CASE SERIES

Case series of Pityriasis lichenoides in the post-COVID era: Clinical features and response to erythromycin monotherapy

Eddula Venkata Ravikanth[1], Chinni Sai Sahithi[1], C Sravana Deepthi[2], M Arun Kumar[3], Sirshendu Chaudhuri[4], K H Sneha[1]*

[1]Department of Dermatology, Venereology and Leprosy, [2]Department of Community Medicine, Apollo Institute of Medical Sciences and Research Chittoor, Chittoor- 517127 (Andhra Pradesh), India, [3]Department of Dermatology, Venereology and Leprosy, Gayatri Vidya Parishad Institute of Health Care and Medical Technology, Visakhapatnam- 530048 (Andhra Pradesh) India, [4]Department of Community Medicine, Indian Institute of Public Health, Hyderabad-500030 (Telangana) India

Abstract

Pityriasis Lichenoides (PL) is a rare dermatological condition marked by erythematous papules and plaques, presenting in acute and chronic forms. The COVID-19 pandemic has seen a surge in PL cases, potentially linked to post-viral immune dysregulation, highlighting a novel aspect of post-COVID dermatological manifestations. This article presents a case series of PL patients diagnosed in the post-COVID era, detailing their clinical features and treatment responses. Notably, all patients in this series responded favorably to erythromycin monotherapy. The cases revealed that erythema, scaling, and pruritus were common symptoms, which significantly improved with erythromycin. This consistent positive response underscores erythromycin's potential as a first-line therapeutic option for PL, especially when considering the emerging pattern of post-viral dermatological conditions. The findings suggest that erythromycin may modulate the immune response altered by COVID-19, providing symptomatic relief and disease resolution. These observations pave the way for further research into the mechanisms of PL in the context of post-viral immune dysregulation and reinforce the need for heightened awareness among clinicians of the possible dermatological sequelae of COVID-19.

Keywords: Case Series, COVID-19, Erythromycin, Pityriasis Lichenoides

Introduction

Pityriasis Lichenoides (PL) comprises a spectrum of inflammatory skin diseases, including Pityriasis-lichenoides Et varioliformis Acuta (PLEVA), Febrile Ulceronecrotic Mucha–Habermann disease (a severe variant of PLEVA), and Pityriasis-Lichenoides Chronica (PLC) [1]. Despite extensive research, the aetiology of PLEVA and PLC remains elusive. Various hypotheses have been proposed, including inflammatory conditions, immunological reactions, and infections [2-3]. Additionally, numerous potential inciting agents have been implicated, such as Epstein-Barr Virus, *Toxoplasma gondii*, Cytomegalovirus, Human Immunodeficiency Virus, and Varicella-Zoster Virus, alongside various types of vaccines [3].

Even causal relationship with vaccines for common infections like measles, mumps, rubella, diphtheria, and COVID-19 have been proposed [4]. Irrespective of the aetiology, steroid has remained the mainstay of treatment. However, the number of

cases have been found to increase in the post-COVID era. An unusual finding has been noticed that antibacterial agents with anti-inflammatory properties might be promising treatment option for patients with PLEVA [5].

Vaccines, including those for human papilloma-virus, tetanus, diphtheria, influenza, measles, mumps, rubella, and notably COVID-19, have been reported as potential triggers for PL [4]. During the COVID-19 pandemic, there was a surge in cases of PL observed post-COVID-19 infection, suggesting a possible association with post-viral immune dysregulation [6].This article presents a case series of PL patients observed in a tertiary care hospital in the southern part of Andhra Pradesh, India during the post-COVID era, emphasizing their response to erythromycin monotherapy.

Case Series

Case 1: A 70-year-old female came to the clinic with complaints of raised red lesions accompanied by intense itching on the neck and back of the trunk persisting for one month. Examination revealed multiple, discrete, erythematous papules with central punctum, along with a few papules exhibiting peripheral scaling on the posterior aspect of the trunk, proximal part of the arms, and flanks bilaterally (Figure 1A- C).

