ACUTE SCROTUM

Aso Omer Rasheed*

Submitted: 12/2/2012; Accepted: 24/6/2012; Published: 1/6/2013

ABSTRACT

Background

Acute scrotum is regarded as an emergency urological problem, it is a name given to a condition that affect the viability and health of the testis. Although the acute scrotum is defined as acute scrotal swelling with or without pain, most patients present with pain as their primary complaint. Since there are different conditions which could lead to acute scrotum, early diagnosis and management of acute scrotum will greatly protect the testis future. Acute scrotum may be due to simple condition like minor trauma with heamatoma of the scrotal sac and intact testis or a serious condition like testicular torsion. Torsion must be considered in any patient with testicular pain and swelling. It account for about 0.5% of total emergency visits. It should be differentiated from epididymitis, orchitis, trauma, testicular segmental infarction. All together they account for 85% -90% of all cases of acute testicular pain, as their symptoms overlaps.

Objective

To identify those patients who have acute testis pain due to testicular torsion whom they need urgent operation and to differentiate them from non operative patients. Furthermore to find out the number of patients presented with each pathology during this period and their outcome.

Patients and Methods

Seventy patients with sudden pain, swelling with or without history of trauma were admitted to Sulaimani Teaching Hospital for diagnosis and treatment. The analysis was made for the etiology, age, disease location, time of occurrence, time of arrivals, diagnosis, treatment were recorded.

Results

Fifty three had infection, 9 patients had torsion of testis, and 4 patients had torsion of testis appendix, 11 patients had trauma and 3 patients had testicular abscess.

Conclusion

Proper history, physical examination and color Doppler ultrasound with early interventions directly affect the prognosis.

***Keywords*:** *Testicular torsion, Color Doppler ultrasound, testis pain, testis trauma.*

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* Department of Surgery, School of Medicine, Faculty of Medical Sciences, University of Sulaimani, Corresponding Email: asoomer62@hotmail.com.

https://doi.org/10.17656/jsmc.10027

INTRODUCTION

Acute scrotum is not an unusual clinical diagnosis among young boys and men. Approximately one in 4000 males will have testicular torsion by the age of 25 mostly between 12 and 18 years of age [1]. The oldest patient with testicular torsion was 78 year old, reported in 1959 [2]. Testicular infarction in neonates occurs as a consequence of spermatic cord torsion [3], the term neonatal torsion was first coined by Taylor 1897 [4]. Torsion must be considered in any patient with testicular pain and swelling [5]. It accounts for about 0.5% of total emergency visits [6], it should be differentiated from epididymitis, orchitis trauma, testicular segmental infarction [7]. All together they account for 85%-90% of all cases of acute testicular pain, as their symptoms overlap [8]. Polyarteritis nodosa and Schoenlein-Henoch syndrome are vasculitis easily mistaken for testicular torsion [9]. Brucella epididimo-orchitis must be considered in endemic areas [10]. Gonadal salvage depends on rapid restoration of blood flow [11], otherwise damage can occur after 12 hours [12] and early treatment can achieve testicular viability [13].

The outcome following that treatment also depends on establishment of the diagnosis [14]. No investigation confidently excludes torsion [15], but color doppler sonography can identify those children with acute scrotum who require exploration and exclude those without torsion [16, 17]. In some centers there is a delay in obtaining doppler sonography during off hours [18]. Tc99m radionuclide imaging is more accurate than ultrasound [19] and MRI is indicated in trauma [6].

Serological markers demonstrate significant elevation of IL-6 in epididymitis [20]. Intra-testicular hemorrhage and infarction were seen in approximately 10% of the cases [21]. It is important to differentiate these various causes to avoid future infertility [22] in adult the commonest cause of acute scrotum is epididymitis. [23]. Trauma can cause various testicular as well as epididymal damage [24]. Scrotal conditions may reflect intra abdominal diseases [25], inflammation of the spermatic cord can result from perforated diverticulum [26] or perforated acute appendicitis with known communicating hydrocele [27].

