Journal of Pakistan Association of Dermatologists. 2026;**36(1)**:136-140.

Case Report

Pityriasis lichenoides chronica treated with combination of Narrowband Ultraviolet B (NBUVB) phototherapy and erythromycin

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Abstract

Pityriasis lichenoides chronica (PLC) is a rare skin disorder that often resists treatment. Its etiology remains unclear but may involve triggers such as infections or medications that induce an inflammatory skin response. Recent studies have investigated treatment options for PLC, including narrowband ultraviolet B (NBUVB) phototherapy and systemic antibiotics like erythromycin. NBUVB delivers targeted anti-inflammatory effects to promote lesion clearance and minimize systemic side effects for localized conditions. Erythromycin, a macrolide antibiotic, has shown efficacy in PLC, particularly among pediatric patients, because of its anti-inflammatory mechanisms alongside antimicrobial activity. We describe a 16-year-old girl with PLC featuring erythematous papules across nearly her entire body for 2 years. Diagnosis relied on clinical history, physical examination, and histopathology. Topical corticosteroids proved ineffective. The patient then underwent combined NBUVB phototherapy and erythromycin therapy, with no side effects reported and notable lesion improvement. This dual approach offers a comprehensive strategy for PLC by targeting inflammation via NBUVB and addressing potential infectious elements with erythromycin.

Article Received on 11.05.2025

Revised on 09.02.2026
23.02.2026

Accepted on 09.03.2026

Published on 30.03.2026

Keywords Pityriasis lichenoides chronica, phototherapy, NBUVB, erythromycin.

Citation: Hidayat DE, Ekasari DP, Retnani DP. Pityriasis lichenoides chronica treated with combination of Narrowband Ultraviolet B (NBUVB) phototherapy and erytrhomycin. *J Pak Assoc Dermatol*. 2026;**36(1)**:136-140.

Doi- https://doi.org/10.66344/jpad.v36i1.3250

Introduction

Pityriasis lichenoides chronica (PLC) is an uncommon, chronic inflammatory skin disorder characterized by the gradual appearance of small, reddish-brown papules that may become scaly and persist for months or years.[1,2] The etiology of PLC remains unknown, though it is often associated with various triggers such as infections.[3-5] PLC primarily affects young adults, usually appearing in the second and third decades of life.[2,6] The clinical presentation of PLC can vary significantly, with lesions progressing through different stages, making diagnosis and treatment challenging. Accurate diagnosis requires careful clinical and histopathological evaluation.[1,5] Treatment options for PLC include topical therapies, systemic medications, and phototherapy. Topical corticosteroids are commonly used as first-line treatment due to their anti-inflammatory properties.[2,7] Narrow-band ultraviolet B (NBUVB) phototherapy has also proven effective, especially for patients who do not respond well to topical treatments, offering a non-invasive alternative.[7,8] Recent studies have shown that NBUVB can significantly improve skin lesions with a promising safety profile.[7,8] Erythromycin, an antibiotic with anti-inflammatory effects, has been explored as a

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treatment option, particularly in cases where bacterial infection is suspected to play a role. While some studies suggest its potential effectiveness, the use of erythromycin in PLC remains under investigation and should be guided by clinical judgment and individual patient circumstances.[2,5] PLC is a complex dermatological condition that requires a multifaceted treatment approach. While topical steroids and NBUVB phototherapy are mainstays of therapy, the potential role of antibiotics like erythromycin warrants further research. This case report aims the effectiveness combination of NBUVB and erythromycin

Case Report

A 16-year-old female patient presented to the dermatology outpatient clinic with reddish-brown papules, some covered with fine scales, on her entire body for the past two years. The lesions began as small red spots on her right hand and gradually spread to her abdomen, chest, back, legs, and scalp over six months. Some of the lesions turned into papules with fine whitish scales. The patient occasionally experienced itching (VAS 6/10) but denied facial rashes after sun exposure. The patient reported intermittent fever during the onset of the lesions but denied joint pain. Hair loss occurred in areas with scalp lesions. There was no family history of similar complaints. The patient was previously seeking for a medication with a dermatologist at a private hospital, diagnosed with suspected psoriasis vulgaris with a differential diagnosis of cutaneous lupus erythematosus and given clobetasole ointment for the medication. Then the patient was referred to our dermatology outpatient clinic for further evaluation. Physical examination and vital signs were normal. Dermatological examination showed multiple erythematous patches and plaques, some covered with fine white scales. Auspitz sign, Karsvlek sign, and paper oil test were negative **(Figure 1)**.