Laboratory investigations including blood cell counts, Erythrocyte Sedimentation Rate (ESR), absolute eosinophilic count, liver function and renal function tests were all within normal limits. Both VDRL & HIV tests were non-reactive.

Case 2: An 18-year-old male complained of rashes and raised lesions accompanied by mild itching all over the body for one week. Examination revealed multiple, discrete, papules and nodules of size varying between one and three centimetre in diameter over the extremities, trunk, face, neck, and ear lobules, with a few papules showing excoriation. Laboratory investigations again demonstrated normal results.

Case 3: A 41-year-old male visited the Outpatient Department (OPD) with painful fluid-filled lesions on the left thigh persisting for 2 days. Multiple, grouped vesicles were noticed on an erythematous base over left thigh, initially suggestive of herpes zoster for which the patient commenced acyclovir treatment. However, after 3 days, sudden eruptions of multiple, discrete, erythematous plaques occurred over the anterior aspect of the left thigh. Laboratory investigations yielded normal results similar to above case. Histopathological examination of the above three cases demonstrated surface epithelium atrophy, mild spongiosis, basal cell

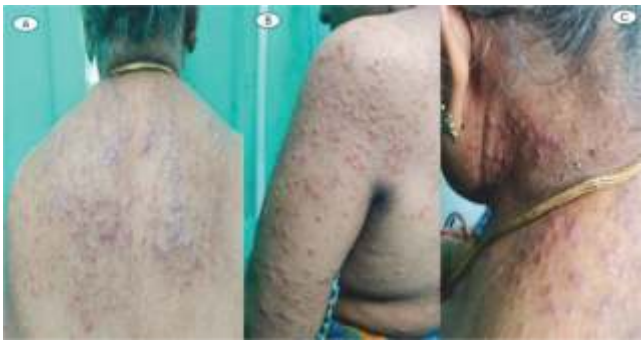

Figure 1: Multiple, discrete, erythematous papules with central punctum, along with a few papules exhibiting peripheral scaling A) posterior aspect of trunk B) left arm C) neck

keratinization, and moderate lymphohistiocytic collections with erythrocyte exocytosis (Figure 2A-B) suggestive of PLEVA.

All three cases of PLEVA were initiated on erythromycin 500 mg twice daily, along with antihistamines and topical corticosteroids. Lesions resolved within 2 weeks, with subsiding itching and absence of new eruptions. Treatment was continued for 2 months without recurrence, followed by a reduction to erythromycin 500 mg once daily for one month before cessation.

Case 4: A 49-year-old female visited the OPD with dark-coloured itchy elevated lesions on face, trunk, and hands persisting for 6 months, appearing as crops of lesions with intermittent episodes (Figure 3A-B). The patient had no history of diabetes, hypertension, or insect bites and had previously used topical and systemic corticosteroids with only symptomatic relief. Examination revealed multiple, discrete, erythematous to hyperpigmented papules with central crusting and scaling over the face, trunk, and extensor aspect of both upper limbs, with hyper- and hypopigmented scars interspersed among active lesions. Routine investigations were all within normal limits and skin biopsy were consistent with PLC.

Case 5: An adolescent boy (15 years) presented with skin-colored elevated lesions on trunk and extremities for the past week, associated with mild itching. He was a febrile and did not use any medications before presentation. On examination, multiple, skin-colored to erythematous papules with mild scaling and crusting were predominantly noted over the upper limbs, trunk, and abdomen. Routine investigations were all within normal limits and skin biopsy were consistent with PLC.

All two cases of PLC were initiated on erythromycin 500 mg twice daily, along with antihistamines and topical corticosteroids. Resolution of lesions was noted within 4 weeks, following which the dose was continued for an additional 2 months before tapering to 500 mg once daily for 2 months and eventual cessation.

