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Acute and Chronic Epididymitis

Mete Çek^{a,*}, Laura Sturdza^b, Adrian Pilatz^b

^a Department of Urology, Trakya University, School of Medicine, Edirne, Turkey; ^b Department of Urology, Pediatric Urology and Andrology, Justus Liebig University Giessen, Germany

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Abstract

Epididymitis is a relatively common clinical condition presenting as acute or chronic forms. Acute epididymitis is the inflammation of epididymitis accompanied by pain and swelling, while chronic epididymitis may present only with pain. Etiological factors may be infectious or noninfectious, for example urinary obstruction, drug induced, or idiopathic. Bacterial ascent through the urogenital tract is the most common etiology in acute epididymitis, with *Chlamydia trachomatis* being isolated in all adult age groups. Diagnosis is generally based on patient history, symptoms, and clinical findings. Recent data indicate that sexually active patients with acute epididymitis should be screened for sexually-transmitted diseases, regardless of their age. Additional laboratory investigations and imaging may be required for differential diagnosis with other intrascrotal conditions, particularly with testicular torsion. Although no evidence-based recommendations can be given for the antimicrobial treatment of acute epididymitis, >85% of bacterial strains causing acute epididymitis are susceptible to fluoroquinolones and third-generation cephalosporins. Chronic epididymitis has not been investigated as thorough as acute epididymitis; however, the development and use of a symptom index is promising in terms of achieving a widely-accepted standardization of diagnosis and evaluation. A conservative approach may be beneficial; medical treatment employing antibiotics, anti-inflammatory agents, pain medication, and others are also being utilized without any evidence-based data. Spermatic cord block with short-term and long-term acting agents as well as surgical treatment including epididymectomy microdenervation of the spermatic cord are other treatment alternatives in patients with chronic epididymitis.

Patient summary: In this article, we provide an update on the definition, epidemiology, etiology, diagnostics, and therapy in terms of acute and chronic epididymitis. © 2017 European Association of Urology. Published by Elsevier B.V. All rights reserved.

* Corresponding author. Department of Urology, Trakya University, School of Medicine, Rektörlüğü, Edirne 22030, Turkey. Tel. +90 532 262 6032. E-mail address: metecek@gmail.com (M. Çek).

1. Introduction

The epididymis is a coiled, tubular organ which is attached to the testis. The functions of the epididymis include transport, maturation, and storage of sperm. The epididymis may become the target of various inflammatory conditions which may or may not be associated with

infectious agents. The clinical picture of this inflammation is epididymitis.

2. Epidemiology

Epididymitis is a common clinical condition with incidence rates ranging from 25 to 65 per 10 000 person-yr (Table 1).

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Table 1 – Overview on epidemiologic studies investigations epididymitis

Author	Period	Region	Age (yr)	Incidence/yr and 10 000 men	Comments
Koch et al (1980)	1977–1978	US	All ages	40	Estimation, about 60% follow-up investigations
Collins et al (1998)	1990–1994	US	18–50	29	Consultations to general practitioners and urologists
Bohm et al (2009)	2001–2004	US	14–35	37	Insurance data analysis, only first event
Nicholson et al (2010)	2003–2007	UK	15–60	25	Consultations to general practitioners
Nickel et al (2005)	2004	Canada	All ages	65	Consultations to urologists; chronic epididymitis?

However, most of the data are derived from coded diagnoses investigating largely different study populations. In this context, acute epididymitis, chronic epididymitis (CE), and recurrent epididymitis are not always strictly separated. Nickel et al [1] reported that more than 80% of all cases are chronic (defined as duration >3 mo). In summary, the reported prevalence includes the following figures: 0.29% of ambulatory office visits in men <50 yr of age [2] and <1% of men presenting to urology outpatient clinics [1]. It is the most common cause of scrotal pain in adults in the outpatients setting, reaching up to 600 000 cases/yr in the US [3]. In children, the incidence of epididymitis was found to be one per 1000 boys in a prospective, population based study [4].

Acute epididymitis can occur at any patient age and largely depends on the study population investigated [5–7]. Two different studies on CE reported the average age of patients as 49 ± 15 yr (age range, 21–83 yr) and 41.1 yr (18–78 yr) [1,8], while the median age of patients with chronic scrotal pain was reported to be 34 yr (age range, 19–52) in another study [9]. This indicates that acute and CE are both an important issue in men within the reproductive ages.

3. Acute epididymitis

3.1. Definition

Acute epididymitis is the inflammation of the epididymis accompanied by pain and swelling with symptoms lasting <6 wk. This clinical picture usually develops within a few days and is typically unilateral. Without adequate therapy a further spread to the testis occurs within a couple of days. This is why several authors use the term *epididymo-orchitis*.

3.2. Etiology/pathophysiology

Acute epididymitis can be related to different etiologies. The generally accepted route of infection in epididymitis is the ascent of microorganisms from the urethra. Already in 1927, Campbell [10] concluded that gonococcal epididymitis arose as a result of pathogen ascent starting as urethritis leading to epididymitis a couple of weeks later. Another finding was that from patients with indwelling urinary catheters bacterial pathogens could be isolated from the vas deferens and were identical with those isolated from the urine. The hypothesis was confirmed by studies investigating pathogens isolated simultaneously from the urine/urethra and epididymis showing 84% identicalness [11–14]. Finally, the bacterial ascent model was underlined by

studies reporting an involvement of the prostate or seminal vesicles by biopsy, ultrasound, or measuring prostate-specific antigen changes [6,7,13].

However, the true incidence of bacterial origin in acute epididymitis is unknown. Before the breakthrough of identifying *Chlamydia trachomatis* as a major pathogen in young patients, studies investigating the etiology reported a high incidence of *idiopathic* cases with about 50% [15]. Nevertheless, important studies from the 80s and 90s still reported on 30% idiopathic cases [11,13,16–18]. The percentage of idiopathic cases could be clearly decreased to 13% in a recent study by applying modern molecular diagnostics including polymerase chain reaction analysis [7].

The pathogenic spectrum is related to the depth of microbiological investigations performed, as well as the study population investigated. Traditionally patients with epididymitis <35 yr were suspected to have a sexually-transmitted disease (STD; eg, *C. trachomatis*) as an underlying cause while patients >35 yr were believed to have epididymitis caused by enteric pathogens (eg, *Escherichia coli*) [17]. Unfortunately, this cut-off is still present in international guidelines [3,19], whereas recent studies clearly provide evidence that sexually-transmitted infections (STIs) are not restricted to a specific age [7,16].

In addition, a systemic spread of viral pathogens appears a plausible cause of epididymitis, since about 5% of patients report a previous respiratory tract infection within the previous 14 d before the development of acute epididymitis [7]. However, studies on viral pathogens are scarce, but indicate that mumps virus and enterovirus epididymitis represent rare causative entities [4,7]. It is not conclusively clarified, if the epididymitis is a result of a direct viral infection or a postinfectious immunologic epididymal reaction [4,7].

3.3. Symptoms and signs

The presenting symptoms are usually pain and swelling [6,12]. In 96% of cases the epididymitis is unilateral [5,16,18,20]. From the first symptoms to medical consultation on average 2–4 d pass by [6,7,11,21].

Typical physical signs include unilateral swelling and tenderness of the involved epididymis. Swelling usually starts at the cauda epididymis before it ascends and involves the whole epididymis and finally reaches the testis [10]. The clinical spectrum of acute epididymitis ranges from mild epididymal tenderness to severe, febrile systemic disease including urosepsis [6,7,22,23]. In a recent

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