

Case Report

Cellulitis and Bullous Erysipelas in a Geriatric Patient

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Received 20 November 2023; Accepted 25 July 2024
<https://doi.org/10.23886/ejki.12.633.209>

Abstract

Erysipelas and cellulitis are common infections of the skin. Erysipelas is a superficial infection affecting the upper layers of the skin, while cellulitis affects the deeper tissues. Bullous formation represents a severe clinical condition of erysipelas. We report a case of cellulitis concurrent with bullous erysipelas focusing on diagnostic and treatment challenges in a geriatric patient with comorbid. A 70-year-old male with a history of diabetes mellitus was admitted to the emergency department with a chief complaint of painful erythematous, warm on palpation, swelling and blistering on his right lower leg for one week. The wound culture was sterile. Cellulitis and bullous erysipelas were determined as the diagnosis. The patient was treated concurrently with intravenous ampicillin-sulbactam, as well as incision and debridement. Clinical symptoms were improved after several days of hospitalization. Bullous erysipelas is an aggressive form of erysipelas that responds less well to therapy. Microbiological culture in erysipelas and cellulitis are negative in up to 70% of cases, including in our patient. Thus, the diagnosis was made based on clinical examination. The administration of intravenous broad-spectrum antibiotic ampicillin-sulbactam and additional incision and debridement significantly improved the patient. In conclusion this case of cellulitis and bullous erysipelas in a geriatric patient with diabetes mellitus was successfully treated with intravenous broad-spectrum antibiotic ampicillin-sulbactam and additional incision and debridement.

Keywords: cellulitis, erysipelas, geriatric, skin infection.

Selulitis dan Erisipelas Bulosa pada Pasien Geriatri**Abstrak**

Erisipelas dan selulitis merupakan penyakit infeksi kulit yang sering dijumpai. Erisipelas adalah infeksi superfisial yang menyerang lapisan atas kulit, sedangkan selulitis menyerang jaringan yang lebih dalam. Timbulnya bula menunjukkan kondisi klinis erisipelas yang berat. Kami melaporkan kasus selulitis bersamaan dengan erisipelas bulosa yang berfokus pada tantangan diagnostik dan pengobatan pada pasien geriatri dengan komorbid. Seorang laki-laki 70 tahun dengan diabetes melitus datang ke unit gawat darurat dengan keluhan tungkai kanan bawah yang kemerahan yang nyeri, hangat pada perabaan, bengkak, dan lepuh selama 1 minggu. Hasil kultur menunjukkan tidak ada pertumbuhan mikroorganisme. Erisipelas bulosa dan selulitis ditetapkan menjadi diagnosis pasien ini. Pasien diberikan terapi ampisilin-sulbaktam intravena serta dilakukan insisi dan debridemen. Keadaan klinis membaik setelah beberapa hari dirawat di rumah sakit. Erisipelas bulosa adalah bentuk erisipelas yang agresif yang memiliki respons kurang baik terhadap terapi. Kultur mikrobiologi pada erisipelas dan selulitis negatif pada 70% kasus, termasuk pada pasien ini. Diagnosis kemudian ditegakkan berdasarkan pemeriksaan klinis. Pemberian antibiotik spektrum luas ampisilin-sulbaktam intravena disertai dengan insisi dan debridemen memberikan perbaikan besar pada pasien. Kasus selulitis dan erisipelas bulosa pada pasien geriatri dengan diabetes melitus berhasil diobati dengan antibiotik spektrum luas intravena ampisilin-sulbaktam disertai tindakan insisi dan debridemen.

Kata kunci: selulitis, erisipelas, geriatri, infeksi kulit.

Introduction

Erysipelas and cellulitis are skin infections that develop when the bacteria enter the skin. It usually affects the lower extremities.¹ These diseases are characterized by erythema and tenderness. Erysipelas affects the upper layers of the skin with well-demarcated erythema, while cellulitis reaches the lower layers of the skin with diffuse erythema. Bullous formation represents a severe clinical condition of erysipelas.² Erysipelas and cellulitis can affect all age groups but are most common in geriatric population.³ Comorbidities in geriatrics increase the risk of developing this disease.⁴ Diagnosis based on history of the disease and physical examination.⁵ It is not always possible to make a definite diagnosis because erysipelas and cellulitis overlap.¹

Case Illustration

A 70-year-old male with diabetes mellitus came to the emergency department with complaints of worsening erythema, warm on palpation, swelling and blistering with pain on his right lower leg for one week. The complaint extended to the lower part of his leg and foot. Trauma at the site of the complaint was denied. Three days before admitting to the emergency department, the pain worsened, and some blisters

appeared on top of the lesion. Eventually, some blisters ruptured, revealing a clear to cloudy colored fluid. One day before admitting to the hospital, he felt malaise, fever, and the pain was getting worse. He also had difficulty standing and walking.

On physical examination, a well-demarcated erythematous plaque (Figure 1a) and a diffuse erythematous plaque (Figure 1b) were observed on the right lower leg. Aspiration of the bullae, along with culture and sensitivity testing, was performed. The patient underwent an incision procedure to explore for the presence of abscess, conducted by a vascular surgeon: A biopsy specimen was taken during the procedure and signs of inflammation improved three days afterward (Figure 1c), with oedema and erythema also showing improvement over time (Figure 1d). Laboratory investigations revealed the following results: haemoglobin at 8.4 g/dL, leukocytes at $21.83 \times 10^3/\mu\text{L}$, fasting blood glucose level at 164 mg/dL, random blood glucose level at 164 mg/dL, HbA1C at 7.1%, and creatinine at 1.3 mg/dL. Thus, the total LRINEC score is five, indicating a low risk of necrotizing fasciitis. Histopathological examination revealed a normal epidermis and erythrocyte extravasation with endothelial edema in the upper dermis. These findings are more consistent with purpura (Figure 2).



