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Case Report

Ecthyma due to *Streptococcus Pyogenes* Mimicking Cutaneous Anthrax

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ABSTRACT

Ecthyma is a form of ulcerative impetigo which erodes through epidermidis and dermis. Mostly, the crusts are found on the lesions, and when the crust is removed, there is a purulent ulcer at the bottom. Herein, we report a patient who presented with ecthyma lesions on his legs to the outpatient clinic and had cutaneous anthrax reporting for differential diagnosis. A 10-year, 6-month old boy admitted to the hospital with five lesions with some of them are wet yellowish-colored, and some of them crusted in black color, surrounded with the hyperemic area on the leg which did not respond to topical treatment. In physical examination, he had no other pathological sign. The laboratory results showed a white blood cell (WBC) count of 9900/mm^3, a hemoglobin level of 13.6 g/dL, platelet count of 478000/mm^3 and C-reactive protein of 8.6 mg/L (0–3.5 mg/L. Biochemical values were normal. The patient was consulted the Department Dermatology and ecthyma was the primary diagnosis. However, cutaneous anthrax was in a differential diagnosis. Thus, we sent two swabs, one swab for PCR and one swab for culture. Because of penicillin allergy of the patient, clindamycin and ciprofloxacin were started. *Streptococcus pyogenes* yielded in culture and tests for anthrax were negative. Thus, we stopped ciprofloxacin and clindamycin therapy continued. On the day of 10th, the patient was discharged because of the crusted lesions with no hyperemic area. *S. pyogenes* is still susceptible to penicillin; however, it may cause severe complications. Thus, it should be treated promptly.

INTRODUCTION

Ecthyma is the ulcerative form of impetigo and the lesion penetrates into the deep part of the epidermis and dermis. The lesions first begin as vesicles, rupture, and then turn into crusted ulcers. When these crusts are removed, a purulent and irregular ulcer floor appears at the bottom. The area of the lesions is surrounded by erythematous edema. Ecthyma is usually found in the lower extremities and in small numbers, but it can also be detected in large numbers and in different parts of the body. In the differential diagnosis of ecthyma, chronic herpetic ulcer, excoriated insect bite, cutaneous diphtheria and vascular ulcers can be enumerated.[1] In addition, skin anthrax can be considered in the differential diagnosis in people who are dealing with animal husbandry or animal contact in our country. Cutaneous anthrax lesion begins as a small, painless and often itchy lesion. A vesicle or blister develops in the middle of the lesion, followed by a necrotic ulcer covered by the black crust. Therefore, skin anthrax should also be included in the differential diagnosis in lesions with a black crust and redness.

Streptococcus pyogenes facultative anaerobic cocci that make gram- positive chain. It is the most common cause of the ecthyma. The second most common cause is *Staphylococcus aureus,* but coinfection can be observed. For diagnosis, it is important to observe gram-positive cocci in exudate samples taken by removing the crust of the lesion. Ecthyma usually heals within weeks, leaving a scar.[2,3]

In this article, we present a patient who presented to the outpatient clinic with ecthyma lesions on her legs and anthrax reported concerning differential diagnosis.

CASE REPORT

A 10-year-and 6-month-old male patient presented with five markedly hyperemic lesions some of them are in the form of yellow –colored blebs with fluid content elevated from the skin, some of them covered with black-colored crust on the leg which did not respond to topical treatment (Fig. 1a, b).

As detected in the physical examination, the patient was conscious cooperative and afebrile. Apart from skin lesions, examinations of the systems were unremarkable. It

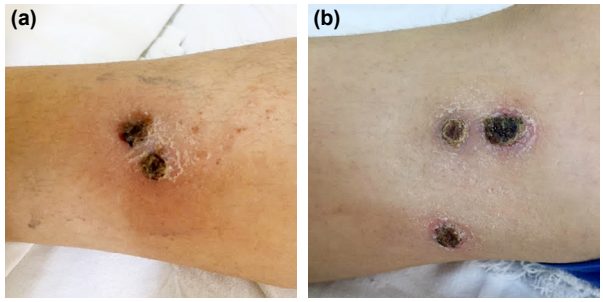

Figure 1. (a, b) Some of them are yellow-colored aqueous and other black colored and crusted lesions of ecthyma suggesting skin anthrax in the differential diagnosis.

