Case Report

Erysipelas Bullosa in a Patient with Deep Vein Thrombosis: A Case Report

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Abstract

Erysipelas is an extensive skin infection usually affecting the legs or face, caused by group A β-hemolytic streptococci. Erysipelas bullosa is a severe form of the disease. We report a case of Erysipelas Bullosa in a Patient with Deep Vein Thrombosis (DVT) in a 43-year-old Asian male who presented with well-demarcated erythematous macules with vesicles and bullae on an erythematous base in the left crural region. This case was diagnosed based on anamnesis, physical examination, and bacterial culture. The patient was treated with intravenous antibiotics.

Keyword: Erysipelas, Bullous, Staphylococcus aureus, Deep Vein Thrombosis.

How to Cite this Article: Dalimuthe DA, Astari A. Erysipelas bullosa in a Patient with Deep Vein Thrombosis: A Case Report. J Pak Assoc Dermatol. 2025;35(4):363-366.

Received: 27-10-2024 **Revision:** 20-04-2025 **Accepted:** 28-08-2025

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Introduction

Erysipelas affects only the upper layers of the skin, presenting as a clearly defined area of inflammation that is typically painful and warm to the touch. It may also be associated with symptoms like fever and an increase in white blood cells. Other variations of erysipelas that can occur include bullous, hemorrhagic, necrotic, or purulent forms.[1] Erysipelas can occur due to the entry of bacteria through a compromised skin barrier. Skin conditions play an important role as predisposing factors for erysipelas, especially on the lower limbs, such as edema, leg ulcers, previous trauma, fungal infections, a history of venous surgery, lymphedema, venous insufficiency, and pre-existing dermatoses. Additionally, there are other risk factors such as obesity, diabetes mellitus, kidney or liver disease, and malignancy.[2]

Inflammation and skin infections can make patients more susceptible to developing DVT by causing localized damage to the inner walls of veins. Additionally, stasis from reduced mobility and the hypercoagulable state linked to inflammation can also lead to thrombosis. Patients with erysipelas often exhibit similar lower extremity symptoms as those with DVT, which can lead to misdiagnosis.[4] This case report presents erysipelas in a patient with DVT.

Case Report

A 43-year-old male patient presented to the Emergency Department of Prof. Dr. CPL Hospital with the main complaint of red patches accompanied by swelling and fluid-filled blisters that felt hot and painful on the left leg for the past three days. The patient also complained of fever. The patient has a history of chronic kidney disease, gout arthritis, and hypertension. The patient denies any history of trauma to the leg or insect bites. The patient denies any history of drug or food allergies. The patient is a private employee and currently spends his days at the office.

On physical examination, the patient was found to be in good general condition, alert and oriented, with a blood pressure of 110/80 mmHg, pulse rate of 96 beats per minute, respiratory rate of 20 breaths per minute, body temperature of 37.5°C, body mass index (BMI) of 25.7 kg/m² (obesity class I). On dermatological examination, a well-defined erythematous macule with vesicles and bullae with an erythematous base was found in the left lower leg region (regio cruris sinistra). Upon palpation, it felt hot and painful (VAS 5) (Figure 1). The patient was given a differential diagnosis of erysipelas, cellulitis, and stasis dermatitis.

The laboratory examination revealed hemoglobin of 9.8 g/dL, leukocytes of 21.88 x 10^3/µL, ESR (erythrocyte sedimentation rate) of 100 mm/hour, uric acid of 10.2 mg/dL, CRP (C-reactive protein) of 269.3 mg/L, procalcitonin of 1.75 ng/mL, and D-dimer of 1440 ng/mL. The random blood glucose level, liver function, and kidney function tests were normal. The patient also underwent culture and sensitivity testing of the bullae fluid, which showed no growth of bacteria or fungi. The Doppler ultrasound examination results indicated left DVT with lymphadenopathy in the inguinal region and the proximal third of the left femoral area. Based on the anamnesis, dermatological examination, and supporting examinations, the working diagnosis for this patient is bullous erysipelas with DVT.

