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CASE REPORT

PRURIGO PIGMENTOSA INDUCED BY INTERMITTENT FASTING AND POST-INFECTIOUS STATE IN A SOUTH ASIAN WOMAN: A DIAGNOSTIC DILEMMA

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Abstract

Prurigo pigmentosa is a rare inflammatory dermatosis, often linked to ketosis and dietary changes, and infrequently reported in South Asian populations. The majority of reported cases involve young adults, with a marked female predominance and peak incidence in the second to third decades of life. It presents diagnostic challenges due to its overlap with other papulosquamous and interface dermatoses. Doxycycline is effective for its anti-inflammatory properties and remains a mainstay in treatment. A 34-year-old Pakistani woman developed a pruritic, widespread red brownish scaly itchy rash all over the body for 4 days. There is h/o fever and sore throat 2 weeks ago, no join pain following intermittent fasting and an upper respiratory tract infection. On examination, pruritic erythematous maculopapular eruption with few lesions with scales, began as erythematous purpuric eruption, spreading and turning brownish present all over the body. Histopathology showed parakeratosis, interface dermatitis, and dermal lymphohistiocytic infiltrates with eosinophils features suggestive of prurigo pigmentosa. Differential diagnoses included pityriasis lichenoides et varioliformis acuta (PLEVA) and lichenoid drug reaction. Our plan is to administer symptomatic treatment with emollients, antihistamines, topical steroids and anti-inflammatory. Bilaxtin, Doxycycline for 15 days. The patient responded favourably to doxycycline and symptomatic treatment, with resolution of inflammation and residual hyperpigmentation.This case underscores the need for clinical suspicion of prurigo pigmentosa in patients with dietary or metabolic triggers. Early histopathological confirmation facilitates accurate diagnosis and management.

Keywords: *Prurigo Pigmentosa, Intermittent Fasting and Post-Infectious State, South Asian Woman, Diagnostic Dilemma,*

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Introduction

Prurigo pigmentosa is considered a rare inflammatory dermatosis, a cutaneous inflammatory condition initially described in Japanese populations but now increasingly recognized worldwide. With approximately 400–500 cases reported in the global literature since it was first described by Nagashima in 1971. Although initially believed to be almost exclusive to East Asian populations, recent studies have shown increasing recognition in Western countries and among ethnically diverse populations (Boer, 2003; Kim et al., 2015). A 2023 review by Chen et al. noted that 76% of reported cases occurred in individuals of East Asian descent, although a rising number of cases in Caucasian, Hispanic, and Middle Eastern patients suggest underdiagnosis in non-Asian populations (Chen et al.,

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2023). In the UAE and broader Middle East region, no epidemiological studies have quantified the incidence or prevalence of PP. However, isolated case reports from countries like Saudi Arabia, Lebanon, and Jordan suggest that PP exists in the region but may be under-recognized or misdiagnosed due to its clinical overlap with more common dermatoses (Alotaibi et al., 2022).

Despite its expanding recognition, formal incidence or prevalence data are not available due to the absence of population-based epidemiological studies. Most available data are from case reports and small case series, often focusing on individual or region-specific presentations.

Its pathogenesis remains unclear but is commonly associated with ketosis-inducing states, such as fasting or ketogenic diets, and has been linked to systemic infections, diabetes, and hormonal fluctuations. Due to overlapping clinical and histopathological features with other dermatoses such as PLEVA and drug eruptions, diagnosis requires careful correlation of history, morphology, and histopathology (Kim et al., 2015; Böer, 2003).

Case Report

A 34-year-old Pakistani woman presented to the dermatology outpatient clinic with a 4-day history of a widespread, itchy, red-brown scaly rash involving the trunk and limbs. Two weeks prior, she had experienced a febrile illness with sore throat, for which she received azithromycin and cloperastine fendizoate. She reported intermittent fasting for one month, which she discontinued a week before symptom onset. She also recently started consuming chia seeds. There was no history of joint pain, systemic symptoms, or prior dermatologic disorders.

On examination, there was a symmetrical, widespread erythematous maculopapular eruption, some lesions with overlying scales. The eruption had progressed from purpuric macules to brownish papules. No mucosal involvement was noted.