was learned that the patient, who had no animal contact previously, had these lesions on the leg area for about a month, applied to the doctor and received topical antibiotic treatment. It was also stated in his epicrises that he was allergic to penicillin. Some laboratory test results were as follows: WBC: 9900/mm^3, Hb: 13.6 g/dL, platelet: 478000/mm^3, C-reactive protein: 8.6 mg/L (0–3.5 mg/L).

His biochemical values were within normal limits. The patient was hospitalized in the pediatric clinic for examination and treatment because his skin lesions did not respond to the topical treatment applied for a month. On the same day, the patient was consulted the Department Dermatology, and the preliminary diagnosis was interpreted as ecthyma and differential diagnosis as skin anthrax. The exudate sample taken from the skin lesion of the patient was sent to the laboratory with the request of gram -staining and culture. The sample was also sent to Public Health Directorate through our hospital's surveillance unit to be analyzed by polymerase chain reaction (PCR), and be cultured to search for the presence of anthrax. Contact isolation measures were taken. Since the patient had a known penicillin allergy, after taking culture material, his treatment was initiated with IV clindamycin (30 mg/kg/day, given in three equal doses) and IV ciprofloxacin (30 mg/kg/day, given in two equal doses). Afterwards, it was learned that *Streptococcus pyogenes* was grown in the wound culture. Even if there was no evidence of upper respiratory tract infection in our patient, the throat culture was taken concerning streptococcal carriage, but any bacterial growth was not detected. Ciprofloxacin treatment was discontinued by the patient whose culture and PCR examination did not demonstrate any evidence of anthrax. However, IV clindamycin treatment was continued.

On the 10th day of hospitalization, the patient's general condition improved. There was no growth in the blood culture, the lesions were completely crusted, and there was no erythema around the lesion. Therefore, the treatment of the patient continued for 10 days and then discontinued. Patient consent was obtained for this study.

DISCUSSION

Ecthyma is a chronic skin disease that starts and looks like non-bullous impetigo but has a deeper location. The lesion starts as a vesicle or vesiculopustule on the erythematous ground, passes through the epidermis and forms a crust to the ulcer. Lesion sizes can reach up to 4 cm. The incidence increases in situations, such as poor hygienic conditions and malnutrition. It is more frequently observed on itchy regions as sites of insect bites and scabies. Although it is mostly observed on the legs, it can be seen everywhere on the body. The most common etiologic agent is *Streptococcus pyogenes*. However, it is observed secondary to *Staphylococcus aureus* infections[2,3] Gram-positive bacteria can be detected in cultures of the samples obtained from vesicle fluid, pus and ulcer sites to establish the diagnosis. In cases where streptococci cannot be isolated, penicillin-resistant penicillin or first-generation cephalosporins can be used for their antibacterial effectiveness against staphylococci. Systemic treatment with clindamycin, doxycycline and trimethoprim- sulfamethoxazole may be recommended due to possible presence of methicillin- resistant strains in staphylococci. However, when streptococcus is isolated, it is sufficient to continue treatment with penicillin.

Clindamycin can be used in patients with penicillin allergy. Mupirocin and retapamulin are effective treatments that can be used in topical treatment.[4] Since our patient had a history of topical treatment and had a large number of lesions, we considered it appropriate to administer systemic treatment. After the wound culture was taken, its treatment was arranged as clindamycin because the patient has a history of penicillin allergy. Complications of ecthyma include lymphangitis, cellulitis and rarely post-streptococcal glomerulonephritis.[5] No complication developed during the follow-up of our patient, whose blood culture was taken before systemic treatment and any bacterial growth was not detected. The most common clinical form of anthrax is skin anthrax. Skin anthrax usually begins with the transition of Bacillus anthracis spores to subcutaneous tissue after contact with infected animals or their products. Having cracks or cuts on the skin facilitates the contamination. Skin anthrax is a painless, peripheral erythematous skin disease; usually on the exposed parts of the body, such as the face, arms, legs, and in the latter stages of the skin, a black crust is formed in the middle of the lesion.[6,7]