Acute scrotal swelling can result from infecting agents like bacteria [28], viruses [29] and malaria [30], chronic irritant like urine [31] can follow blunt trauma with extensive scrotal bruising but the testis usually escape the damage [32, 33].

This is not the case in penetrating trauma [34], It also occurs after intermittent torsion which requires operation [35]. Re torsion after previous fixation [36] can follow torsion of hernia sac which is a rare disease in children [37]. Post chemotherapy testicular abscess should be suspected [38] or intra testicular bleeding which are not palpable on examination [39]. A rare case of thrombophlebitis of spermatic vein has been seen [40], isolated torsion of epididymus should be included in differential diagnosis [41] and sometimes non specific causes can be seen [42]. In children and adolescents with acute testicular pain they should be evaluated promptly [43] even with detection of intra testicular blood flow, torsion can't be excluded and false positive cases can be seen [44]. In doubtful conditions exploration should be performed [45] and during operation for fixation, tunica vaginalis should be inverted to enhance adhesion formation [46]. Testicular appendix torsion can be treated conservatively [47], partial orchiectomy can be done for segmental infarction [48], but in the absence of rapid restoration of perfusion subfertility may result [49].

PATIENTS AND METHODS

From November 2003 to June 2005, 70 patients with acute testicular pain and swelling were admitted to the Sulaimani Teaching Hospital, their age ranged from 3 months to 85 years, with mean age of 30.77. All patients were evaluated with history, physical examination and investigations, including GUE, WBC, ESR, and Brucella agglutination test were recorded. In addition abdominal ultrasound, and color doppler sonography of the testis to observe the status of the testis, epididymus and its vascularity.

Diagnosis was made according to this information. Treatment then was applied accordingly. All patients' data were revised, including age, disease location, duration of the illness, time of presentation, diagnosis, and type of treatment received, operative findings and final outcome. According to the findings, these conditions were identified; Torsion of the testis,

Torsion of the testis appendages, Trauma, Epididymitis, Orchitis and Testicular abscess.

RESULTS

Ages of patients ranged from 3 months to 85 years Majority patients (51) presented within 3 days, the time of presentation various from 30 minutes to 21 days. Right side affected in 37 (53%) patients and left side in 33(47%) patients as shown in Figure1.

Hospital stay lasted form 1-7 days but the majority (59) stayed for one day. Epididymo-orchitis was seen in 43 patients, their ages ranged from 13-85 years; testicular abscess found in 3 patients, trauma occurred in 11 patients, torsion of testis in 9 patients their ages ranged from 3 months to 15 years, torsion of testis appendages torsion in 4 patients.

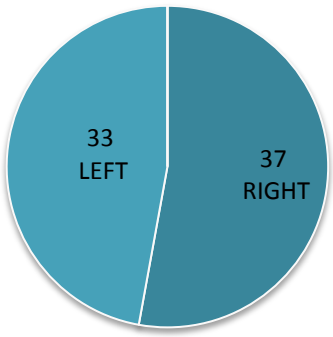

Figure 1. The testes affected side.

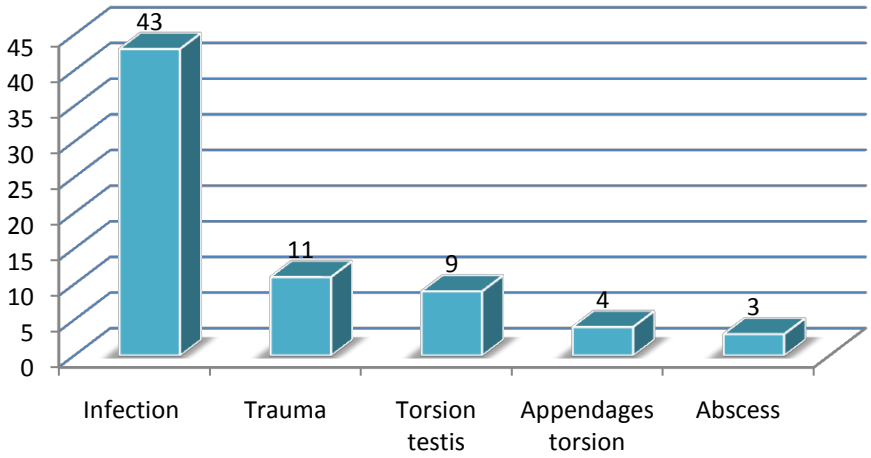

Figure 2. The Number of different pathologies of the affected side.