Based on history and clinical findings, the patient was suspected with diagnosis of Pityriasis Lichenoides Chronica (PLC), with differential diagnoses including Pityriasis Lichenoides et Varioliformis Acuta (PLEVA), small plaque psoriasis, and subacute cutaneous lupus erythematosus. The patient was lost to follow up for 6 months but then returned to the clinic with worsened complaints. The lesions had increased in number, darkened, and were accompanied with persistent itchy sensation with VAS 6/10. Physical and vital sign examinations remained normal. Dermatological examination showed multiple erythematous and hyperpigmented papules and plaques, some covered with fine white scales. Auspitz sign, Karsvlek sign, and paper oil test remained negative. The patient underwent blood laboratory tests revealing neutrophilia, lymphocytosis, monocytosis, and negative ANA and

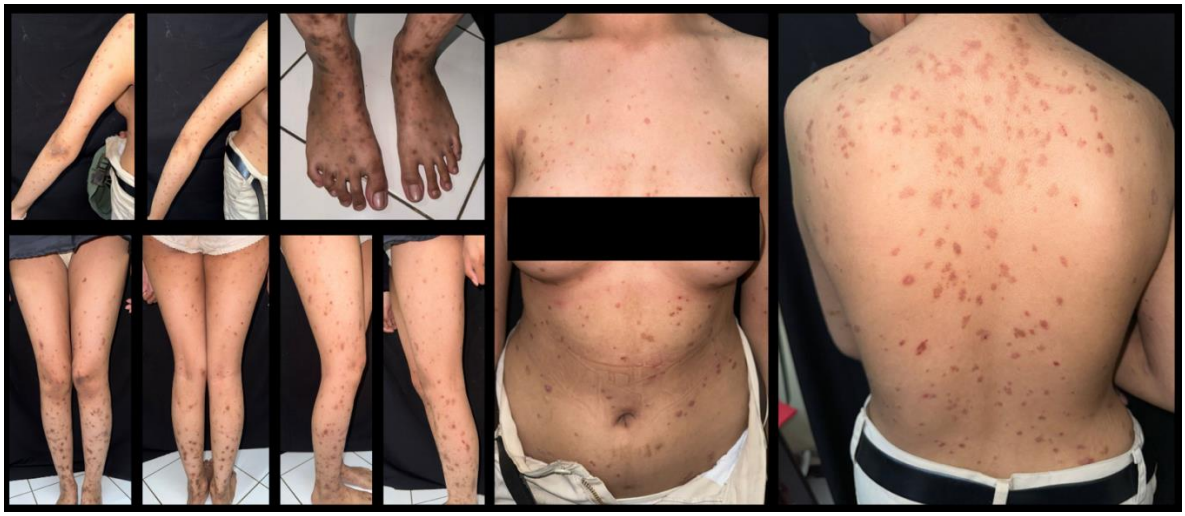

Figure 1 Physical examination showed multiple erythematous patches and plaques with well-defined, regular borders, varying in shape and size, some covered with fine white scales.

