Dermatology Practical & Conceptual

Ecthyma Gangrenosum Secondary to Panton-Valentine Leukocidin–Secreting Staphylococcus aureus in an Immunocompetent Patient

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Introduction

Ecthyma gangrenosum (EG) is a rare necrotizing vasculitis primarily caused by *Pseudomonas aeruginosa* sepsis in immunocompromised patients [1]. It is associated with a severe prognosis, with mortality rates ranging from 20% to 77%. We report a case of EG due to Panton-Valentine leukocidin (PVL)-secreting methicillin-sensitive *Staphylococcus aureus* (MSSA) in an immunocompetent patient.

Case Presentation

A 77-year-old patient with no history presented with a protuberant necrotic purulent and very painful posterior cervical lesion that had been evolving for six weeks (Figure 1A) and with scalp furunculosis (Figure 1B). The medical history began five months earlier with a furuncle on the chest, followed by a furuncle in the right inguinal fold and in the buttock crease. Then, following a post-traumatic wound of the neck, the lesion appeared with a highly inflammatory periphery extending over the entire root of the scalp. Despite two courses of antibiotics (pristinamycin 7 days, cloxacillin 10 days), the patient's condition rapidly deteriorated.

EG was suspected, and a pus swab was taken. A cervical CT scan revealed extensive infiltration of superficial tissues of the neck with no identifiable collection. Drainage with washing (Figure 2A) and samples for bacteriological, mycological, mycobacterial, and histological testing were taken. The pus swab was positive for MSSA, and in view of this atypical clinical presentation, the PVL test was performed

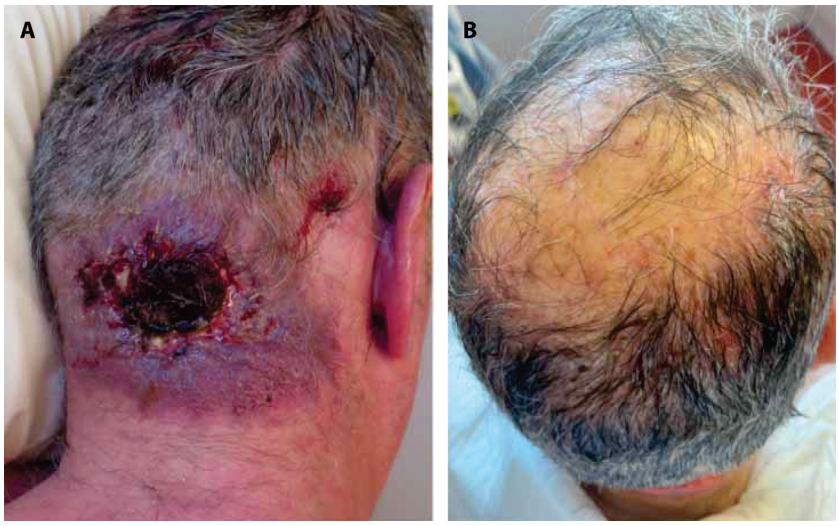

Figure 1. (A) Clinical ecthyma gangrenosum. (B) Scalp furunculosis.

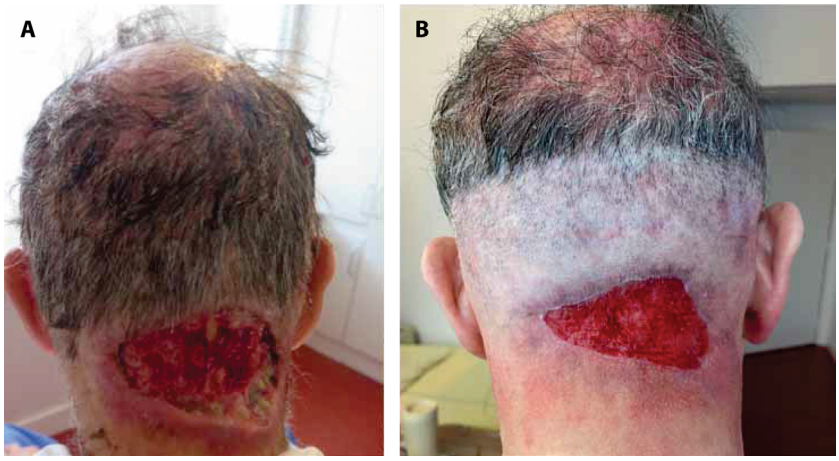

Figure 2. (A) One day after surgery. Note the persistence of scalp furunculosis. (B) Six weeks after surgery (and 12 days after negative pressure therapy).

and came back positive. Histological findings were inconclusive. We concluded that the patient had non-bacteremic EG secondary to PVL-secreting MSSA. In view of the PVL, treatment with clindamycin 600 mg 4 times a day was initiated for 10 days. We also implemented a *S. aureus* topical decolonization protocol. After surgical debridement, management consisted of negative pressure therapy (Figure 2B).

This atypical clinical presentation led us to conduct a large immunologic analysis, including immunoglobulin subtypes and complete immunophenotyping of circulating lymphocytes, but no immune deficiency was identified. We also suspected the existence of an underlying skin condition that could have served as a gateway, such as Quinquaud's disease, dissecting cellulitis, or erosive pustular dermatosis of the scalp. However, investigations of such condition have not been carried out yet because the lesions regressed after treatment.

Discussion

Only few cases of EG have been observed in immunocompetent patients [2]. Cases of EG secondary to *S. aureus* (methicillin-resistant or not) have been reported, but only in immunocompromised patients, with PVL screened only once, and tested negative [3,4]. In France, the prevalence of MSSA positive for PVL is approximately 5%, and PVL diagnosis is not automatically performed when *S. aureus* is detected in microbiology. Furunculosis, multiple lesions, or deep-seated abscess can be found in PVL infections, and their presence should lead to PVL testing [5].

The occurrence of EG secondary to *S. aureus* in this immunocompetent patient might be a consequence of PVL's pathogenicity, involving bacterial invasion of dermal vessel walls and tissue necrosis. Regarding antibiotic therapy, oxacillin and other β-lactams increase PVL production, whereas

clindamycin or linezolid are usually effective against PVL due to their inhibitory action on protein synthesis [6].

We report an atypical case of EG secondary to PVL-secreting MSSA in an immunocompetent patient. In cases where patients exhibit atypical manifestations of EG, it is crucial to conduct PVL testing to determine the appropriate antibiotic therapy.

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