



Testicular Infarction: A Rare Complication of Epididymo-Orchitis

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Abstract

Epididymo-orchitis is a common urological disorder in clinical practice. Testicular infarction is a rare complication of epididymo-orchitis with a few reports in the literature. A 53-year-old male presented to the Emergency Department complaining of right scrotal pain. The patient was diagnosed with acute epididymitis and treated with ciprofloxacin for 2 weeks without clinical improvement. Subsequently, he was admitted to the Urology Department. A color Doppler ultrasonography revealed an enlarged right epididymis with increased vascularity. No significant color flow signal was observed in the right testis except for a small parenchymal area of the posterior part. The patient underwent scrotal exploration, and the ischemic changes of the testis were observed. Therefore, a right orchiectomy was performed. We present here a case of testicular infarction secondary to epididymo-orchitis. If clinical findings do not improve despite appropriate conservative treatment, patients should be under close follow-up for reassessment with ultrasonography, and more aggressive conservative therapy could be prescribed to prevent complications that may lead to testicular loss.

Keywords: Complication, epididymitis, epididymo-orchitis, testicular infarction

Introduction

Epididymo-orchitis, which is an inflammation of the epididymis and testis, is a common condition in clinical practice. The symptoms include scrotal pain accompanied by swelling, fever, and lower urinary tract symptoms. The diagnosis is made based on clinical symptoms, physical examination, and Doppler (capital D) ultrasonography. This condition can be managed with anti-microbial and anti-inflammatory treatment. However, testicular infarctions have rarely been reported as a complication of epididymo-orchitis in literature (1). Here in, we discuss a case of epididymo-orchitis that progressed to abscess formation with testicular infarction.

Case Report

A 53-year-old male presented to the Emergency Department complaining of right scrotal pain. The patient was diagnosed with acute epididymitis and treated with ciprofloxacin for 2 weeks without clinical improvement. He subsequently developed right scrotal swelling, dysuria, and fever and was admitted to the Urology Department. He had a history of hypertension and

previously treated left-sided epididymitis but denied having a history of trauma, drug use, urethral discharge, or prior sexually transmitted diseases. His vital signs were normal. The physical examination revealed an erythematous right hemiscrotum and a swollen right testicle with severe tenderness. Laboratory tests showed leukocytosis ($21.7 \times 10^3 / \text{mm}^3$) with neutrophil predominance (84.9%), elevated C-reactive protein (119 mg/L), and elevated creatinine level (1.48 mg/dL). A color doppler ultrasonography (CDU) showed an enlarged right epididymis with increased vascularity. No significant color flow signal was observed in the right testis except for a small parenchymal area of the posterior part (Figure-1). The patient underwent emergent scrotal exploration. There were severe adhesions of the scrotal wall. No evidence of torsion of the spermatic cord was identified. Ischemic changes and discoloration of the testis were observed, and the discoloration persisted (Figure-2). A right orchiectomy was performed. Histopathological findings were hemorrhagic infarction, abscess formation, and infiltration by inflammatory cells. After surgery, the patient's condition improved significantly, and the laboratory results returned to normal dramatically. He was discharged home on post-operative day 3 with oral antibiotics and anti-inflammatory drugs.

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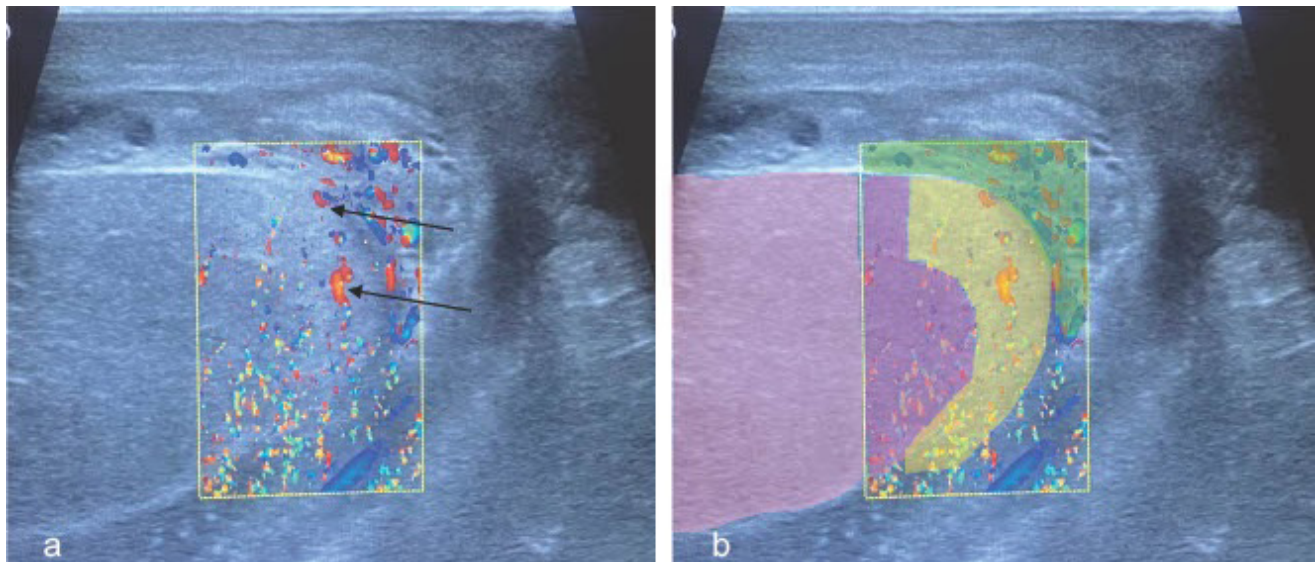


