CASE REPORT

Community-acquired *Pseudomonas aeruginosa* Epididymo-orchitis With Abscess Formation in a Prepubertal Boy

Chia-Horng Chen 1, Shih-Kai Lan 1, Yi-Hsiang Lin 2, Yuh-Shyan Tsai 3,4*

1 Department of Urology, Dalin Buddhist Tzu-Chi General Hospital, Chia-Yi, 2 Department of Medical Imaging, Dalin Buddhist Tzu-Chi General Hospital, Chia-Yi, 3 Department of Urology, College of Medicine and Hospital, National Cheng Kung University Hospital, Tainan, and 4 Division of Urology, Department of Surgery, National Cheng Kung University Hospital Douliou Branch, YunLin, Taiwan.

Received March 17, 2010; accepted June 21, 2010
Available online April 3, 2011

KEY WORDS
abscess, child, epididymitis, *Pseudomonas*, testis

Acute epididymo-orchitis is not a rare disease in children. We report a 10-year-old boy who presented to our hospital with a 14-day oral cefazoline treatment for left epididymo-orchitis without any voiding problem, uncontrollably resulting in abscess formation because of pseudomonal infection. We highlight the importance of alertness and sonographic examination to community-acquired pseudomonal infection in prepubertal boys with a first episode of acute epididymitis.

© 2011, Elsevier Taiwan LLC and the Chinese Taipei Society of Ultrasound in Medicine.
Open access under CC BY-NC-ND license.

Introduction

Acute epididymo-orchitis is not a rare disease in children [1]. Currently, imaging studies can aid in differentiating epididymo-orchitis from other causes of acute scrotum (e.g. torsion of the testis) and in avoiding detecting the loss of the testis. Infectious processes, usually is a benign course, might include Gram-negative bacteria from infected urine, and blood-borne microorganisms (such as an unusual bacteria or viruses). Neuro-urological abnormalities are infrequent in prepubertal boys without previously known uropathies or bacteriuria when suffering from the first episode of acute epididymitis [2]. Empirical antibiotic treatment plays a small role, and the prognosis is usually good [1]. We report a 10-year-old prepubertal boy suffering from acute epididymo-orchitis, uncontrollably resulting in abscess formation because of *Pseudomonas aeruginosa* infection, who underwent a 3-week oral cefazoline treatment. We highlight the importance of alertness and sonographic examination to community-acquired fulminant pseudomonal infection in a prepubertal boy with the first episode of acute epididymitis.

* Address correspondence to: Dr. Yuh-Shyan Tsai, Department of Urology, College of Medicine and Hospital, National Cheng Kung University, 138, Sheng Li Road, Tainan, 704, Taiwan. E-mail: youh@mail.ncku.edu.tw (Y.-S. Tsai).

0929-6441 © 2011, Elsevier Taiwan LLC and the Chinese Taipei Society of Ultrasound in Medicine. Open access under CC BY-NC-ND license.
Case Report

A 10-year-old boy visited our hospital because of progressive scrotal swelling and tenderness after a 14-day consecutive oral cefazoline treatment regimen from a regional hospital. The initial medical record showed no pyuria on urinalysis; a sterile urine culture was performed and was diagnosed with acute epididymitis. Except for local scrotal discomfort, the patient did not complain of fever, chills, or voiding discomfort. Physical examination at our hospital showed the penis had been circumcised before, and there was a tender, swollen, erythematous change in the left hemiscrotum (Fig. 1). Color Doppler ultrasonography of the left hemiscrotum revealed both an enlarged epididymis with prominent vascularity and an enlarged testis with inhomogeneous echotexture and a decreased vascular flow detected within it (Fig. 2). The parents refused any invasive procedures, including the suggested scrotal exploration. The left hemiscrotum became more swollen and erythematous in appearance, and also fluctuated over the lower pole after a further 7-day oral cefazoline therapy (Fig. 3). With patient’s consent, we did not perform any further invasive procedures.

Fig. 1. Two weeks after the onset of acute scrotum, physical examination of the left hemiscrotum showed a tender, swollen, and erythematous change.

