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# A Case of Necrotizing Fasciitis after Cryotherapy

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## ABSTRACT

**Introduction:** Necrotizing fasciitis is a serious infection of the subcutaneous tissue and fascia. Despite being rare, it may have a high mortality rate because it usually leads to rapidly progressing fascial necrosis. The purpose of this study was to report a case of early stage necrotizing fasciitis that developed after cryotherapy for a penile condyloma, 19 days before the index emergency department admission.

**Case Report:** A 32-year-old man without any history of systemic disorder was admitted to our emergency department for groin swelling and burning sensation that developed 12 hours before his hospital admission. Edema and hyperemia starting from the left inguinal region and extending to the penis and scrotum were noted on physical examination. While initially being considered a case of early stage necrotizing fasciitis and tested for it, the patient rapidly developed a bulla and entered intermediate stage. We hospitalized the patient with an initial diagnosis of necrotizing fasciitis and initiated dual antibiotic therapy. Furthermore, we debrided the wound and excised the necrotic tissue debris. We discharged the patient on the 12$^{th}$ day.

**Conclusion:** Clinical suspicion should be high for necrotizing fasciitis in emergency. Initiating the most appropriate medical and surgical therapy as soon as the diagnosis is made is the key for preventing mortality and morbidity.

**Keywords:** Cryotherapy, fasciitis, necrotizing

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## Introduction

First described by Wilson, necrotizing fasciitis is a serious infection of the subcutaneous tissue and fascia. Despite being rare, it may have a high mortality rate because it usually leads to rapidly progressing fascial necrosis (1, 2). Its diagnosis is particularly challenging in early stages of the infection, and it may be confused with skin lesions of spider or insect bites (3, 4). Surgical procedures, penetrating injuries (e.g., insect or animal bites), intravenous drug use, and minor interventional procedures, such as arthrocentesis or acupuncture, have all been described as potential predisposing factors for necrotizing fasciitis (3).

The purpose of this study was to report a case of early stage necrotizing fasciitis that developed after cryotherapy for penile condylomas, 19 days before the index emergency department admission.

## Case Report

A 32-year-old man without any history of systemic disorder was admitted to our emergency department for groin swelling and burning sensation that developed 12 h before his hospital admission. His overall status was good, and the vital signs included a body temperature of 37.7°C, a pulse rate of 132 beats/min, a respiratory rate of 22 breaths/min, a blood pressure of 120/76 mmHg, and a pulse oximeter saturation of 96%. Edema and hyperemia starting from the left inguinal region and extending to the penis and scrotum were noted on physical examination. Moreover there was an ecchymotic area in the left suprapubic region (Figure 1). His past history was notable for a cryotherapy procedure that was applied by the dermatology clinic of an outside center for penile condylomas, 19 days prior to his present admission. Hemogram and blood chemistry findings revealed a hemoglobin level of 14.7 g/dL, white blood cell count of 24700/µL, sodium level of 137 mmol/L, glucose level of 82 mg/dL, blood urea nitrogen of 27 mg/dL, creatinine of 1.38 mg/dL, and C-reactive protein level of 350 mg/L. However, we noted that

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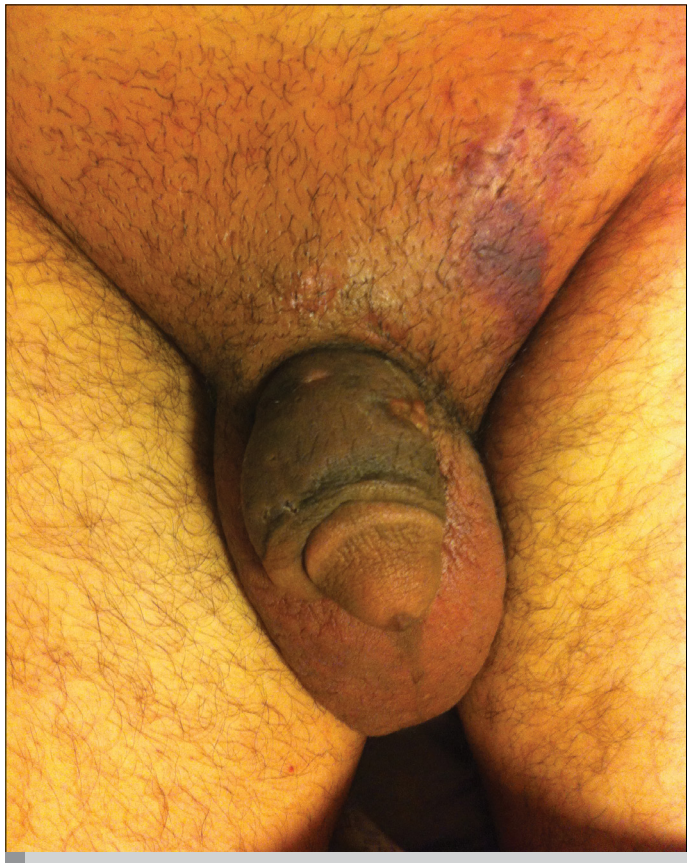

