CASE REPORT

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A Case of Streptococcal Fasciitis Developing Secondary to Trauma and Progressing with Erythema Multiforme

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ABSTRACT Necrotizing fasciitis (NF) is a soft tissue infection involving the superficial fascial layer and skin-subcutaneous tissue. It is rare, its course is rapid, and its fatal course can only be prevented with early diagnosis and treatment. Extensive surgical debridement and administration of appropriate antibiotic therapy as early as possible are essential for successful treatment. On the fourth day of treatment for NF in the left foot of a 31-year-old male patient, rashes consistent with erythema multiforme (EM) were detected on the hands, feet, and oral mucosa of the patient. Although EM is often associated with infections, it can also develop due to malignant diseases or drugs. We aimed to present this case because it is a rare condition in which the coexistence of NF and EM is seen.

Keywords: Fascitis; necrotizing; erythema multiforme; antibiotics; trauma

Necrotizing fasciitis (NF) is a serious soft tissue infection that affects the skin, subcutaneous tissue, and fascia and progresses with rapidly spreading inflammation, thrombosis, and necrosis. Although NF can affect any part of the body, it mostly affects the extremities.[1] Group A beta-hemolytic streptococci and *Staphylococcus aureus* have been reported as the most common causative agents of NF.[2-4]

Erythema multiforme (EM) is a hypersensitivity reaction characterized by discrete targetoid lesions and may involve mucosal and cutaneous areas. Infections and some drugs play a role in its etiology, most of the cases are due to an unidentified cause.[5]

In this study; a case of NF developing after trauma and progressing with EM is presented. Our case is a very interesting case due to the association of EM NF, because we did not find any other case in which these 2 conditions were reported together, and we found it appropriate to present this case.

CASE REPORT

A 31-year-old male patient was admitted to the emergency service with bruising, pain, increased temperature, and fever in his left ankle. It was learned that the patient had sprained his left ankle 3 days ago and then received only analgesic treatment, he did not have a history of chronic disease, but was an alcoholic. The patient with a temperature of 39 °C had edema, increased temperature, redness, bruising in some areas, and bullous lesions on an erythematous background in the region from the left ankle to the dorsum of the foot (Figure 1, Figure 2). In laboratory values, the leukocyte count was 15,860/mm³, the platelet count was 165,000/mm³, and the C-reactive protein was 39.1 mg/L. Blood glucose values were within the normal range (80 mg/dL). There was no gas appearance on the direct radiograph.

The patient was hospitalized with the suspicion of skin and soft tissue infection, blood culture was

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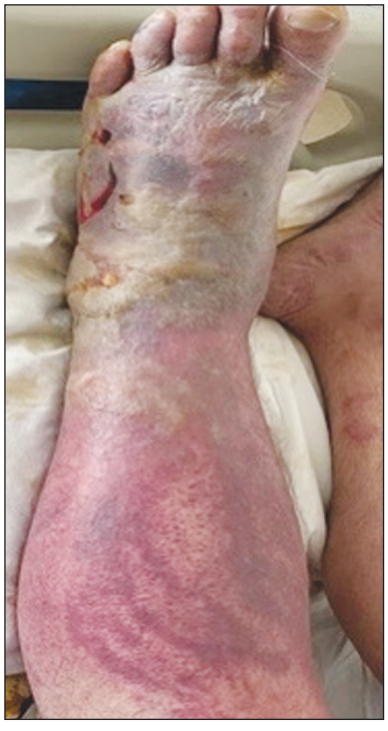

FIGURE 1: Appearance of the patient's foot before debridement.

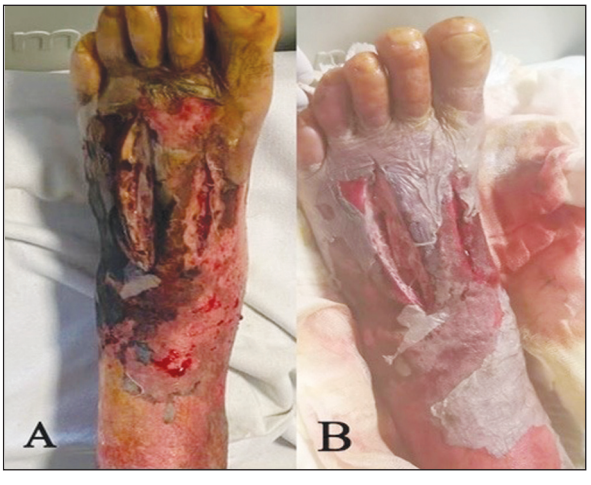

FIGURE 2: Appearance of the patient's foot after debridement.*
*A, B respectively; first day after debridement, fourth day after debridement appearence.

taken and empirical ceftriaxone 2×1 g intravenous treatment was started. A few hours after the hospitalization, due to the rapid progression of erythema to the knee region and the formation of new bullous lesions, daptomycin (4 mg/kg/day) and metronidazole (2 g/day) were added to the treatment in addition to the patient's current ceftriaxone treatment. Due to this rapid deterioration in the patient's examination findings, with the preliminary diagnosis of NF, fasciotomy was performed on the dorsum of the foot by plastic surgery and debridement was performed.

