

# A diagnostic dilemma of pemphigus vulgaris mimicking ecthyma gangrenosum

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**Abstract** Pemphigus vulgaris (PV) is the most common autoimmune blistering disorder affecting the skin and mucous membranes. It is clinically characterized by the presence of flaccid vesiculobullous lesions or erosions, which usually start in the oral mucosa, followed by skin involvement. Atypical presentations of PV have been mentioned previously in the literature. Extensive bacterial overgrowth with staphylococcus aureus or Pseudomonas aeruginosa can lead to delayed wound healing and enlarging ulcers, thereby causing diagnostic problems. We describe an unusual presentation of PV masquerading as Ecthyma gangrenosum (EG) in a 55 year old male.

**Key words**

Atypical; Ecthyma gangrenosum; Pemphigus vulgaris.

## Introduction

Pemphigus vulgaris (PV) is a chronic, autoimmune blistering disorder of the skin and mucous membranes that is clinically characterized by the presence of flaccid vesiculobullous lesions or erosions appearing over normal skin.<sup>1</sup> The pathogenesis is mainly due to the production of autoantibodies, usually IgG-class, directed against various proteins of desmosomes (desmogleins). The attachment of these autoantibodies to the components of the desmosomes disrupts intraepidermal adhesion, leading to acantholysis and the formation of vesicles, blisters, and erosions on the skin and mucous membranes.<sup>2,3</sup> PV is the most common form of pemphigus, accounting for approximately 70% of cases. It is also the most severe form of the disease among the different forms of pemphigus.<sup>2</sup> Diagnosis is based on the

clinical features, which is then confirmed by histopathological findings and direct and indirect immunofluorescence studies. Secondary bacterial colonization with Staphylococcus aureus or Pseudomonas aeruginosa can occur in PV leading to purulent crusted erosions, hypopyon, ecthyma ulcers, and delayed wound healing. Unusual presentations of bullous pemphigoid resembling ecthyma gangrenosum but lacking systemic infection with Pseudomonas aeruginosa have been previously reported in the literature.<sup>4</sup> We herein present one such interesting and unusual presentation of PV masquerading as Ecthyma gangrenosum (EG), causing diagnostic confusion which was later confirmed by biopsy and direct immunofluorescence.

## Case report

A 55-year-old male presented with multiple painful, discrete, and well-circumscribed ulcers over the trunk and upper limbs for the past 20 days. He also gave a history of painful oral erosions that started six months ago. No fever or other constitutional symptoms were seen. There

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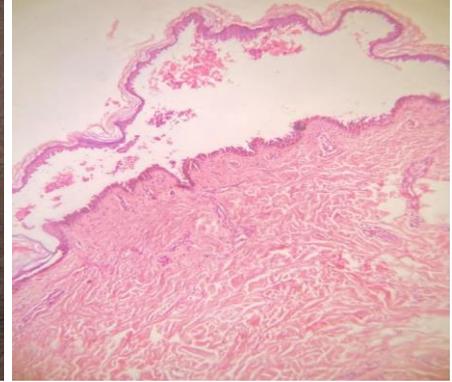
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**Figure 1** A) Multiple circular punched out ulcers with central black eschar and crusting. B) Post treatment image showing resolution of lesions with post inflammatory hyperpigmentation.



**Figure 2** Well defined punched out circular ulcers covered with purulent slough.



**Figure 3** HPE (×10) showing suprabasal blister with acantholytic cells and eosinophils in the epidermis and perivascular lymphocytic infiltrate in the dermis.

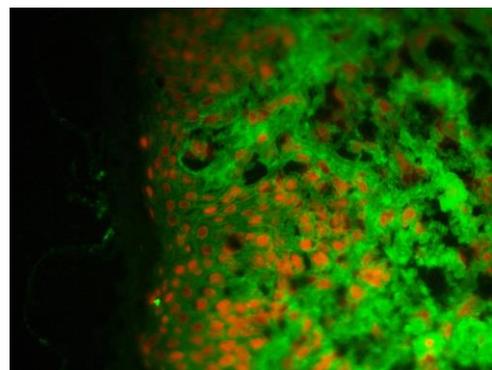
was no history of DM or other systemic illnesses. He was treated outside by private practitioners with multiple IV and oral antibiotics with not much response. Clinical examination revealed multiple circumscribed, punched out shallow to deep ulcers varying in size from 2×1 cm to 6×5 cm, distributed over the trunk and upper arms. The ulcers were covered with central black eschar, crusting, purulent slough and surrounded by a rim of erythema. (**Figure 1A,2**).

We considered the possibilities of extensive pyoderma gangrenosum, vasculitis, ecthyma contagiosum, and ecthyma gangrenosum based on the above clinical picture, and the initial diagnosis of PV was not considered. Oral examination showed multiple erosions and fissures involving the lips, tongue, and buccal mucosa. Wound and blood cultures were sent for analysis. The patient was admitted in hospital and started on empirical antibiotic therapy with injection amoxicillin and clavulanic acid and injection gentamycin. After admission, he developed few vesicles over the back, which prompted us to consider the possibility of PV or pemphigus vegetans. Tzanck smear was positive for acantholytic cells. Serology for HIV, HbsAg, ANA profile, and rheumatoid factor were found to be negative. Swab culture showed the growth

of *Staphylococcus aureus*. Blood culture showed no bacterial growth. Histopathological examination of the vesicle showed suprabasal blister with acantholytic cells and eosinophils involving the epidermis and perivascular lymphocytic inflammatory cell infiltrate in the dermis (**Figure 3**).

