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Ecthyma Gangrenosum: A Rare Manifestation of *Staphylococcus aureus* Infection

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PUBLISHED ABSTRACT

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ABSTRACT

Background: Ecthyma gangrenosum (EG) is a necrotizing vasculitis most observed in immunocompromised patients with *Pseudomonas aeruginosa* bacteremia. Rarely, it can be seen with other bacterial, fungal, and viral infections [1]. We report a rare etiology of EG in an immunocompetent patient caused by methicillin-sensitive *Staphylococcus aureus* (MSSA).

Case Report: A 62-year-old man with hypertension and hyperlipidemia presented to the emergency department for pain, swelling, and blackish discoloration of the right lower extremity. He suffered a crush injury to the right great toe one week prior. Initial vital signs were remarkable for hypotension with a blood pressure of 84/43 mmHg and a pulse rate of 134 beats per minute. On evaluation, the patient appeared acutely ill. Examination of his right lower extremity revealed a gangrenous right great toe (***Figure 1***). Further examination of the skin revealed scattered, well-circumscribed purpuric papules with a violaceous border and central pallor most prominent on the patient's legs and lower abdomen (***Figure 2***).

Laboratory findings were significant for leukocytosis, thrombocytopenia, and lactic acidosis. The patient was administered intravenous fluids for hypotension. Blood cultures were collected and the patient was started on broad-spectrum antibiotics

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KEYWORDS:
Ecthyma gangrenosum; Staphylococcus; gram-positive; bacteremia; septic shock

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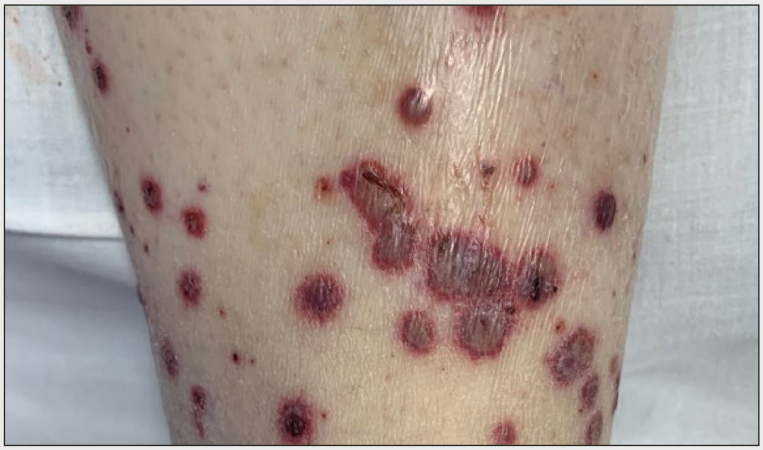

Figure 1 Anterior aspect of left leg: Well circumscribed purpuric papules with a violaceous border and central pallor.

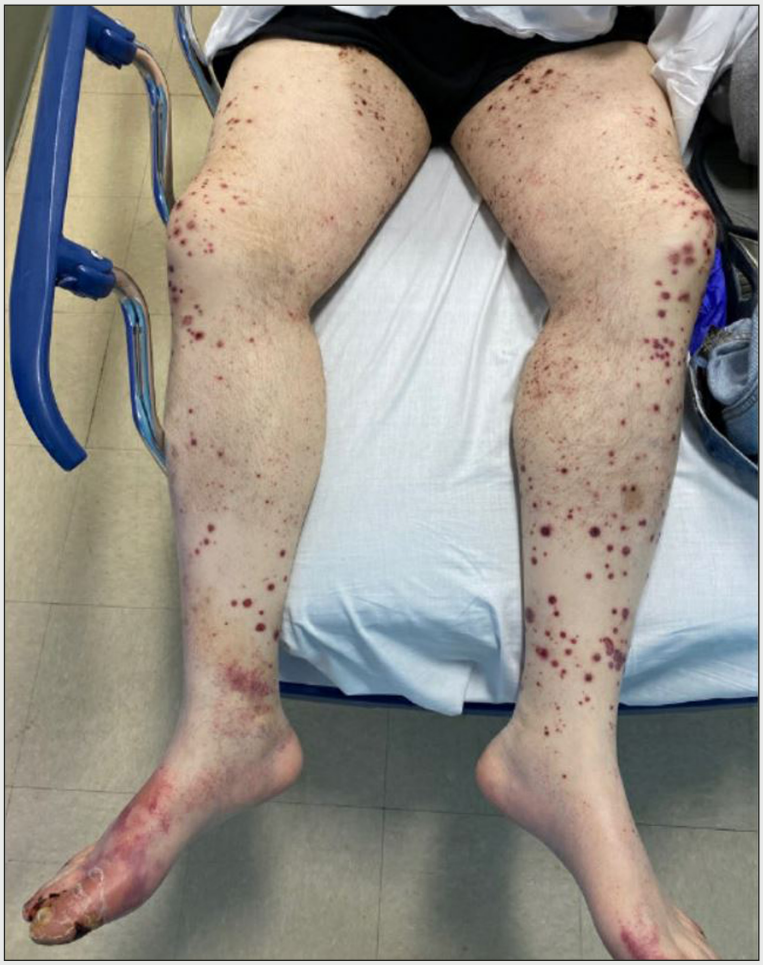

Figure 2 Distribution of skin lesions.

with vancomycin and cefepime. The patient rapidly deteriorated and progressed to septic shock requiring intravenous vasopressors and he was admitted to the medical intensive care unit for critical care management. Surgical service was consulted and amputation of the right great toe was performed. Dermatology was consulted to evaluate the diffuse skin lesions and a punch biopsy was performed. Despite aggressive critical care management the patient continued to deteriorate and developed acute hypoxemic respiratory failure requiring mechanical ventilation and acute kidney injury requiring renal replacement therapy. Blood, wound and urine cultures grew MSSA. Due to the blood cultures growing MSSA, a transesophageal echocardiogram (TEE) was performed which revealed aortic valve vegetation. Cardiothoracic surgery was consulted but the patient was determined not to be a surgical candidate. The results from the skin biopsy revealed necrobiosis and suppurative dermatitis with gram-positive cocci in clusters consistent with EG due to MSSA bacteremia. Antibiotic coverage was narrowed to nafcillin, however, the patient continued to deteriorate with progressive multiple organ failure. The patient was ultimately transitioned to comfort measures and died peacefully in the presence of family.

Discussion: To the best of our knowledge, there only two reported cases of EG secondary to MSSA infection [2, 3]. One of a healthy 15-month-old girl who developed EG and toxin-mediated systemic findings and the second of a 54-year-old female with SLE and metastatic gastric adenocarcinoma with recent chemotherapy. This the first reported case of an immunocompetent adult patient with MSSA EG.

Conclusions: Reported predisposing risk factors for EG include immunodeficiency, recent chemotherapy, malnutrition, burns, and tuberculosis infection [4]. The literature describes two different forms of EG, bacteremic and non-bacteremic [5]. Mortality rates in patients with EG due to bacteremia are significantly higher compared to patients without bacteremia [6]. This case is unique as our patient had a rare presentation of EG due to MSSA bacteremia with none of the previously described predisposing risk factors.

COMPETING INTERESTS

The authors have no competing interests to declare.

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