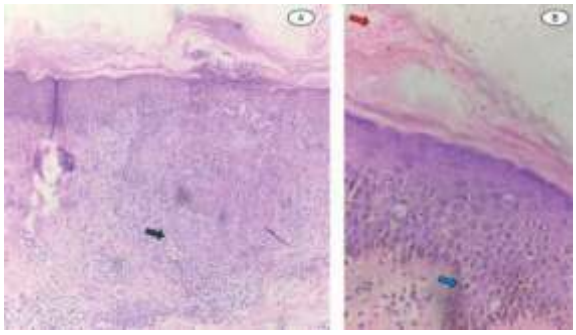

Figure 2: H&E A)10X B)40X shows epithelium atrophy, mild spongiosis, basal cell keratinization (blue arrow), and moderate lymphohistiocytic collections (black arrow) with erythrocyte exocytosis (red arrow).

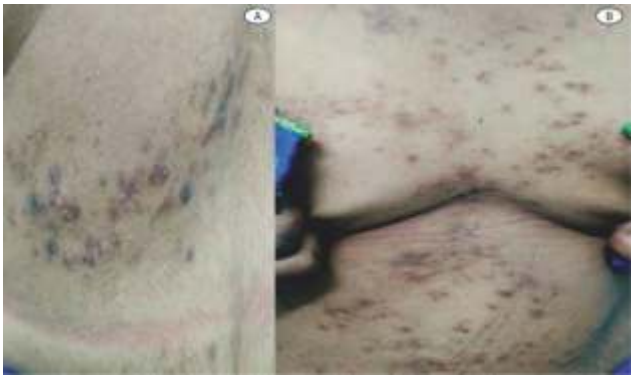

Figure 3: Multiple, discrete, erythematous to hyperpigmented papules with central crusting and scaling over the trunk.

Discussion

PL encompasses a spectrum of dermatological conditions, having an acute variant PLEVA and a chronic variant PLC [4]. The underlying pathogenesis of PL remains elusive. While presence of high antibody titres to various infectious agents indicates the possible role of infections; however, no definitive relation has been established [1]. Rare cases of PL following vaccination have been reported, with associations noted with some vaccinations as well [1].

The emergence of PLEVA cases in association with COVID-19 infection prompts inquiry into the possible role of viral infections in stimulating or exacerbating immune-mediated skin disorders. In our cases, all patients had received COVID-19 vaccination, and two of them had a history of COVID-19 infection. Further research is warranted to elucidate the mechanisms linking COVID-19 infection and vaccination with PLEVA, as well as to explore the broader implications of viral infections on dermatological health [7].

PLEVA typically presents with erythematous macules progressing into papules with a fine micaceous scale. These papules may develop central vesiculo-pustular changes, haemorrhagic necrosis, ulceration, and red-brown crusts, often leading to varioliform scars and post inflammatory hypo- and hyperpigmentation [2]. Symptoms commonly include burning sensation and pruritus, with lesions predominantly appearing on the trunk, flexural areas, and extremities. The polymorphous nature of the eruption, characterized by lesions in various developmental stages and successive crops lasting from weeks to months or years, adds complexity to diagnosis and management [2]. Histopathological examination of two cases of PLC revealed focal parakeratosis, spongiosis, a preserved granular cell layer, disappearance of the dermoepidermal interface, and perivascular inflammation, findings consistent with those reported by Bhargava *et al*. [8, 9].

Differential diagnoses for PLEVA encompass a wide range of dermatological conditions, including lymphomatoid papulosis, reactions due to insect bites, viral infections like varicella, and erythema multiforme. The other uncommon conditions include pityriasis rosea, Gianotti-Crosti syndrome among children due to Epstein-Barr virus infection, guttate psoriasis, vasculitis, and secondary syphilis [2]. Clinical management of PL remains challenging due to its uncertain aetiology. Treatment modalities include topical corticosteroids, phototherapy, systemic antibiotics, and immunosuppressive agents [2]. However, optimal therapeutic approaches lack consensus, necessitating individualized management based on disease severity and patient preferences.

Erythromycin, a macrolide antibiotic with anti-inflammatory properties, has shown promise in treating PL due to its immunomodulatory effects. Notably, in this post-COVID era, significant responses to erythromycin monotherapy have been observed in PL patients.