A wedge biopsy of the ulcer edge showed ulcerated epidermis and non-specific perivascular lymphocytic inflammatory cell infiltrates in the dermis. Direct immunofluorescence (DIF) showed intercellular IgG and C3 deposits in the epidermis (**Figure 4**).

The final diagnosis of PV with EG like clinical presentation was made based on the biopsy and DIF findings. Patient was started on treatment



**Figure 4** DIF showing IgG and C3 deposits in the epidermis.

with injection dexamethasone 12mg IV along with oral azathioprine 50mg once daily. There was notable improvement within 7 days of the initiation of treatment. Steroids was then switched to oral, with prednisolone 60mg given daily, which was tapered by 5 to 10 mg every two weeks and stopped after 3 months. Patient was also given an antibiotic course with IV amoxicillin and clavulanic acid for 10 days. The ulcers had healed completely, leaving behind postinflammatory pigmentation after 3 weeks of treatment (**Figure 1B**). Patient has been on regular follow-up for the past year and is on maintenance with oral azathioprine alone. No recurrences were seen, and he is currently in remission.

## Discussion

PV typically begins as oral blisters and erosions, which are followed later by the development of flaccid blisters on the skin, sometimes involving other mucosa like the genitalia, nose, and eyes. It usually affects individuals in the 4<sup>th</sup> to 6<sup>th</sup> decade of life.<sup>2</sup> The annual incidence of PV is estimated to be between 0.75 and 5 new cases per million globally.<sup>5</sup> Atypical presentations of PV have been mentioned in a few reports before. An unusual case of pemphigus vegetans presenting as verrucous vegetative plaques over the soles of the feet had been reported in a 40-year-old female.<sup>6</sup> Similarly, a rare case of PV presenting as bilateral foot ulcers in a 60 year old male has also been described.<sup>1</sup> Other atypical presentations of PV include paronychia, trachyonychia, and nail bed erosion.<sup>1,7</sup> In the present case, we observed a peculiar clinical picture of PV presenting as EG. This type of presentation has already been reported by Steiner *et al*;<sup>4</sup> however, in three cases of bullous pemphigoid (BP). They observed EG-like lesions over the trunk of bedridden elderly female patients suffering from BP. In all those

cases, BP was not considered an initial diagnosis, but rather disseminated pyoderma gangrenosum, ecthyma gangrenosum, necrotizing vasculitis, and cutaneous T cell lymphoma were considered. They hypothesized that the initial break in the epidermal barrier by the evolving lesions of BP or scratching due to itching in BP combined with physical immobility predisposed the skin of the back in patients to extensive bacterial overgrowth with *S. aureus* or *P. aeruginosa*, which in turn led to delayed wound healing, enlarging wounds, thereby causing diagnostic problems. In the present case, skin colonization by *Staphylococcus aureus* would have resulted in ecthyma ulcers, obscuring the classical clinical picture of PV.

Pyoderma gangrenosum (PG) is a rare inflammatory disorder commonly seen in association with systemic diseases, pointing towards an underlying immune dysfunction. It is associated with hematological malignancies, inflammatory bowel disease, and various autoimmune disorders.<sup>8</sup> Keshavamurthy *et al*.<sup>9</sup> first described the association of pyoderma gangrenosum with PV. They reported a 27-year-old female with oral PV for 8 months presenting with complaints of a rapidly progressive, painful necrotic ulcer over the left thigh. Biopsy of the ulcer margin showed necrotic epidermis with an intense neutrophilic infiltrate, confirming the diagnosis of PG. They proposed that an acute flare of PV was associated with an elevated level of IL-8, which could contribute to the pathogenesis of PG. On the contrary, a biopsy of the ulcer edge in the present case showed perivascular lymphocytic infiltrates with no neutrophils, which excluded the diagnosis of PG.

Atypical cases of PV are likely to be misinterpreted resulting in diagnostic delays. A high index of suspicion is required in all such

cases to establish a definite diagnosis. Once the diagnosis is established, appropriate therapy for PV can be initiated early, thereby preventing complications, which in turn highly reduces the morbidity and mortality of patients.

## Conclusion

This is an unusual presentation of PV mimicking as EG which made the diagnosis extremely challenging on the first instance. Recognising these atypical presentations at the earliest is required for prompt management of these patients.

**Declaration of patient consent** The authors certify that they have obtained all appropriate patient consent.

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## Author's contribution

**PTM,NM:** Identification and management of the case, manuscript writing, critical review, has given final approval of the version to be published.

**SGV:** Diagnosis and management of the case, critical review, has given final approval of the version to be published.

**KG:** Identification of the case, manuscript writing, has given final approval of the version to be published.

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