Figure 1. Testicular ultrasound images of the patient with segmental infarction. (a) The color Doppler (with capital D) box is placed to cover the necrotic and non-necrotic parts of the testicle and epididymis. (b) The epididymis is seen in the Doppler box with the green area; increased blood flow in this area suggests epididymitis. The dark and pink sections are necrotized testis; there is no Doppler flow in the necrotized testis (the dark pink part), only noise. The light pink area is the testicle in B-mode; hypoechoic and granular appearance is indicative of infarction. The yellow area represents the normal testicle with preserved echogenicity and color Doppler flow (arrows).



Figure 2. Intraoperative view of the testicle

Discussion

Epididymo-orchitis is the most common cause of acute scrotal pain in adults (2). The main treatment strategy for epididymo-orchitis includes antibiotics and analgesics. Testicular infarction secondary to epididymo-orchitis is extremely rare, and a few reports have been published in the urologic literature (1,3). The pathogenesis of abscess formation and testicular infarction remains unknown. The true incidence of this severe complication is still obscure and may be underestimated. Several mechanisms have been proposed to contribute to testicular infarction due to epididymo-orchitis. These are compression of the testicular artery by the inflammatory process of the spermatic cord, endothelial dysfunction caused by bacterial toxins, and

increased venous resistance leading to thrombosis (4). Although the exact mechanism of testicular infarction due to epididymo-orchitis is not well understood, early diagnosis and intervention are crucial to prevent testicular loss.

Color Doppler ultrasonography is essential along with clinical findings and physical examination to confirm the diagnosis of testicular infarction. The differential diagnosis of acute scrotal pain includes epididymitis, testicular torsion, torsion of appendix testis, testicular malignancy, and urolithiasis. CDU is the primary modality used to assess the blood flow of the testis and epididymis in the differential diagnosis (5). Alternatively, contrast-enhanced ultrasound provides visualization of testis parenchyma and vascular enhancement with high sensitivity and can be performed quickly at the patient's bedside (6). In this case, the patient's first CDU showed normal testicular blood flow and increased epididymal blood flow. Despite ciprofloxacin and analgesics treatment, an increase in epididymal blood flow was observed in the CDU performed after 2 weeks, accompanied by increased scrotal pain and swelling in the scrotum, but vascularization was absent in most of the testicle. If clinical findings do not improve despite appropriate conservative treatment, patients should be under follow-up for reassessment with ultrasonography to prevent complications that may lead to testicular loss.

Acute epididymitis is a common diagnosis in men with scrotal pain. Due to anatomical proximity, the inflammation extends from the epididymis and can easily spread to the testis. Epididymo-orchitis can be seen in all age groups. The most common pathogens responsible for epididymo-orchitis are *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in men under 35 years of age, while *Escherichia*

coli and other gram-negative bacteria in older men (7). A urine culture should be obtained to determine proper treatment. Nevertheless, urine culture is often unable to reliably detect the pathogenic microorganism (8). Empiric therapy should be prescribed based on age and sexual activity. Empirical antibiotics include ceftriaxone plus doxycycline for suspected sexually transmitted pathogens and fluoroquinolones for suspected urinary tract pathogens (7). In our case, the patient had a history of epididymitis treated with fluoroquinolone without any complications a year ago. After that, the patient was diagnosed with acute epididymitis again and fluoroquinolone treatment for 2 weeks did not yield positive results. Considering the increasing incidence of fluoroquinolone resistance and the possible coexistence of atypical pathogens, empirical treatment can be expanded in patients with recurrent urinary tract infections.

Conclusion

Epididymo-orchitis leading to testicular infarction is extremely rare. Situations predisposing to testicular infarction secondary to epididymo-orchitis may include a history of scrotal trauma, instrumentation, anatomical variations, recurrent urinary tract infections, and immunosuppressive conditions. Patients with these risk factors should be under close follow-up and more aggressive conservative therapy could be prescribed. Additionally, repeated CDU of the testes should be performed. Clinicians must be aware of the serious consequences such as the progression of the infection and testicular infarction in patients with severe nonresolving epididymitis despite appropriate conservative treatment.

Ethics Approval and Consent to Participate:

This case report was presented in accordance with the Declaration of Helsinki. Written informed consent was obtained from the patient involved in this study.

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Conflict of Interest

The authors declare no conflict of interest.

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