DISCUSSION

The clinical differential diagnosis of painful scrotum in a child includes testicular torsion, torsion of testicular appendages, epididymo-orchitis, idiopathic scrotal pain idiopathic scrotal edema and obstructed hernia. The ability to confidently establish a surgical versus a non surgical diagnosis for acute scrotal pain is important to preserve the testis in ischemic conditions and to avoid unnecessary operation in infectious conditions.

Our study showed that the incidence of testicular torsion was 12.85% which is lower than other studies; Havranek *et al*. 14% [50], Galejes LE *et al*. 14% [51], Silder D *et al*. 31% [52], Suzer O *et al*. 18% [53], Van GE *et al*. 16.8% [54] and Goto D *et al*. 35% [55].

Testicular appendages torsion occurred in 5.71% which is lower compared to other studies; Havranek *et al*. 28% [50], Silder D *et al*. 31% [52], Van GE *et al*. 46% [54] and Goto D *et al*. 39% [50], Galejes LE *et al*. 14% [51], Silder D *et al*. 28% [52] and Goto D *et al*. 7,5% [55], while it is lower than a study done by Suzer O *et al*. which occurred in 78% of the patients [53]. Abscess occurred in 4.28% of the patients. The age incidence was lower in cases of testicular torsion than in appendages torsion as seen in the different studies in the table 1.

Testicular torsion is rare in patients older than 35 years [56], acute epididymitis is commonly the cause of acute scrotal pain in patients younger than 18 years, acute scrotal pain in prepubertal boys occur most commonly from torsion of the testicular appendages [57]. Trauma was found in 15.71% of the patients. Mumps is a contagious viral disease caused by a single-stranded RNA virus belong to the genus Rubella virus and the family Paramyxoviridae. When the MMR vaccine was introduced the incidence of mumps virus decreased significantly [58]. We didn't report or diagnose acute mumps in our study because of active immunization in our city and the study didn't include periphery.

Table 1. The results of this study in relation to other studies.

Studies	Year of the study	No. of patients	Testis torsion	Appendages torsion	Infection	Trauma
Current study	2003-2005	70	12.85%	5.71%	61.42%	15.71%
Havranek *et al.*	1992-1995	88	14%	28%	39%	
Galejes LE *et al*.	1986-1996	300	14%		14%	
Silder D *et al.*	1976-1996	199	31%		28%	
Suzer O *et al.*	1996-1998	102	18%		78%	
Van GE *et al.*	1986-1996	543	16.8%	46%		
Goto D *et al.*	1986-1998	40	35%	55%	7.5%	

Radionuclide scrotal imaging (RNSI) is an accurate examination in the differential diagnosis of ischemia versus infection and may assist in evaluation of non traumatic acute scrotum and can clearly distinguish among torsions and epididymitis [59].

In our study we didn't have it but we used color Doppler ultra sonography (CDU) to evaluate patients due to its wide spread availability and its ability to diagnose testicular torsion with a high degree sensitivity and specificity and to distinguish other causes of scrotal pain and swelling.

In conclusion, time is crucial in acute scrotum. Although good history and physical examination are mandatory, color Doppler ultra-sonography is also necessary. One should always think of early exploration when the viability of testis is doubtful. When duration of pain is brief and the history and the physical examination suggest that torsion is the most likely diagnosis, urgent surgical exploration without any additional imaging studies is recommended.

When it is not possible to diagnose or exclude testicular torsion definitely or when the duration of pain is more than 12 hours, then color Doppler ultra-sonography can provide significant information. Color Doppler sonography is an

essential tool in every urological department, it is used in such emergencies, when appropriately performed this facilitates rapid identification of torsion or without torsion and minimize the number of unnecessary scrotal explorations.

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