2 viral markers were negative.

Treatment and Clinical Course

Treatment was initiated with topical corticosteroids on the body lesions and tacrolimus 0.1% ointment on facial lesions. After 10 days, the patient showed apparent improvement; however, a subsequent flare occurred. Systemic therapy with oral azithromycin was then introduced, administered in cycles of 5 days on treatment followed by 10 days off. Monthly follow-up showed gradual improvement with resolution of existing lesions, although a few new lesions continued to appear. A total of 8 treatment cycles were completed until full resolution was achieved. The patient experienced a relapse 4 months later, which was successfully treated with UVB phototherapy, leading to complete remission (Fig. 1-3).

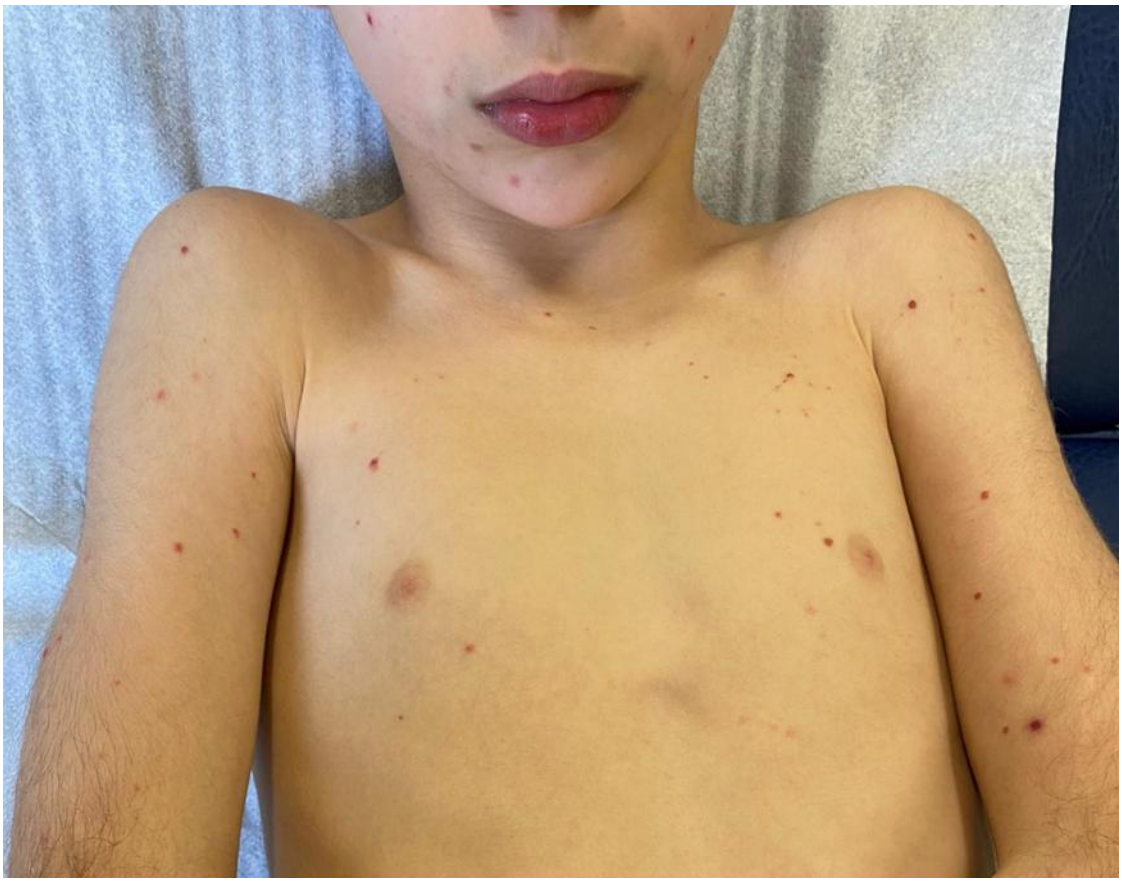

Figure 1: Lesions located on the face, trunk and arms.

