Case Report

Ecthyma Gangrenosum in a 37-Year-Old Woman Undergoing Adjuvant Chemotherapy for Breast Cancer

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Abstract
Ecthyma gangrenosum is the cutaneous manifestation of bacteremia traditionally associated with Pseudomonas Aeruginosa bacteremia. It classically presents as gunmetal grey bullae with a pink macular margin. To our knowledge, no case reports exist detailing the occurrence of ecthyma gangrenosum in a healthy young woman undergoing treatment for breast cancer. We present such a case to raise awareness of this entity in patients receiving chemotherapy.

INTRODUCTION
Ecthyma gangrenosum is a serious cutaneous infection that usually occurs in immunocompromised patients with prolonged neutropenia. The pathogen is usually Pseudomonas aeruginosa, although other aggressive bacterial pathogens have also been described. If unrecognized in immunocompromised patients, it can have severe morbidity and mortality. Prompt diagnosis and appropriate antibiotic treatment can significantly lower the mortality.

We report the case of a previously healthy, 37-year-old woman who received adjuvant chemotherapy with doxorubicin and cyclophosphamide (AC) for stage IIA invasive ductal carcinoma of right breast. She presented with fever of 102°F (38.8°C), severe malaise, a dry cough and lower extremity skin lesions. In the emergency room her white blood cell count was 1.15 x 10^9/liter, with absolute neutrophil count (ANC) of 5.7x10^8/liter. Physical examination was unremarkable except for two symmetrical 1 cm, hemorrhagic bullae with gray-black centers, and surrounding macular erythema extending approximately 3 cm circumferentially. The area was tender to palpation. There was no inguinal lymphadenopathy noted, but there was erythematous lymphangitic streaking from the shin towards the lane bilaterally (Figure 1). Her Port-A-Cath insertion site was unremarkable.

Ecthyma gangrenosum was suspected. Blood cultures were sent, and fluid was aspirated from one of the leg lesions and sent for culture. The patient was started on intravenous cefepime and vancomycin empirically. She defervesce quickly and the lesion improved on the next day. Her blood culture remained negative, but wound culture grew Pseudomonas aeruginosa sensitive to ciprofloxacin. Her absolute neutrophil count recovered quickly (ANC) of 5.7x10^9/liter. Physical examination was unremarkable except for two symmetrical 1 cm, hemorrhagic bullae with gray-black centers, and surrounding macular erythema extending approximately 3 cm circumferentially. The area was tender to palpation. There was no inguinal lymphadenopathy noted, but there was erythematous lymphangitic streaking from the shin towards the lane bilaterally (Figure 1). Her Port-A-Cath insertion site was unremarkable.

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DISCUSSION

Ecthyma gangrenosum is usually caused by *Pseudomonas aeruginosa* infection, but can also be caused by *Aeromonas hydrophila*, *Staphylococcus aureus*, *Serratia marcescens*, *Aspergillus* species, and *Mucor* species [1,2]. Ecthyma gangrenosum is usually seen in immunocompromised patients, such as those with hematologic malignancies, patients on immunosuppressive therapies after transplantation, diabetes mellitus, malnutrition, or intravenous drug users [2]. It has been commonly reported in children, and many of the affected patients were neutropenic [3]. The incidence is about 1.3% to 6% of patients with *Pseudomonas aeruginosa* bacteremia [1]. The typical skin findings often occur early and are frequently misdiagnosed, resulting in delayed treatment. Patients often are initially treated with antibiotics covering gram-positive bacteria.

The classic gunmetal grey bullae and ulcerations can occur anywhere, but most frequently appear in the gluteal or perineal region (57%), extremities (30%), trunk (6%) and face (6%) [3,4]. Treatment is usually a combination of an anti-pseudomonal beta-lactam antibiotic and an aminoglycoside for both bacteraemic and nonbacteraemic ecthyma gangrenosum. In addition, surgical debridement of dead tissues and eschars is often needed. The most important prognostic factor is the absolute neutrophil count. All patients reported to have died with *Pseudomonas aeruginosa* bacteremia had an absolute neutrophil counts of less than $5\times10^9$/ liter [4].

We were unable to find a previously published report of ecthyma gangrenosum in otherwise healthy young female undergoing adjuvant chemotherapy for breast cancer. We present this first case to raise awareness of the possibility of such deadly infections in otherwise healthy patients, who have otherwise short periods of neutropenia (as in our patient), since early diagnosis and aggressive antibiotic treatment can be lifesaving in this potentially fatal disease.

REFERENCES