CASE REPORT

Ecchyma-gangrenosum-like lesions associated with methicillin-resistant \textit{Staphylococcus aureus} infection

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Introduction

Ecchyma gangrenosum (EG), which first appears at the skin and mucosa, is a necrotizing vasculitis commonly caused by \textit{Pseudomonas aeruginosa}. Malnutrition, severe neoplasia or hematological diseases, resulting in immunosuppression, are non-bacterial causes of EG.¹ The first clinical observation is grouped vesicles with surrounding erythema; within a few days, they evolve into a gangrenous ulcer with a black/gray eschar surrounded by an erythematous halo.² In this report, we present a patient with chronic obstructive pulmonary disease (COPD) who developed EG-like lesions due to methicillin-resistant \textit{Staphylococcus aureus} (MRSA) infection while he was in the intensive care unit.

Case report

A 69-year-old male, diagnosed with COPD 20 years previously, was admitted to the emergency department for acute dyspnea and confusion possibly due to COPD. His vital signs were as follows: blood pressure 170/95 mmHg; heart rate 98 bpm; body temperature 37.5 °C; and respiratory rate 32/min. He was disoriented and cyanotic. Upon auscultation, respiratory sounds were decreased; rales and wheezing could be detected. Chest radiographs revealed an infiltration at the right middle lobe. Arterial blood gas values were: pO₂ 68

KEYWORDS

Ecchyma gangrenosum; \textit{Staphylococcus aureus}; Bacteremia

Summary

Ecchyma gangrenosum (EG) manifests as a skin lesion and is commonly associated with \textit{Pseudomonas aeruginosa} septicemia in immunocompromised patients. Other viral, fungal and bacterial agents can also cause EG. The first clinical observation is grouped vesicles with surrounding erythema. Within a few days, they evolve into a gangrenous ulcer with a black/gray eschar surrounded by an erythematous halo. Herein, we present a patient with chronic obstructive pulmonary disease who developed EG-like lesions due to methicillin-resistant \textit{Staphylococcus aureus} infection while he was in the intensive care unit.

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The lesions were erythematous and macular lesions progressed to huge bullae, 3 cm in diameter and lower extremities were detected. After a few days, the COPD was treated with N-acetylcysteine and methylprednisolone, in addition to the above-mentioned drugs. A combination of tazocin 3 g/day, meropenem 109/l, and amikacin 1 g/day, teicoplanin 2 g l/day and ampicillin/sulbactam 4.5 g/day and amikacin 1 g/day, meropenem 109/l). On the 7th day, antibiotics were stopped. On the 12th day, the patient had an elevated pCO2 and he was again intubated for mechanical ventilation. His WBC count was 13.3 × 109/l; Hb 9.1 g/dl; Plt 195 000/µl. On the 15th day, mottled skin lesions on the upper extremities, 30% on the extremities, and 12% on the face and body. In our patient, lesions first appeared on the extremities.

After invasion of the tunica adventitia of the post-capillary venules, bacterial invasion proceeds to the media and obliterates the vessel, causing inflammation and thrombosis of the post-capillary vessels. Arteries also become involved, either directly by bacterial invasion or by venous obliteration, leading to separation of dermis and epidermis and causing bullae formation.6 Bacterial load of the bullae increases, producing a central area of necrosis surrounded by an erythematous halo. In our patient, the lesions eventually became necrotic.

EG is typically and most commonly caused by P. aeruginosa. However, EG-like lesions have also been observed in patients with other Gram-negative bacterial (Aeromonas hydrophila, Klebsiella pneumoniae, Serratia marcescens, Xanthomonas maltophilia, Morganella morganii, Escherichia coli, Citrobacter freundii, etc.), fungal (Candida albicans, Aspergillus fumigatus, Fusarium solani, Scytalidium dimidiatum, etc.) and viral (Herpes simplex virus) infections. To the best of our knowledge, lesions associated with Gram-positive bacteria have not been reported in the literature; therefore, our patient seems to be the first case in which EG-like lesions are associated with MRSA sepsis.

The clinical scenarios associated with EG-like lesions are reported as leukemia, immunosuppression, chemotherapy, urinary tract infection and pneumonia. In our patient, the EG-like lesions were associated with MRSA sepsis due to complications of the COPD during follow-up in the ICU.

In conclusion, EG-like skin lesions can occur in immunocompromised patients undergoing long-term treatment in the ICU. Despite the fact that they are commonly associated with pseudomonal sepsis, other bacterial and nonbacterial causes should be kept in mind for the differential diagnosis, and management plans should be tailored accordingly.

Conflict of interest: No conflict of interest to declare.

References