Received in formalin identified with patient's name and MRN single skin tissue measuring 0.3 x 0.1 cm. Totally embedded in 1 block. A skin biopsy from the affected site revealed confluent parakeratosis with serum crusting. Irregular acanthosis and mild to moderate spongiosis. Perivascular and interface lympho-histiocytic infiltrates with occasional eosinophils. Patchy basovacuolar degeneration, melanin incontinence, and red blood cell extravasation.

These findings were compatible with either prurigo pigmentosa or PLEVA. Clinical-histopathological correlation favored prurigo pigmentosa. Prurigo pigmentosa most consistent with clinical and histopathological findings. Pityriasis lichenoides et varioliformis acuta (PLEVA). Lichenoid drug eruption (due to recent azithromycin). Vasculitis limited to skin. Lichen planus and other papulosquamous disorders.

The patient was started on Oral doxycycline 100 mg twice daily for 15 days. Oral bilastine for pruritus. Topical moderate-potency corticosteroids. Emollients for supportive care. Significant improvement was noted at 2-week follow-up, with resolution of the pruritic rash and residual post-inflammatory hyperpigmentation. No recurrence was noted during 1-month surveillance. The patient was advised to avoid sudden dietary changes and maintain a balanced diet.

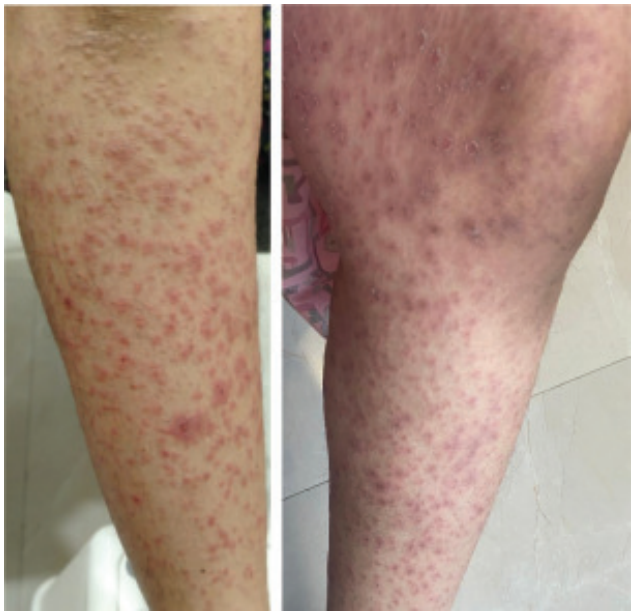

Figure 1: I*tchy, red-brown scaly rash involving the trunk and limbs.*

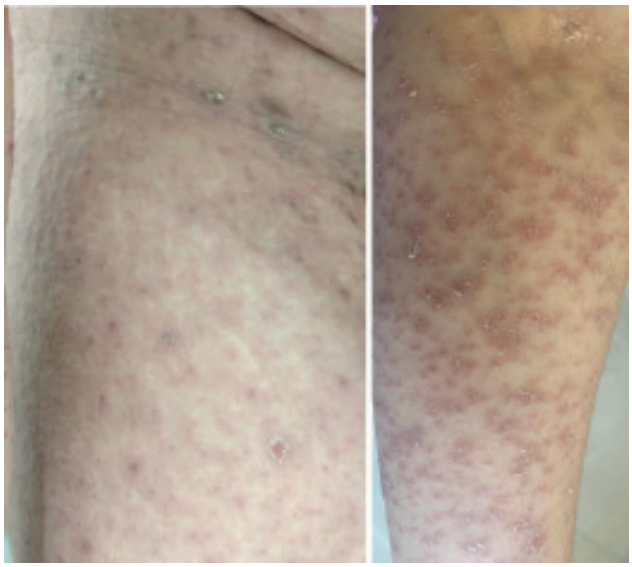

Figure 2: *The lesions are symmetrical, widespread erythematous maculopapular eruption, some lesions with overlying scales.*