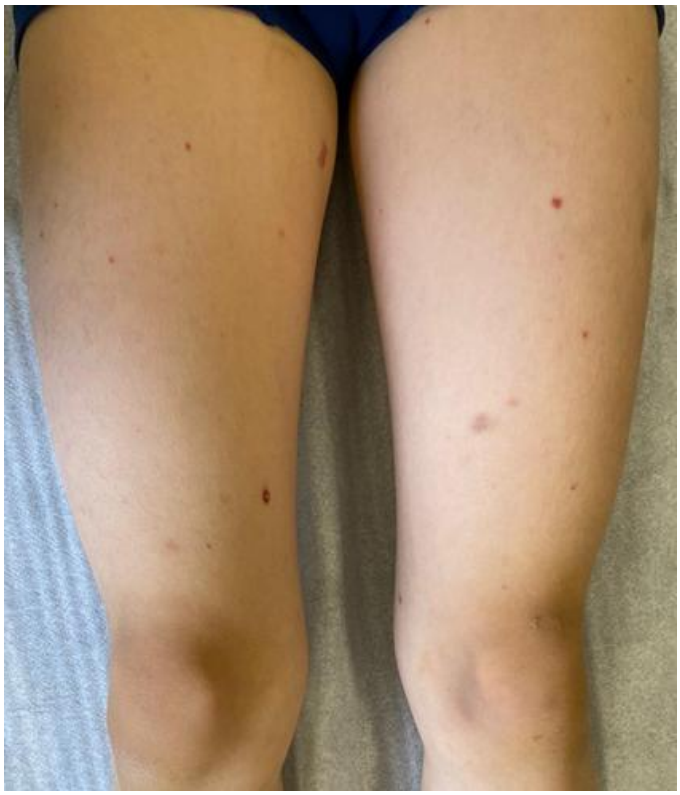

Figure 2: Lesions on the thighs.

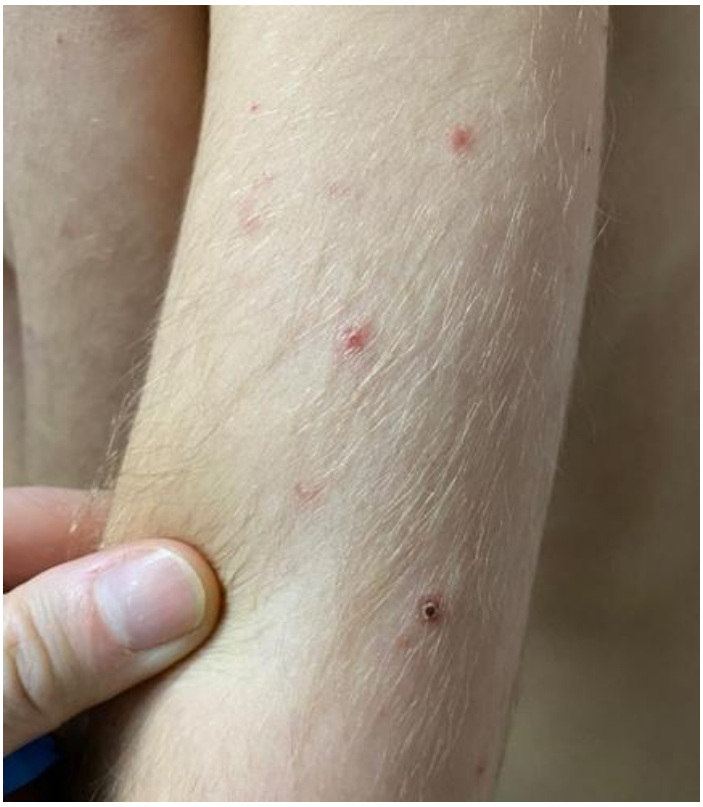

Figure 3: Close-up image of one of the lesions on the arm showing a central crust.