FIG 1. View of the suprapubic, inguinal, penile, and scrotal regions at the time of admission to the emergency department. An ecchymotic area of 3×4 cm is viewed in the left suprapubic region. The areas of previous cryotherapy can be observed on the dorsum of the penis.

the hemoglobin level dropped to 13.1g/dL in a second hemogram that was taken 4 h later. A superficial ultrasonography of the area of interest revealed edema of the skin and subcutaneous tissue in the suprapubic region, which was accompanied by increased echogenicity and vascularity that was consistent with an inflammatory reaction. A scrotal ultrasonography revealed left-sided hydrocele and edema of both the spermatic cords and tunica vaginalis with the left-sided changes being more prominent. An abdominal computed tomography was obtained to check free air in the subcutaneous tissue; however, it revealed no free air. The inguinal region, scrotum, and penis all appeared edematous and inflamed. During a 2-h period of observation and testing in the emergency department, the hyperemic and edematous area was noted to extend in the size and a 1×1 cm bulla was formed inside the ecchymotic area that has a size of 3×4 cm. (Figure 2). While initially being considered as a case of stage 1 (early stage) necrotizing fasciitis and tested for it, the patient rapidly developed a bulla and entered stage 2 (intermediate stage) (5). According to the Laboratory Risk Indicator in Necrotizing Fasciitis score based on the laboratory risk markers, the patient had 5 points and was in the early stage at the time of admission (necrotizing fasciitis likelihood of 50%) (6). Four hours later, the results of hemogram scored 6 points and put the patient in the moderate stage (necrotizing fasciitis likelihood of 50%–75%). Therefore, we hospitalized the patient with an initial diagnosis of necrotizing fasciitis and initiated dual antibiotic therapy comprising piperacillin–tazobactam 4×4.5 g (Tazoper; Mustafa Nevzat Pharmaceuticals, İstanbul, Turkey) plus linezolide 2×600 mg (Linezone; Farmako Pharmaceuticals, İstanbul, Turkey). Moreover, we debrided the wound by making an incision from both the inguinal and subinguinal regions that extended down to the fascia. We excised the left-sided necrotic tissue debris and sent the excision material to our microbiology laboratory for tissue culture examination. Culture results revealed proliferation of methicillin-resistant *Staphylococcus aureus* and *Streptococcus* species. However, blood cultures revealed no proliferation. On 11$^{th}$ day, using a flap, we repaired the incision lines of the debridement area that were initially left open. We discharged the patient on an oral amoxicillin–clavulonate 3×1 g (Augmentin; GlaxoSmithKline, İstanbul, Turkey) and ciprofloxacin 2×500 mg (Cipro; Biofarma Pharmaceutical, İstanbul, Turkey) on 12$^{th}$ day of admission. We obtained written informed consent from the patient.

FIG 2. View of the suprapubic, inguinal, penile, and scrotal regions, 2 h after the emergency department admission. A newly developed bulla of 1×1 cm can be viewed inferior to the previously described ecchymotic area in the left suprapubic region. The area denoted as 1 corresponds to the hyperemic region at the time of diagnosis, whereas the one denoted as 2 indicates the area of hyperemia 2 h later. As clearly seen, an increase occurred in the area of hyperemia in just 2 h.

## Discussion

Early diagnosis and therapy of necrotizing fasciitis in the emergency department is life saving (1). Unless treated in a timely fashion, the clinical picture may progress into a form of systemic inflammatory response syndrome and become fatal, such that its median mortality rate reaches 32.2% (7). Our patient presented to the emergency department with inguinal swelling and burning sensation. Despite both symptoms initially being suggestive of cellulitis, we considered the history of cryotherapy, the rapidly progressive clinical course, and bulla formation being in favor of necrotizing fasciitis. Ultrasonography and computed tomography yielded nonspecific signs such as edema. Vayvada et al. (1) reported that imaging examinations alone were not sufficient to make the diagnosis of necrotizing fasciitis. The authors also reported that signs of necrosis and infec-

tion at the time of debridement were supportive of the diagnosis. We similarly observed necrosis in wound debridement.

Although diabetes mellitus, liver, kidney, and heart failure are the most common comorbidities accompanying necrotizing fasciitis, our patient had no systemic disorder (2). Khamnuan et al. (2) determined that gram-positive organisms, such as *Streptococcus pyogenes* and methicillin-resistant *Staphylococcus aureus* were the most common infectious agents isolated from the tissue cultures. We similarly observed the proliferation of methicillin-resistant *Staphylococcus aureus* and *Streptococcus* species in the tissue culture.

## Conclusion

Clinical suspicion should be high for necrotizing fasciitis in the emergency department (8). Starting the most appropriate medical and surgical therapy as soon as the diagnosis is made is the key for preventing mortality and morbidity.

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**Informed Consent:** Written informed consent was obtained from the patient who participated in this study.

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