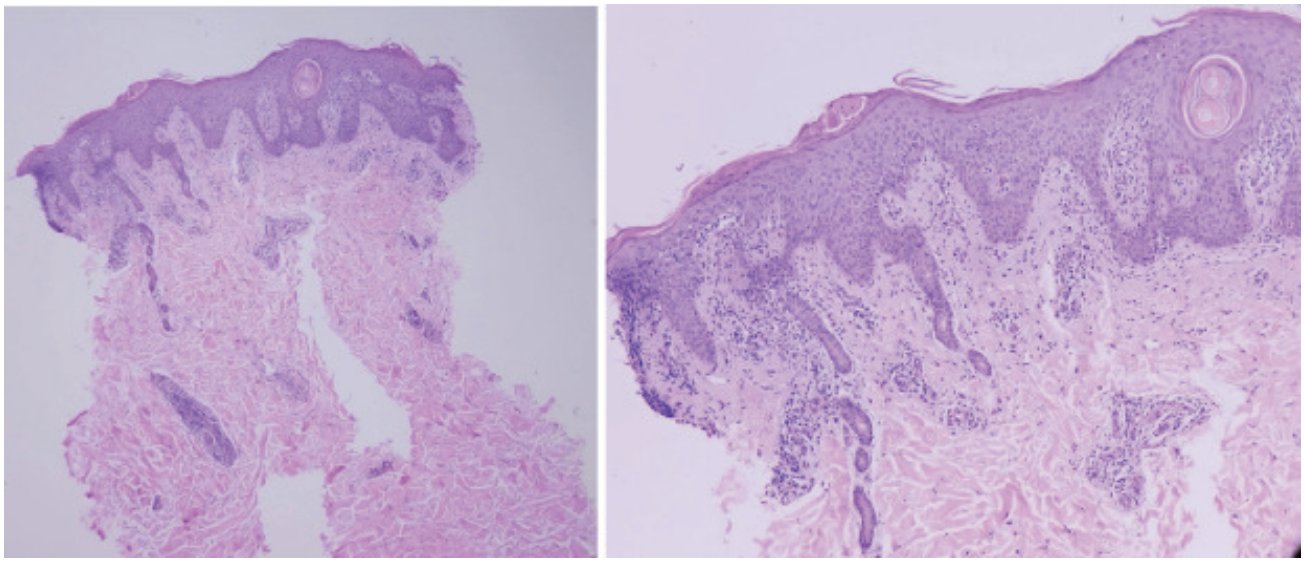

Figure 3: *Microscopic sections show confluent parakeratosis with focal serum accumulation and absent granular layer. Irregular acanthosis with mild to moderate spongiosis.*