Discussion

Proposed triggers of PLEVA include viral or bacterial infections, vaccinations and immunomodulatory drugs [3]. Although there is growing evidence linking PLEVA with SARS-CoV-2 infection and COVID-19 vaccination, the vast majority of reported cases have occurred in adults [7-10]. This case is particularly noteworthy because it involves a pediatric patient.

In our case, the onset of cutaneous lesions occurred 15 days after the first dose of the mRNA COVID-19 vaccine, with no recent infections or medication exposure reported. While causality cannot be definitively established, the temporal relationship and absence of alternative triggers provide a rationale for considering a potential vaccine-associated immune response. This association has been documented in other reports involving both SARS-CoV-2 infection and vaccination [7-11]. However, it is important to emphasize that such reactions are extremely rare. Despite widespread global vaccination and SARS-CoV-2 exposure, reported pediatric PLEVA cases remain very limited underscoring that these events should not generate undue concern or contribute to vaccine hesitancy [10].

This case also underscores the diagnostic challenge PLEVA presents particularly for non-dermatologists. The patient was initially managed for suspected varicella and subsequently for impetigo highlighting the frequent misclassification of these polymorphic lesions. This diagnostic ambiguity is well documented in the literature and reflects the broad clinical spectrum of the disease [2,5].

Therapeutic management of PLEVA remains empirical and pediatric-specific guidance is lacking [1,4]. In our patient, a favorable response was observed with azithromycin administered in cycles with existing lesions resolving completely and only a limited appearance of new ones, achieving complete remission after 8 cycles. A recurrence occurred 4 months later and was successfully treated with narrowband UVB phototherapy, which led to sustained resolution. This clinical course is in line with previous findings suggesting that PLEVA in children may be more prone to recurrence and may require stepwise or combined treatment strategies [4,12]. Although oral antibiotics such as azithromycin or erythromycin have been used with varying degrees of success, treatment regimens are often extrapolated from adult studies [1,4,6]. While the response to antibiotics may be satisfactory, phototherapy has demonstrated superior efficacy, particularly in relapsing or refractory cases [1,6,11].

Additionally, some studies suggest that epidemiological peaks of PLEVA correlate with infectious outbreaks, further supporting the idea of external immune triggers [8,9]. This highlights a possible rationale for considering a post-vaccination immune response in our patient, despite the rarity and poorly understood pathogenesis of the condition.

Conclusion

This pediatric case of PLEVA following COVID-19 vaccination contributes to the limited but growing literature on post-vaccination cutaneous inflammatory reactions. It highlights the diagnostic uncertainty, therapeutic complexity and potential for recurrence, particularly in younger patients. Moreover, it underscores the need for heightened clinical suspicion, especially in atypical eruptions unresponsive to standard treatment and reinforces the importance of biopsy for accurate diagnosis. Considering the rarity of these occurrences relative to the scale of COVID-19 vaccination and infection, they should be interpreted with caution and in proper epidemiological context.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the research, authorship or publication of this article.

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Informed Consent Statement

Informed consent was obtained from the patient and mother. The patient's anonymity was preserved and all images were taken to prevent identification.

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Authors' Contributions

Doctor Vera Teixeira was the attending physician in the pediatric dermatology outpatient clinic, proposed the clinical hypothesis, established the diagnosis, contributed to all stages of manuscript review and served as the final reviewer of the manuscript.
Doctor Cátia Juliana Silva collaborated in the pediatric dermatology outpatient clinic, assisted the attending physician in the clinical investigation, was the primary author of the manuscript, reviewed and approved its final version.
Doctors Sofia Poço Miranda, Inês Eiras, Luciana Abelha, Inês Magalhães and André Costa e Silva contributed to the literature review and have reviewed and approved the final manuscript for publication.

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