

Clinical Challenges in the Diagnosis and Management of Pyoderma Gangrenosum: A Case Report

Rengaraj Thirunanamoorthy¹, Thaslim Ridhwana Barakath Ali*², Vennila Sankar², Kanchana Ramamoorthy², Vignesh Sekar², Mathesh M.²

¹Chief Doctor, Department of General Medicine, Government Medical College and Hospital, Orathur, Nagapattinam, Tamil Nadu, India.

²Pharm D Intern, Department of Pharmacy Practice, E.G.S. Pillay College of Pharmacy, Nagapattinam, Tamil Nadu, India.

Corresponding Author: Thaslim Ridhwana Barakath Ali, Pharm D Intern, Department of Pharmacy Practice, E.G.S. Pillay College of Pharmacy, Nagapattinam-611002, Tamil Nadu, India

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ABSTRACT

Pyodermagangrenosum (PG) is a rare, non-infectious, ulcerative neutrophilic dermatosis often misdiagnosed as diabetic or infectious ulcers, particularly in patients with diabetes mellitus. Early recognition is essential to prevent progressive tissue destruction. A 43-year-old woman with a 4-year history of type 2 diabetes mellitus presented with multiple painful, rapidly enlarging ulcerative lesions on the lower limbs. Initial management with empirical antibiotics for suspected diabetic ulcers was ineffective. Skin biopsy revealed dense neutrophilic infiltration without infection, confirming PG. Oral prednisolone 20 mg daily was initiated as first-line therapy, resulting in gradual ulcer improvement. Wound debridement was minimized to prevent pathergy. At discharge, topical betamethasone was prescribed for maintenance therapy, with instructions for glycemic control and follow-up. PG should be considered in atypical, non-healing ulcers, especially in diabetic patients. Early immunosuppressive therapy with systemic corticosteroids and topical maintenance can improve outcomes and prevent recurrence.

KEYWORDS: Pyodermagangrenosum, Diabetes mellitus, Corticosteroids, Neutrophilic dermatosis, Prednisolone, Betamethasone.

I. INTRODUCTION

Pyodermagangrenosum (PG) is a rare condition resulting from neutrophil dysfunction. This ulcerative neutrophilic dermatosis is generally non-infectious, painful, sterile ulcers that typically involve the lower extremities, leading to progressive skin destruction. PG is frequently associated with systemic conditions such as

inflammatory bowel disease, rheumatic disorders, hematological abnormalities, and malignancies.

The occurrence of PG in patients with diabetes mellitus is uncommon and often poses a diagnostic challenge, as it can easily be mistaken for diabetic foot ulcers. Such misdiagnosis may delay appropriate treatment and adversely affect prognosis. Several clinical variants of PG have been described, including ulcerative, bullous, pustular, vegetative, peristomal, and postoperative types, with the ulcerative form being the most prevalent. (1)

Epidemiological studies suggest that PG affects approximately 3–10 individuals per million population, while its association with diabetes mellitus ranges between 1% and 2% in various case series. (2)

II. CASE PRESENTATION

A 43-year-old woman with a 4-year history of type 2 diabetes mellitus presented with multiple painful ulcerative lesions over both thighs. The lesions initially appeared as small pustules that rapidly enlarged and ulcerated within two days, accompanied by severe pain. The ulcer was not associated with bleeding. There was no history of trauma, insect bite, or preceding infection.

On examination, multiple necrotic ulcers with irregular, undermined edges and surrounding erythema were observed at the following sites:

- Right posterior thigh – 7 × 7 cm
- Posterior aspect of left leg – 1 × 1 cm
- Anterior aspect of left thigh – 2 × 2 cm
- Lateral aspect of left thigh – 6 × 4 cm
- Medial aspect of left thigh – 2 × 2 cm

The lesions were tender but without purulent discharge or foul odor. Vital signs were

stable (BP 120/80 mmHg, pulse 88 bpm, respiratory rate 18 /min). Capillary blood glucose was markedly elevated at 528 mg/dL. Laboratory findings revealed mild microcytic anemia (Hb 11.1 g/dL, MCV 78.4 fL), normal leukocyte and platelet counts, and normal renal parameters (urea 25 mg/dL, creatinine 1.2 mg/dL). Prothrombin time (19.6 s) and INR (1.4) were mildly prolonged.

Based on the clinical appearance, a diagnosis of diabetic ulcer and differential diagnosis of pyodermmagangrenosum were made. A skin biopsy obtained from an external center revealed dense neutrophilic infiltration of the dermis, confirming PG.