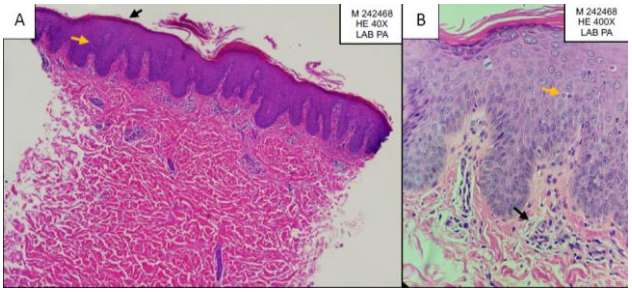

Figure 2 Mild psoriasiform and spongiotic reaction (→) in the epidermis layer. Parakeratosis, several lymphocyte, erythrocyte inflammatory cells and perivascular lymphocyte inflammatory cell infiltrate (→) in the dermis layer. (A, H&E, X40) (B, H&E, X400)

anti-dsDNA results. Skin biopsy showed psoriasiform and mild spongiotic reactions in the epidermis, parakeratosis, inflammatory lymphocyte and erythrocyte infiltration in the dermis, and perivascular lymphocyte infiltration, supporting a diagnosis of PLC **(Figure 2)**.

Based on history, physical examination, and supporting tests, the patient was diagnosed with PLC. Treatment included narrow-band ultraviolet B UVB (NBUVB) phototherapy starting at 300 mJ/cm² with a 10% dose increase per session, oral erythromycin 2 x 500 mg daily for a month. After three phototherapy sessions, no new lesions appeared, and the previous lesions began to disappear. No side effects were observed. Dermatological examination revealed that the red papules and patches had darkened, scaling had decreased, and itching improved (VAS 1/10 from 6/10) **(Figure 3)**.

Discussion

Pityriasis Lichenoides Chronica (PLC) belongs to a broader disease spectrum called pityriasis lichenoides, which also includes an acute form known as Pityriasis Lichenoides et Varioliformis Acuta (PLEVA).[1,9] While PLC typically causes few or no symptoms, some patients may experience mild itching. The lesions initially present as erythematous plaques or papules that developed into a reddish-brown and covered with fine scales. The lesions tend to develop gradually, often flattening and shrinking spontaneously, which distinguishes PLC from other chronic skin diseases.[2,10] Our patient presented with erythematous plaques that appeared almost all over the body for the last two years. This clinical presentation suggested to the diagnosis of PLC.

The exact cause of PLC is largely unknown, but it is believed to involve infectious agents (such as Epstein-Barr virus, HIV, varicella-zoster virus, Streptococcus, Staphylococcus, and HPV), immune responses, and possibly genetic predisposition.[4,11] There have also been reports of PLC being triggered by vaccinations, including MMR and mRNA COVID-19 vaccines, suggesting an immune-mediated mechanism. Environmental factors and underlying systemic diseases may also play a role, but no definitive causative agent has been identified.[2,5] Our patient presented with intermittent fever while the lesions appeared and spread.

PLC is uncommon, with higher incidence in young adults, especially in the second and third decades of life, and affects both genders equally.[2,11] The clinical diagnosis is based on the characteristic appearance and distribution of lesions, supported by patient history and physical examination. Dermatoscopy and histopathological examination can help confirm the diagnosis and distinguish PLC from other similar skin conditions, such as lichen planus and psoriasis.[10] Histopathological examination of the patient's skin presented psoriasiform and mild spongiotic reactions in the epidermis, parakeratosis,

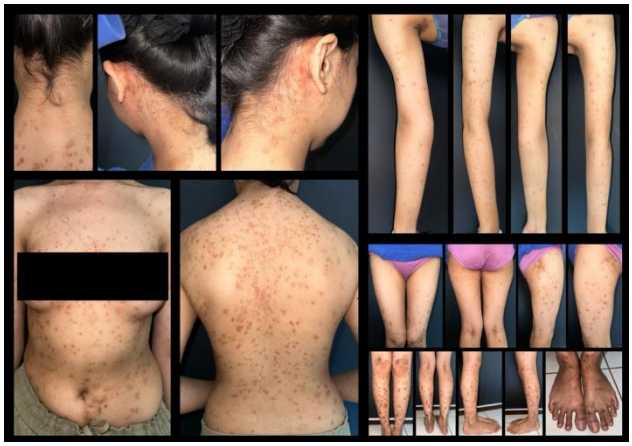

Figure 3 Physical examination showed multiple erythematous and hyperpigmented papules and plaques with well-defined, regular borders, varying in shape and size, some covered with fine white scales.

inflammatory lymphocyte and erythrocyte infiltration in the dermis, and perivascular lymphocyte infiltration that may support a diagnosis of PLC.