The immunomodulatory properties of erythromycin, including its inhibition of cytokine production and modulation of T-cell responses, may contribute to its efficacy in treating PL which is believed to involve immune dysregulation [5, 10]. Further research is needed to consolidate these findings and explore the effectiveness of erythromycin as a therapeutic option for PL in the context of emerging post-COVID dermatological manifestations.

Conclusion

The cases outlined in this series shed light on the rising incidence of PL in the aftermath of the

COVID-19 pandemic and suggest a promising role for erythromycin monotherapy in its management. While these findings underscore the potential of erythromycin as a therapeutic option for PL, further investigation is necessary to elucidate the intricate mechanisms linking COVID-19 infection, vaccination, and the development of PL.

Moreover, validation of the efficacy of erythromycin in larger cohorts is imperative to strengthen treatment recommendations. Nonetheless, these observations underscore the significance of considering erythromycin in the therapeutic armamentarium for PL, particularly amidst emerging post-viral dermatological manifestations.

References

1. Shastry V, Ranugha PSS, Rangappa V, Sanjaykumar P. Pityriasis lichenoides et varioliformis acuta following measles rubella vaccine. *Indian J Dermatol Venereol Leprol* 2020;86(4):398–400.
2. Pereira N, Brinca A, Manuel Brites M, José Julião M, Tellechea O, Gonçalo M. Pityriasis Lichenoides et Varioliformis Acuta: Case Report and Review of the Literature. *Case Rep Dermatol* 2012 Mar 23;4(1):61–5.
3. de Castro BAC, Pereira JMM, Meyer RLB, Trindade FM, Pedrosa MS, Piancastelli ACC. Pityriasis lichenoides et varioliformis acuta after influenza vaccine. *An Bras Dermatol* 2015;90(3 Suppl 1):181–4.
4. Al Muqrin AM, Alruwaili ZMN. Pityriasis lichenoides chronica induced by COVID-19 messenger RNA vaccination. *JAAD Case Rep* 2022 Jul 19;27:52–4.
5. Chen Y, Zhao M, Xiang X, Wang Z, Xu Z, Ma L. Oral erythromycin in pityriasis lichenoides chronica and pityriasis lichenoides et varioliformis acuta. *Dermatol Ther* 2020 May;33(3):e13311.
6. Dawoud NM, Aslam H, Ali IM, Dawoud MM. The first case report of Pityriasis lichenoides chronica following COVID-19 mRNA vaccination. *Dermatol Ther* 2022 Jun;35(6):e15445.
7. Kashte SB, Sharma RK, Kadam S. Profile of adverse events following COVID-19 vaccination: Insights from Covishield, Covaxin, and Corbevax beneficiaries in India. *J Krishna Inst Med Sci Univ* 2023; 12(1):86-96
8. Bhargava S, Mathur R. Psoriasiform dermatoses: the diagnostic challenges revisited. *J Krishna Inst Med Sci Univ* 2022;11(2):92–104.
9. Shivanand D, Srikrishna R. Study of insulin resistance and dyslipidemia in psoriasis patients in a tertiary care hospital, South India. *J Krishna Inst Med Sci Univ* 2016; 5. 14-19
10. Hapa A, Ersoy-Evans S, Karaduman A. Childhood pityriasis lichenoides and oral erythromycin. *Pediatr Dermatol* 2012;29(6):719–24.

Author for Correspondence:
Dr. Eddula Venkata Ravikanth, Department of Dermatology, Venerology and Leprosy, Apollo Institute of Medical Sciences and Research Chittoor, Near Murukambattu, Chittoor, Andhra Pradesh – 517127 Email: ravikanthmikado@gmail.com Cell: 9966789376

How to cite this article:
Eddula VR, Chinni SS, C Sravana D, Kumar MA, Chaudhuri S, Sneha KH. Case series of Pityriasis lichenoides in the post-COVID era: Clinical features and response to erythromycin monotherapy. *J Krishna Inst Med Sci Univ* 2024; 13(4):194-198.

Submitted: *29-July-2024* ***Accepted:*** *14-Sep-2024* ***Published:*** *01-October-2024*