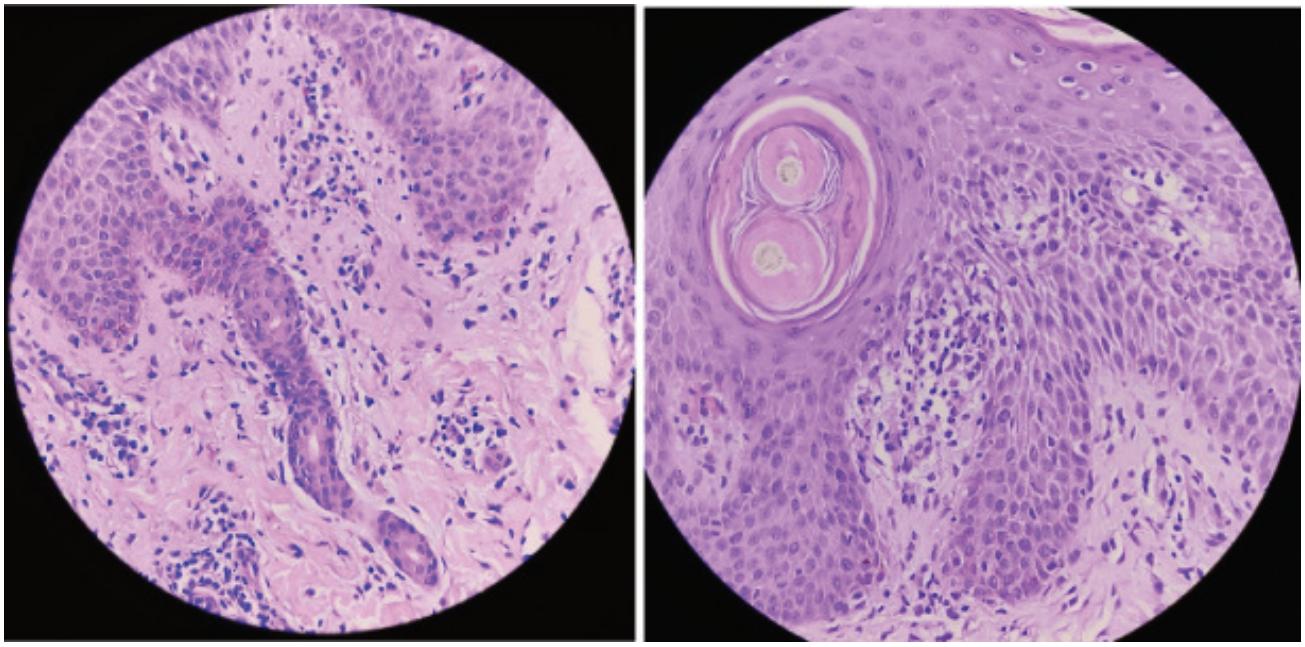

Figure 4: *Microscopic sections show dermal interface and perivascular lymphohistiocytic infiltrates with occasional eosinophils. Patchy basovacuolar degeneration, melanin incontinence and red blood cell extravasation noted.*

Discussion

Prurigo pigmentosa (PP) should be considered in the differential diagnosis of pruritic papular eruptions, particularly in the context of recent dietary modifications or ketosis-inducing states, such as intermittent fasting or ketogenic diets. Clinical suspicion supported by histopathological findings is essential to distinguish PP from other mimickers including pityriasis lichenoides et varioliformis acuta (PLEVA), lichenoid drug eruptions, and other inflammatory dermatoses.

This case underscores the diagnostic complexity of PP, especially in non-East Asian populations where the condition remains underrecognized. In this instance, the co-occurrence of a post-infectious state and initiation of intermittent fasting likely contributed to ketosis, a well-established trigger for PP pathogenesis (Nomura et al. 2020, Kimura et al. 2019).

Histopathologically, PP typically reveals a superficial perivascular and interface dermatitis with variable parakeratosis, basal vacuolar alteration, and a predominance of neutrophilic infiltrates (Lee et al. 2017, Chiba et al. 2011). While PLEVA may exhibit overlapping histologic features, such as interface changes and parakeratosis, it often includes a wedge-shaped lymphocytic infiltrate and erythrocyte extravasation, warranting careful clinicopathological correlation (Boer et al. 1993). Lichenoid drug eruptions, on the other hand, are characterized by more pronounced basal layer damage, apoptotic keratinocytes, and a mixed inflammatory infiltrate including eosinophils (Shiohara et al. 2008).

Doxycycline remains a mainstay of treatment for PP due to its anti-neutrophilic and anti-inflammatory properties, with good therapeutic outcomes reported in the literature (Böer et al. 2001, Suto et al. 2000). As ketogenic and fasting-based dietary practices gain popularity worldwide, heightened awareness and recognition of PP are critical to avoid misdiagnosis and ensure appropriate management.

Conclusion

Given the growing prevalence of ketogenic diets, intermittent fasting, and other metabolic stressors recognized triggers for prurigo pigmentosa (PP) an increase in reported cases within the UAE is plausible, despite currently limited documentation. As recognition of PP expands beyond East Asian populations, heightened clinical awareness and suspicion are essential to ensure timely diagnosis and appropriate management.

Consent for Publication

Written informed consents were obtained from the patient for the publication of this case report and the accompanying images. All identifying information has been removed to ensure patient confidentiality.

Availability of Data and Materials

All data generated or analysed during this study are included in this published article.

Competing Interests

The author declares that they have no competing interests.

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Authors' Contributions

The authors were responsible for study conception, data interpretation, manuscript preparation, and final approval of the version to be published.

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Use of Artificial Intelligence

Artificial intelligence tools (Grammarly and Open AI) were used for language editing and structuring of the manuscript under the author's supervision. All scientific content, interpretations, and conclusions are the responsibility of the author.

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