The patient was initially started on empirical intravenous piperacillin–tazobactam (2.25 g TDS) and metronidazole (500 mg TDS), vitamin supplementation, paracetamol for pain, and insulin therapy for glycemic control. After the diagnosis of PG was confirmed, the antibiotics were discontinued, and oral prednisolone 20 mg daily was initiated. Wound debridement was minimized to prevent pathergy and was limited to the removal of loose necrotic tissue under aseptic conditions.

Following corticosteroid therapy, the ulcers gradually improved with a reduction of necrotic tissue and no appearance of new lesions during hospitalization. The patient was discharged on day 8 with topical betamethasone for maintenance therapy and instructions for glycemic monitoring and follow-up.



FIGURE 1: ULCERATIVE DERMATOSIS IN THE POSTERIOR ASPECT OF LEFT THIGH



FIGURE 2: ULCERATIVE DERMATOSIS IN THE POSTERIOR ASPECT OF RIGHT THIGH

III. DISCUSSION

PG is a rare condition of neutrophilic dermatosis for which the diagnosis is often excluded. Its clinical presentation often overlaps with diabetes-related complications, such as infected or venous ulcers, which can make early diagnosis challenging. (3) Females are more prone to skin diseases such as the PG as compared to male individuals. Likewise, in the present case, the patient is a female with type 2 diabetes mellitus, presenting with painful, rapidly progressing ulcers on the lower limbs. Initially, these lesions were managed as diabetic ulcers with antibiotics, reflecting the common misdiagnosis due to overlapping clinical features. (3, 4)

PG lesions are typically extremely painful, rapidly progressive, and most frequently affect the lower extremities, though any region of the body can be involved. (5) Misdiagnosis and inappropriate interventions such as debridement can lead to worsening through pathergic responses. The underlying pathogenesis remains incompletely understood, but neutrophils and upregulation of proinflammatory and chemotactic factors play a central role. (5)

Early recognition is critical to reduce morbidity, and clinicians should actively consider PG in patients with non-healing, atypical ulcers. In this case, biopsy confirmed the diagnosis, and oral prednisolone 20 mg was initiated as first-line therapy in accordance with literature recommendations. (6) At discharge, topical betamethasone was prescribed as maintenance therapy to prevent recurrence (2). PG remains a

condition with significant morbidity, and awareness of its characteristic presentation, particularly in patients with comorbidities such as diabetes, is essential for timely and effective management.

This report is limited by its single-patient design, which restricts generalizability. The patient's response to therapy was not followed long-term, and other potential systemic associations of PG could not be explored. Additionally, the initial misdiagnosis and prior antibiotic therapy may have influenced the clinical course, highlighting the challenges in early recognition.

IV. CONCLUSION

PG is a rare, rapidly progressive ulcerative condition that can be easily misdiagnosed, particularly in patients with diabetes mellitus. Early recognition and differentiation from infectious or diabetic ulcers are critical. Management with systemic corticosteroids (oral prednisolone) was effective in controlling inflammation and promoting ulcer healing, while topical betamethasone served as maintenance therapy to prevent relapse. This case emphasizes the importance of timely immunosuppressive therapy and careful wound care in achieving favorable outcomes in PG.

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REFERENCES

- [1]. Pyodermagangrenosum misdiagnosed as diabetic foot. *Front Endocrinol (Lausanne)*. 2025;16:1604157. doi:10.3389/fendo.2025.1604157.
- [2]. Toledo-Contreras A, Bermúdez V, Toledo AJ, Salazar J, Martínez MS, Rojas E, Roque W, Pérez A, Chacín-González M, Rojas J.

Pyodermagangrenosum in a patient with type 2 diabetes: a case report. *Kasmera*. 2020;48(1):e48101122019.

- [3]. Husain R, Alawadhi A, Dayan E, Huang M, Corcuera-Solano I. MRI features of pyodermagangrenosum in a diabetic patient with ulcerative colitis: A case report and review of the literature. *Radiol Case Rep*. 2020;15(12):2540–2546. doi:10.1016/j.radcr.2020.09.038.
- [4]. Javed MA, Anwar MA, Shahzad KA, Krishnagopalan SK, Alsaffar EJMS, Sultan N, Hui J. Pyodermagangrenosum associated with type 1 diabetes mellitus: A case report. *Biomed Lett*. 2017;3(2):130–133.
- [5]. George C, Deroide F, Rustin M. Pyodermagangrenosum: a guide to diagnosis and management. *Clin Med (Lond)*. 2019;19(3):224–228. doi:10.7861/clinmedicine.19-3-224.
- [6]. Kaur M, Diaz MJ, Anthony M, et al. Treatments for pyodermagangrenosum: A systematic review and single-arm meta-analysis of systemic therapies. *Int Wound J*. 2025 Aug;22(8):e70733.