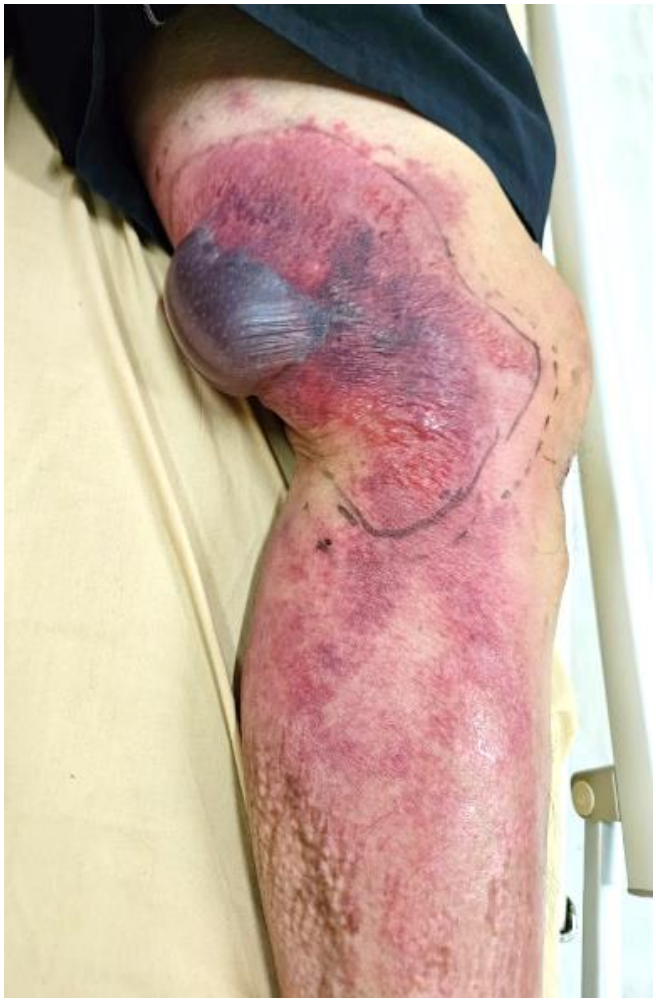

Figure 1: *Clinical photo of the patient in the emergency room.*

The patient was then admitted to the hospital and for the management of erysipelas was given: IV fluids with Ringer's lactate at 20 drops/min, Injection of ceftriaxone 1 gram every 12 hours, Paracetamol drip 1 gram every 12 hours, Injection of ranitidine 1 ampoule every 12 hours, Clindamycin tablets 300 mg four times a day, Compress with 0.9% NaCl on the skin lesions 4-5 times a day for 15 minutes. The patient was instructed to rest their leg and elevate it to a position about 30° higher than the pelvis. The patient is being treated in conjunction with the Internal Medicine department for the management of hypertension, hyperuricemia, and DVT. After 12 days of hospitalization, the patient was discharged and given Soft u derm® cream (urea 10%) to be applied twice daily, and was advised to return for a follow-up in 7 days.

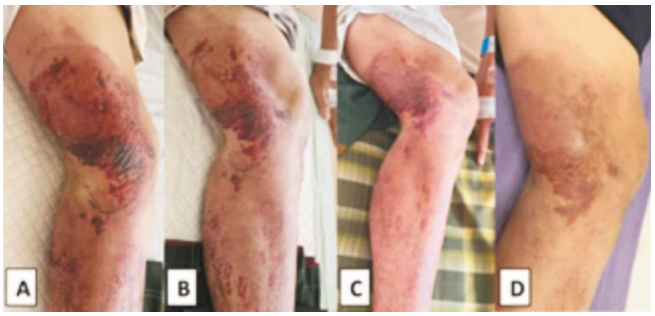

Figure 2: *Clinical photos of the patient on day 4 of treatment (A), day 8 of treatment (B), day 12 of treatment (C), 7 days after discharge from the hospital (D).*

Discussion

Erysipelas is a widespread skin infection that usually affects the legs or face, caused by group A beta-hemolytic streptococci, but sometimes also by group B, C, G streptococci, and staphylococci.[5] Epidemiologically, 200 out of 100,000 people per year experience erysipelas, with no difference in incidence between sexes. However, location-wise, women are at a higher risk of developing erysipelas on the trunk, while men are at a higher risk of erysipelas on the lower limbs. Erysipelas on the lower limbs very often recurs. Local risk factors for recurrence include lymphadenopathy and other conditions that decrease defenses against microbes, such as wounds or toe web intertrigo. Systemic factors for recurrence include obesity, which is associated with venous insufficiency, impaired lymphatic flow, and decreased hygiene.[5]

