

CASE REPORT

Urethral Fistula Mimicking Necrotizing Fasciitis

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ABSTRACT

Necrotizing fasciitis (NF) is the most urgent soft tissue destruction, with a high fatality rate. It may occur after a minor trauma or after a surgical procedure involving the skin, and can rapidly disseminate to the subcutaneous tissue and superficial fascia. This life-threatening infection can be very difficult to recognize in the early stage but it may rapidly progress to a mortal cascade within hours. Thus, early suspicion and rapid diagnosis and, more importantly, aggressive surgical treatment have life-saving potential. Herein, the authors present an interesting case of soft tissue infection after a urethral perforation; initially, the radiological and clinical findings mimicked NF.

Key words: Necrotizing fasciitis, Urethral fistula; Radiological differential diagnosis, Subcutaneous crepitation, Urethra-muscular fistula

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ÖZET

Nekrotizan Fasiyiti Taklit Eden Üretral Fistül

Nekrotizan fasiyit (NF) yüksek mortalite oranıyla en acil yumuşak doku bozulmasıdır. Cildi içeren minör travma veya cerrahi sonrası oluşabilir ve hızla cilt altı dokulara ve yüzeysel fasyaya yayılır. Yaşamı tehdit eden bu enfeksiyonun erken dönemde tanınması oldukça zordur ve saatler içinde öldürücü evreye geçebilir. Erken şüphe ve hızlı tanı daha da önemlisi agresif cerrahi tedavi hayat kurtarıcı potansiyele sahiptir. Burada, üretral perforasyon sonrası yumuşak doku enfeksiyonu olan ve başlangıçta radyolojik ve klinik olarak NF'ye benzeyen ilginç bir olgu sunuldu.

Anahtar kelimeler: Nekrotizan fasiyit; Üretral fistül; Radyoloji; Subkütan krepatasyon; Üretro-musküler fistül

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CASE REPORT

A 56-year-old male patient admitted to our outpatient clinic with left thigh pain. He had a medical history of radical retropubic prostatectomy four years before because of carcinoma of the prostate, and had also undergone left epididymal cyst excision and internal urethrotomy for urethral stricture three weeks prior to this admission at another facility. The patient had no remarkable medical history. On initial physical examination, there was superficial tenderness on the medial upper side of the left thigh. His plain X-ray film and venous Doppler ultrasonography (US) were normal. Four days later, the patient re-admitted to our hospital with excessive swelling, increased pain and discoloration at the same location. There was no abrupt necrosis on the skin, but subcutaneous crepitation was noted with an axial temperature of 38.9 °C. Laboratory work-up showed white blood cells (WBC) 16.800/mm³ and C-reactive protein (CRP) > 1000 mg/L. Plain X-ray showed gas formation in the adductor muscle group. Gas bubbles were also detected by magnetic resonance imaging (MRI) with abnormally increased signal intensity on T2-weighted images on the medial side of the left thigh, in the adductor muscle groups, the gracilis and pectineus muscles near the fascia. The bubbles appeared as focal signal voids on both T1- and T2-weighted images (Figure 1).

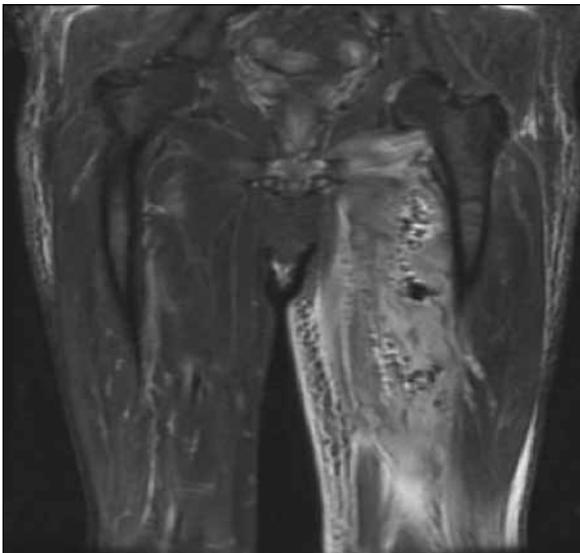


Figure 1. Gas formation in the adductor muscle group detected by MRI. The bubbles appear as focal signal voids on both T1- and T2-weighted images.

Inter-fascial fluid collection and microabscess formation were also determined. This area was enhanced after intravenous contrast agents. Since the patient had been operated three weeks ago, necrotizing fasciitis (NF) was suspected, and the patient underwent immediate surgery. In the operation, an abscess was seen between the fascia and diffuse edema was detected in the adductor muscle groups. There was no necrosis in the surgical site. Abscesses were drained and drainage catheters were placed. Oozing fluid from the drainage catheter the next day was suspected to be urine, and the amount of draining fluid decreased when a urethral catheter was placed. Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Klebsiella* spp. were isolated from the drained fluids and from the surgical material. Laboratory tests indicated that the drainage content was urine. No abnormality was seen in voiding cystography but a fistula tract was detected on pelvic computerized tomography (CT) after giving contrast agent to the urethra. The fistula tract was towards the adductor muscle groups from the prostatic urethra (Figure 2). The contrast agent was seen on the medial side of the thigh.