There is no standard therapy currently established. The most common used therapy consist of topical corticosteroids, systemic agents and phototherapy to reduce inflammation and promote healing.[5,12] Emollients may be used to maintain skin hydration.[1,10] Topical corticosteroids can reduce inflammation and pruritus but fail to treat the cause of the disease. Remissions are common in PLC, but no studies have reported the adverse effects or replaspe rates of topical corticosteroids as monotherapy.[1] Our patient applied clobetasol propionate ointment to the erythematous plaques for approximately 6 months, with no side effects observed during therapy.

Phototherapy can be used for PLC such as narrowband UVB (NB-UVB), broadband UVB (UVB-BB), PUVA, and UVA.[12] Phototherapy considered highly effective and safe, especially for widespread or treatment-resistant cases, with high rates of complete response and minimal side effects.[12] Adistri et al reported a complete response in patients with PLC who showed no response to topical therapy. The mean number of sessions required was 8, with a cumulative dose of 3.42 J/cm². No side effect such as erythema, pruritus, burning, tingling, folliculitis, headaches, or dryness were observed.[13] Our patient has completed 3 sessions and shown improvement in the lesions, with no phototherapy-related side effects reported.

Systemic agents have been reported for treating PLC, including antibiotics (azitrhomycin, erythromycin), methotrexatem cyclosporin, azathioprine. The data of erythromycin used in PL are limited to case reports. Chen et al repeorted succesful treatment of PLC with erytomycin (15-30 mg/kg/day). Oral erythromycin, an antibiotic with anti-inflammatory properties, can be used, particularly in children or in cases associated with streptococcal infection, though evidence for its effectiveness is limited. The mechanism of action of erythromycin is considered multifaceted, it not only inhibits bacterial protein synthesis but also modulates inflammatory pathways, potentially reducing the inflammatory response associated with PLC.[2,5,14] Our patient was given an oral erythromycin 2 x 500 mg for four weeks and got improvement of the lesions. No side effect of phototherapy was reported by our patient. This combination therapy seems promising for treating PLC.

There was no report of PLC treated with a combination of eyrthomycin and NB-UVB previously reported. In dermatology, phototherapy is often combined with other threrapies to minimize systemic drug toxicity and reduce the cumulative UVB dose. The prognosis for PLC is generally good, as the condition is often self-limiting and may resolve spontaneously over time.[2,10] However, its chronic nature can cause psychological distress and cosmetic concerns.[1,10] Complications may include secondary infection and post-inflammatory pigmentation changes. Rarely, PLC can progress to more severe skin diseases, such as mycosis fungoides, making regular follow-up and appropriate management important.[10,12,15]

Conclusion

Pityriasis lichenoides chronica (PLC) is a challenging, treatment-resistant inflammatory dermatosis that responds poorly to topical corticosteroids alone. In this case, combination therapy with narrowband ultraviolet B (NBUVB) phototherapy and oral erythromycin proved highly effective in a 16-year-old patient with widespread, recalcitrant lesions, achieving rapid lesion regression, reduced pruritus (VAS from 6/10 to 1/10), and no new eruptions after just three sessions, without adverse effects. This novel regimen leverages NBUVB's anti-inflammatory effects alongside erythromycin's immunomodulatory and potential antimicrobial actions, offering a safe, multifaceted approach for extensive PLC, particularly in adolescents; further studies are

warranted to validate its broader efficacy and long-term outcomes.

Declaration of patient consent Author certify that they had obtained all appropriate patient consent.

Financial support and sponsorship None.

Conflict of interest No conflict of interest.

Author's contribution

DEH: Identification and management of the case, manuscript writing.

DPE: Identification and management of the case, critical review of the manuscript writing.

DPR: Diagnosis of the case critical review of the manuscript.

All authors have given final approval of the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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