On the third day of hospitalization, group A beta-hemolytic *Streptococcus* was grown in the intraoperative wound culture of the patient. Thereupon, antibiotic treatment was changed to crystalline penicillin (24 MU/day), gentamicin (160 mg/day), and metronidazole (2 g/day). On the 4th day, due to the progression of redness and erythema to the thigh region, fasciotomy was performed again by plastic surgery. On the same day, rash lesions developed on the hands, feet, and oral mucosa of the patient, and a dermatology consultation was requested (Figure 3). Dermatology stated that the patient's lesions were compatible with EM major and recommended topical corticosteroid and antihistamine treatment. No fever was detected in the patient from the 48th hour of the change in antibiotic therapy. On the 8th day of his hospitalization, it was observed that the lesions in the palmoplantar region and oral mucosa regressed. The daily dressing was applied to the fasciotomy areas. The patient, who showed clinical improvement after 2 weeks of penicillin, metronidazole, and gentamicin treatment and whose antibiotic treatment was stopped, was transferred to plastic surgery for the continuation of wound care and closure of the fasciotomy areas. The patient was discharged after the closure of the fasciotomy areas, with the recommendation of outpatient control. Before discharge, the pa-

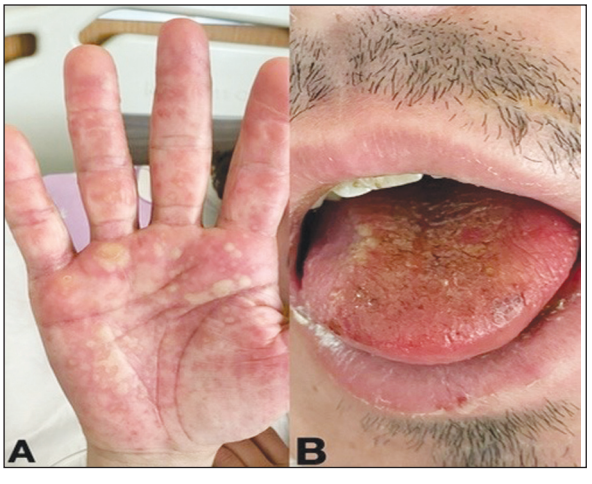

FIGURE 3: Findings of erythema multiforme developing on the fourth day.
*A, B; erythema multiforme rashes on the hands and mouth.

tient's consent was obtained to share clinical information and pictures in scientific studies.

DISCUSSION

NF is a life-threatening clinical picture that can cause multi-organ failure and death in cases of delayed diagnosis or inadequate treatment. Diabetes mellitus, human immunodeficiency virus infection, vasculitis, and immunosuppression are the most important risk factors. Other facilitating factors include obesity, chronic renal failure, being over 65 years of age, alcohol, and intravenous drug use.[6]

Local clinical findings in NF are erythema, edema, wound discharge, vesicle and bulla formation, necrosis, and crepitation. Systemic symptoms include fever, tachycardia, and hypotension.[7] Despite increased awareness and advances in treatment, mortality remains high, between 25% and 35%.[8] NF is still associated with significant morbidity, mortality, amputation risk, prolonged intensive care unit, and hospital stay.[9] To prevent the rapid systemic spread of the infective process, it is very important to perform immediate and comprehensive radical debridement of necrotic tissues together with broad-spectrum intravenous antibiotic therapy. However, due to the lack of specific clinical features in the first stage of the disease, early signs are often confused with cellulitis or abscess, as in our case. Therefore, early diagnosis is missed or delayed in 85-100% of cases with the passage of precious time.[10] Due to the clinical progress of our patient within a few hours after hospitalization, appropriate antibiotic therapy and surgical treatment were performed in a very short time. Polymicrobial infection was thought to be possible in the patient whose clinic deteriorated rapidly. Therefore, although group A beta-hemolytic streptococ were isolated, gentamicin was added to the treatment to provide gram-negative activity. However, crystallized penicillin therapy alone could have been used in the patient.

Interestingly, on the fourth day of hospitalization, rashes consistent with diffuse EM developed in the palmoplantar region and oral mucosa in our patient. EM is an immune-mediated reaction involving the skin and sometimes the mucosa. Most commonly, lesions of EM occur symmetrically on the extremities and spread centrifugally. Most cases of EM are infections, especially *Herpes simplex* virus and *Mycoplasma pneumonia*, and medications. In our case, these rashes may have developed due to the current infectious picture or the drugs used for antibiotherapy. Treatment of EM includes symptomatic treatment with topical steroids or antihistamines and, if known, treating the underlying etiology.[11] In our case, EM eruptions showed a visible improvement on the fourth day of topical treatment. We think that the effective and rapid treatment of the underlying soft tissue infection plays an important role in this rapid recovery.

If NF is not treated, it is a fatal disease and successful results can be obtained with early diagnosis, adequate debridement, and appropriate antibiotic treatment, as in our case. EM; is a condition characterized by widespread rashes in the body that can develop due to infections and various drugs. With the treatment of the underlying disease, topical steroids, and antihistamine treatments, rapid recovery of rashes due to EM is possible.

Source of Finance

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Derya Korkmaz, Neşe Demirtürk, Barış Manavlı;* ***Design:*** *Derya Korkmaz, Neşe Demirtürk;* ***Control/Supervision:*** *Derya Korkmaz, Neşe Demirtürk;* ***Data Collection and/or Processing:*** *Derya Korkmaz, Barış Manavlı;* ***Analysis and/or Interpretation:*** *Derya Korkmaz, Barış Manavlı, Neşe Demirtürk;* ***Literature Review:*** *Derya Korkmaz;* ***Writing the Article:*** *Derya Korkmaz, Barış Manavlı, Neşe Demirtürk;* ***Critical Review:*** *Derya Korkmaz, Barış Manavlı, Neşe Demirtürk;* ***References and Fundings:*** *Derya Korkmaz, Barış Manavlı, Neşe Demirtürk;* ***Materials:*** *Derya Korkmaz, Barış Manavlı, Neşe Demirtürk.*

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