The patient was followed about two months with urethral catheter. Despite the catheterization, fistula repair was not achieved spontaneously. Thus, the patient was operated in the Urology Department for

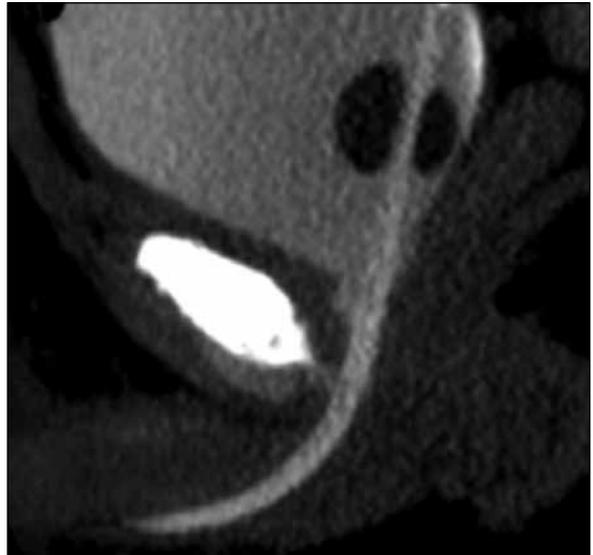


Figure 2. Fistula tract detected on pelvic CT after giving contrast agent to the urethra. The fistula tract was towards the adductor muscle groups from the prostatic urethra.

fistula correction on the distal urethra. Approximately 10 days after the procedure, pelvic CT showed no fistula tract and no extravasation of the urine.

DISCUSSION

NF is a rapidly progressive, proportionally fatal soft tissue infection. Most of the patients are of older age or diabetics, alcohol abusers or immunosuppressive. Minor trauma, history of recent surgery, diverticulitis, or sometimes even an insect bite might be a predisposing factor^[1,2]. The mortality rate is as high as 30%-70%, and patients generally die because of sepsis, acute respiratory insufficiency or multi-organ failure^[3].

NF is usually a polymicrobial infection caused by both aerobic and anaerobic organisms. Another form of the disease is caused by group A streptococci and its toxins, and is seen in approximately 10% of cases^[3,4]. Toxic shock syndrome may complicate this latter form. The clinical presentation is often nonspecific, and a high clinical suspicion is therefore needed for timely diagnosis. Patients may present with systemic complaints with fever and confusion, despite vague local symptoms. The overlying skin may appear normal or the local examination findings may be subtle and mistaken for cellulite^[5]. The infection usually lacks a clear boundary without a barrier wall formation. This lack of formation accounts for both the rapid dissemination of the muscular destruction and the difficulty in clinical diagnosis^[6]. The disease is a surgical emergency with a proportionally high mortality; therefore, imaging studies should not delay the surgical intervention. Plain radiography, CT, MRI, and even US are auxiliary tools for achieving rapid diagnosis.

The most common plain radiographic findings are similar to those of cellulite with increased soft tissue thickness and opacity^[7]. Frequently, plain radiographs are normal until the infection and necrosis are advanced^[8]. The characteristic finding is gas formation in the tissue layers, although this is seen in only a minority of cases.

CT characteristics are correlated with the pathologic findings of liquefied, necrotic tissue and inflammation resulting from bacterial toxins. The CT hallmark of NF is soft-tissue air associated with fluid collections within the deep fascia, although this find-

ing is not constant. Also evident on CT are thickening and enhancement of one or both of the superficial and deep fascial layers. The subcutaneous fat may be similarly affected. While fascial fluid collections are typically non-focal, abscesses may be seen^[7]. Reactive lymphadenopathy is also commonly present^[5]. Liquefaction and inflammatory edema both create fascial fluid that is detected with MRI as abnormally increased signal intensity on T2-weighted images and variably increased signal intensity on T1-weighted images along thickened deep fascial planes. In general, fat-suppressed T2-weighted imaging has been found to display inflammatory changes better than fat-suppressed gadolinium-enhanced T1-weighted imaging. Gas bubbles, if present, appear as focal signal voids on both T1- and T2-weighted images^[7]. The subcutaneous tissues may have reticular increased signal intensity, similar to cellulitis. Unlike cellulitis, however, the deep fascia is also involved. Since both infected necrotic tissue and non-infected edematous tissue have a similar appearance on MR images, the extent of infection may be overestimated^[7,9]. Gadolinium contrast material is not necessary for diagnosis, although it may be helpful in detecting abscesses or in distinguishing joint effusion from surrounding inflammation^[9]. The degree of contrast enhancement may cause the extent of disease to be underestimated due to hypoperfusion and tissue necrosis.

Urethral fistulas are rare entities and may be congenital or acquired. The acquired urethral fistulas may be neoplastic, traumatic, iatrogenic, or caused by infections^[10]. Urethral fistulas have been noted after straddle injury and after blunt penile trauma^[11,12]. Furthermore, urethral fistulas can also occur after debridement of NF^[13]. In our case, urethral fistula was caused by previous internal urethrotomy. Intravenous pyelogram (IVP) and voiding cystography were not able to demonstrate the fistula and urinary spill. The urethral fistulous tract within the adductor muscle groups was seen only after giving contrast agent to the urethra on pelvic CT. Urethral fistulas opening to the adductor muscle groups are extremely rare, and to our best knowledge have not been reported previously. To facilitate a rapid surgical decision, effective use of radiological techniques is essential for a timely diagnosis.

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