Because of the redness, and edematous region around the lesion, and painless black crust on the lesion we saw in our case, we also considered skin anthrax in our differential diagnosis due to the increased sensitivity in this regard in our country. Thus, we added oral ciprofloxacin therapy for skin anthrax to the intravenous clindamycin treatment that we started for the initial diagnosis of ecthyma. With our laboratory results, we ruled out cutaneous anthrax and stopped ciprofloxacin treatment.

Although *S. pyogenes* is still a microorganism sensitive to antibiotics that do not develop penicillin resistance, it needs to be treated quickly due to serious complications it induces, such as necrotizing fasciitis.

Informed Consent

Written informed consent was obtained from the parents

of the patient for the publication of the case report and the accompanying images.

Authorship Contributions

Concept: A.K., C.Ç.; Design: A.K.; Supervision: A.K., C.Ç.; Materials: A.K., G.T., A.A., Ö.K.; Data: A.K., C.Ç., Y.A.; Analysis: A.K., C.Ç., Y.A.; Literature search: A.K., A.A., Ö.K., G.T.; Writing: A.K., C.Ç.; Critical revision: A.K., C.Ç., Y.A.

Peer-review

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Conflict of Interest

None declared.

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Deri Şarbonu Şüphesi Uyandıran *Streptococcus Pyogenes*'e Bağlı Gelişen Ektima

Ektima, impetigonun ülseratif formu olup, lezyon epidermis ve dermisin derin kısmına doğru ilerlemiştir. Lezyonların üzerinde çoğu zaman krutlar bulunur ve krut kaldırıldığında altta pürülan ülsere zemin ortaya çıkar. Bu yazımızda, çocuk polikliniğine bacaklarında ektima lezyonları ile başvuran ve ayırıcı tanı açısından şarbon bildirimi de yapılan bir hastayı sunmaktayız. On yaş altı aylık erkek hasta bacak bölgesinde topikal tedaviye cevap vermeyen ciltten kabarık kimi sulu sarı renkli, kimi siyah renkli kabuklu, etrafları belirgin hiperemik beş adet lezyon ile başvurdu. Hastanın fizik muayenesinde cilt lezyonları dışında patolojik bulgu yoktu. Laboratuvar incelemelerinde Lökosit: 9900/mm^3, Hb: 13.6 g/dL, trombosit: 478000/mm^3, C-reaktif protein: 8.6 mg/L (0–3.5 mg/L) olarak saptandı. Biyokimyasal değerleri normal sınırlarda bulundu. Aynı gün dermatolojiye de konsülte edilen hastada ön planda ektima düşünüldü. Ayırıcı tanı açısından yarasından alınan yara kültürü, hem piyojen kültüre, hem de şarbon açısından hastanemiz sürveyans birimi aracılığıyla Halk Sağlığı Müdürlüğü'ne hem Polimeraz Zincir Reaksiyonu (PZR) hem de kültür çalışılmak üzere gönderildi. Hastanın önceden bilinen penisilin alerjisi olduğu öğrenildiği için tedavisi klindamisin intravenöz ve siprofloksasin oral olarak düzenlendi. Yara kültüründe *Streptococcus pyogenes* üremesi olduğu öğrenildi. Şarbon bildirim sonucu negatif gelen hastanın siprofloksasin tedavisi kesilerek, tedavisine klindamisin intravenöz olarak devam edildi. Yatışının 10. gününde genel durumu iyi olan, lezyonları tamamen kabuklanıp, çevresinde eritem kalmayan hastanın tedavisinin 10 güne tamamlanarak kesilmesi planlandı. *S. pyogenes* halen penisilin direnci geliştirmeyen antibiyotiklere duyarlı bir mikroorganizma olmakla birlikte komplikasyonları nedeniyle hızlı bir şekilde tedavisi edilmesi gerekmektedir.

Anahtar Sözcükler: Çocuk; deri şarbon; ektima.