Laboratory blood tests revealed elevated ESR, D-dimer, CRP, and procalcitonin levels. D-dimer is a marker of hypercoagulation and endogenous fibrinolysis, making it detectable in patients with deep vein thrombosis (DVT). Several studies have shown that the D-dimer test has a high negative predictive value and is a sensitive marker for DVT. Elevated CRP and ESR levels indicate a high probability of diagnosing erysipelas, with a sensitivity of 75% and specificity of 73.2%. Procalcitonin levels correlate with the severity of erysipelas.[6] The culture results of the bullae fluid showed no bacterial or fungal growth. Erysipelas is a bacterial infection of the dermis and hypodermis, mostly caused by streptococci. Bullous erysipelas is a severe form of the disease. Bacteriological evidence of streptococcal etiology in erysipelas is often difficult to obtain.[7] Bullous erysipelas usually presents with flaccid sterile intraepidermal blisters. In a study conducted by Krasagakis et al, on 14 patients with bullous erysipelas, sterile bullae fluid was found in 4 patients. Additionally, S. aureus was detected in 10-61% of erysipelas lesions, particularly in ulcerative cases. Other pathogens, including S. Warneri, S. Pyogenes, E. Faecalis, P. Aeruginosa, and P. Mirabilis, were also identified but were isolated alongside S. aureus.[1]

The occurrence of DVT in cases of cellulitis or erysipelas seems to be relatively low, with an incidence rate of 2.1-3.1% among patients with these conditions.[8] Superficial and deep vein thrombosis have frequently been reported as concurrent conditions or complications of erysipelas. Inflammation and infection can increase the risk of DVT by causing local damage to the walls of veins. Additionally, immobility and hypercoagulability associated with inflammation can lead to thrombosis. Erysipelas can create conditions that favor thrombosis due to factors such as immobility, venous stasis from edema, and the inflammatory activation of the coagulation system. Reports have also noted decreased fibrinolysis, lower factor XII levels (with elevated fibrinogen levels), activation of various plasma serine proteinases, local fibrin deposits, and superficial microthrombosis.[9]

The patient was given a differential diagnosis of erysipelas, cellulitis, and stasis dermatitis. Erysipelas is characterized by a brighter red rash compared to cellulitis, with well-defined borders. Erysipelas involves the outermost layer of the epidermis, while cellulitis extends into the subcutaneous tissue, which may explain the less defined borders and lighter red color of cellulitis. Fever is more common, and patients appear sicker with erysipelas than with cellulitis.[10] Stasis dermatitis has a similar clinical appearance but typically does not present with fever, is less painful, affects both legs (bilateral), is chronic, involves scaling, pruritus, and does not involve leukocytosis. Stasis dermatitis usually improves with compression, elevation, and the application of topical corticosteroids.[5]

The patient was given initial therapy with an injection of ceftriaxone 1 gram every 12 hours. Treatment of erysipelas is largely empirical. Antibiotics targeting streptococci are the first-line treatment in typical cases of erysipelas or cellulitis.[10] The prognosis for this patient is quo ad vitam bonam, quo ad functionam dubia ad bonam, and quo ad sanationam bonam. The prognosis for erysipelas is generally very good for patients who receive appropriate and timely therapy. Most pat-

ients achieve complete recovery after antibiotic treatment, and only a few experience recurrences. In high-risk patients, recurrence occurs in up to 20%.[10]

Conclusion

Erysipelas affects only the superficial layers of the skin and manifests as a clearly defined area of inflammation, often accompanied by pain, warmth, fever, and an increase in white blood cells (leukocytosis). Other forms of erysipelas that can occur are bullous, hemorrhagic, necrotic, or purulent. Risk factors such as elevated uric acid levels can be associated with endothelial dysfunction, inflammation, and a prothrombotic state, leading to DVT. Erysipelas of the lower extremities can occur concurrently with DVT. Currently, empirical antibiotic therapy is recommended to treat erysipelas, even though bacterial cultures in erysipelas rarely show growth.

Conflict of Interest: There was no conflict of interest to be declared by any authors.

Funding Source: None.

Author's Contribution

DAD: Conceived, designed, edited the manuscript, given final approval of the version to be published, critical revisions

AA: Manuscript writing, final approval of the version to be published,

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