Figure 1. (a) Well-Demarcated (b) Diffuse Erythematous Plaque in The Right Lower Leg (c) Location of The Biopsy Tissue Specimen. Inflammation Has Improved after Three Days Post-Procedure (d) Edema and Erythema Improved after Undergoing Management for Three Weeks

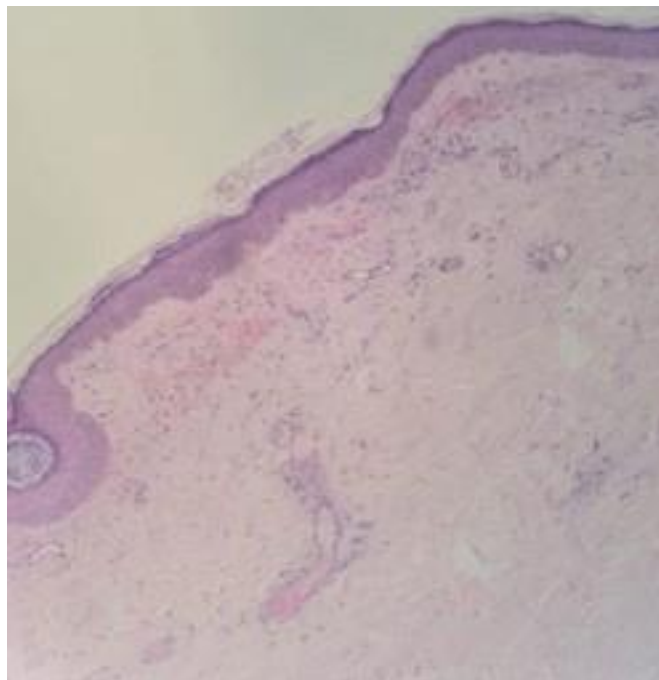


Figure 2. Histopathology revealed normal epidermis with extravasation of red blood cells in the upper dermis with endothelium oedema and there is no evidence of blood vessel wall damage and minimal inflammatory cells of lymphocytes and histiocytes. These findings are more in line with purpura.

Discussion

Wound or tissue culture in erysipelas and cellulitis are negative in up to 70% of cases, with *Staphylococcus aureus*, group A streptococci and group G streptococci being the most common isolates from wound cultures.⁴ Thus, a negative result of microbiological culture taken from both specimens of our patient was in accordance with the literature. Bullous involvement complicates erysipelas for about 5% of cases. Diagnosis of purpura, based on the conclusion of histopathological examination, may be caused by unnoticed minor trauma, particularly in geriatric patients who have fragile blood vessels.⁶

Anaphylactoid purpura, also known as Henoch-Schönlein purpura or immunoglobulin A vasculitis, has been reported to be associated with cellulitis caused by *Streptococcus aureus* and group A β -hemolytic Streptococcus. Anaphylactoid purpura occurs due to the formation of immunoglobulin A-containing immune complexes in the blood.⁷ This more aggressive form of erysipelas, decreased responsiveness to treatment,² thus, intravenous broad-spectrum antibiotics should be given empirically.^{8,9} Ampicillin-sulbactam was effective to erysipelas or cellulitis,¹⁰ however, there was no improvement within 3 days, thus

incision and debridement were performed, and significant improvement was observed. Incision and debridement should be done if there is any accumulation of abscess.⁴ Cellulitis in geriatric patients with type 2 diabetes mellitus requires rapid diagnosis and management because hyperglycemia can lead to immune system dysfunction. This condition increases the risk of complications by promoting the spread of bacterial infections into the bloodstream, resulting in bacteremia that can progress to sepsis and endocarditis. Untreated cellulitis can extend into the deeper layers of the dermis, subcutaneous tissue, and reach the bone. Necrosis or gangrene can occur and is known as necrotizing fasciitis when it reaches the fascia, and gangrenous cellulitis if it hasn't reached the fascia or muscle. This condition increases the mortality rate.^{11,12}

A biopsy specimen was taken after the condition had improved and antibiotics had been started. This might be the reason why there were only minimal inflammatory cells. The diagnosis of cellulitis and bullous erysipelas was made from history and physical examination. Necrotizing fasciitis as the differential diagnosis was excluded as the the LRINEC score gave low suspicion. ALT-70 score is a tool that can assist clinicians in

diagnosing cellulitis during the initial examination. In contrast, the LRINEC score is a tool for distinguishing necrotizing fasciitis from other soft tissue infections.^{13,14}

This case highlights the need for prompt empirical antibiotic and surgical treatment in geriatric patients with diabetes mellitus suffering from bullous erysipelas. Broad-spectrum antibiotics should be administered while awaiting culture results, as cultures for cellulitis and bullous erysipelas often yield sterile results. If the culture identifies a specific pathogen, the antibiotic therapy can be adjusted accordingly.

Conclusion

Bullous erysipelas is a severe form of erysipelas that responds less well to therapy. Diagnosis of cellulitis and bullous erysipelas in this geriatric patient was made based on anamnesis and clinical examination. Intravenous broad-spectrum antibiotic ampicillin-sulbactam and additional aggressive incision and debridement successfully treated this severe condition.

Consent Form

The patient has provided verbal consent for the submission of the case report to the journal.

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