Fig. 2. (A) Transverse view of gray-scale ultrasound of the mid-scrotum showed that the left hemiscrotum had become enlarged, compared with the right counterpart. (B–D) Color Doppler studies of left scrotum. (B) Longitudinal view showed that left epididymis was enlarged with prominent vascularity and left testis was also enlarged with inhomogeneous echotexture and the vascular flow within it. (C) Transverse view at the level of left epididymal head, as shown in the arrow of (B), revealed that some areas with decreased blood flow existed in the left testis (arrow). (D) Transverse view at the level of left mid-epididymis, as shown in the wide arrowhead of (B), revealed that both testis and epididymis were heterogeneous in echotexture with decreased blood flow. E = epididymis; LONG = longitudinal view; LT = left testis; RT = right testis; T = testis; TRAN = transverse view.
informed consent, scrotal exploration was performed 21 days after initial therapy, revealing an abscess formation of both the left epididymis and testis. Left epididymo-orchiecction was then performed. *Pseudomonas aeruginosa* that was resistant to ampicillin was isolated from the pus culture. The pathology confirmed acute suppurative inflammation of the testis and epididymis with negative results for periodic acid-Schiff and acid-fast stain. Sonography of the kidneys and urinary bladder was normal. No further scrotal discomfort or urinary tract infection was noted during a subsequent 12-month follow-up.

**Discussion**

Epididymitis, an acute inflammation of the epididymis, easily extends to the testis [1]. The pathogenesis includes reflux of sterile or infected urine into the vas deferens (usually Gram-negative bacteria), appendix torsion, and blood-borne microorganisms, most of which are viruses [3]. Somekh et al. [1], in a 1-year prospective study of 44 boys with acute epididymitis, reported that there were only nine (20%) positive findings for bacterial or viral growth from microbiological studies of several sites, and that the treatment policy was basically to use analgesics with little role for antibiotics. Siegel et al., in a review of 47 patients with epididymitis who were younger than 18 years, reported that a positive urine culture suggested an underlying anomaly, and a negative culture virtually ruled out an anomaly [4]. Likitnukul et al. [5], in a 20-year retrospective study, suggested that children younger than 2 years and older patients with recurrent episodes were at a high risk of urine reflux or an association with genitourinary abnormality. The presence of the foreskin has been postulated as an etiological factor for acute epididymitis in children [6], particularly in infants, and dysfunctional voiding is considered as an etiology in older boys [7]. Almost all of the patients responded well to antibiotic treatment and showed no complication or sequelae at follow-up [6,7]. Also, Cappèile et al. [2] suggested that, in prepubertal boys without previously known uropathies or bacteriuria, the discovery of a malformation is infrequent and the prognosis of the first episode of acute epididymitis is usually good.

*Pseudomonas aeruginosa*, a common cause of nosocomial infection, is not usually taken into consideration as a causative agent of community-acquired epididymitis in prepubertal boys [8,9]. The incidence of pseudomonal infection among all cases of acute bacterial epididymitis was reported to be between 5% and 14% [10,11], regardless of the patients’ age. There are several English and Japanese reports of cases of acute *P. aeruginosa* epididymo-orchitis with abscess formation, unavoidably leading to loss of the testis, despite adequate ciprofloxacin treatment [10–12]. All the reported cases occurred in adulthood and involved underlying urolological diseases [12]. The evidence might hint at the connection between a poor outcome and such a fulminant pseudomonal infection.

Therefore, it is important how to detect such an infection earlier. See et al. [13], in a small cohort of 21 epididymitis patients with gray-scale sonographic examination, reported that both findings of epididymal enlargement plus testicular inhomogeneity and progressive testicular changes on sonographic follow-up are significant predictors of an unavoidable orchietomy. In contrast, only few patients with enlarged epididymis alone or plus hypoechoic testes finally received orchietomy [13]. Therefore, scrotal sonography plus color Doppler techniques should not only be used for initially differentiating diagnosis of acute scrotum in patients with epididymitis. The echotexture and blood flow of the accompanied testis should be strictly evaluated and closely followed up if complicated epididymitis possibly exists [13,14].

In conclusion, although the prognosis of acute epididymitis in most prepubertal boys without previously known uropathies or bacteriuria is good, the possibility of a fulminant pseudomonal infection leading to abscess formation and loss of the testis should not be neglected. Sonographic evaluation of the scrotum is mandatory.

**References**


**Fig. 3.** Three weeks after the onset of acute scrotum, left hemiscrotum became more swollen and erythematous in appearance, and also fluctuated over the lower pole with ruptured abscess.


