Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2015; 3(2A):558-561 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2015.v03i02.006

Research Article

Acute Scrotum in Paediatric: Clinical Profile and Management

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Abstract: The term acute scrotum refers to acute scrotal pain. This presentation should always be treated as an emergency because of the possibility of testicular torsion and permanent ischemic damage to the testis. It presents a major diagnostic and therapeutic challenge. The objectives of the study were to assess the presentation and management of acute scrotum in paediatric surgery. It is a prospective descriptive analytical study, conducted on three hospitals in the period from Mar. 2013 - Nov. 2014. It included all paediatric patients of acute scrotum younger than 13 years. Data was reviewed and analyzed using SPSS version 20.Final diagnosis was made by Doppler ultrasound ± surgical exploration in all cases; include epididymoorchitis (39.5%), testicular torsion (34.2%), torsion of testicular appendage (10.5%), scrotal abscess (6.6%), haematocele (5.3%) and obstructed inguinal hernia (3.9%). The common triad of symptoms was pain (100%), swelling (90.8%) and fever (46.1%), while the common triad of signs was tenderness(96.1%), erythema (82.9%) and oedema (80.3%).Surgical exploration was performed in 49 patients (64.5%), findings were testicular torsion (n=26), torsion of testicular appendage (n=8), epididymoorchitis (n=7), scrotal abscess (n=5) and obstructed inguinal hernia (n=3). In testicular torsion group, salvage rate was 38.5% (n=10), in most of patients (90%) operated within 24 hours from symptoms onset, however, most patients underwent orchiectomy (n=15) were operated after 24 hours (P value 0.000). Although epididymoorchitis is the most common cause of acute scrotum in paediatric, testicular torsion is the most important differential diagnosis since delay in management leads to testicular loss. Unfortunately, testicular torsion cannot be consistently confirmed or rule out by history and clinical examination.
Keywords: Acute scrotum, Epididymoorchitis, Testicular torsion, Torsion of testicular appendage.

INTRODUCTION

Acute scrotum is defined as an acute painful swelling of the scrotum or its contents, accompanied by local signs and general symptoms [1]. It is a diagnostic dilemma because of its diverse aetiologies and clinical pictures overlapping [2]. The three most common causes are testicular torsion, epididymoorchitis and torsion of testicular appendage [3].

Testicular torsion is the most serious condition affecting the scrotum that needs urgent diagnosis and treatment to save the affected testis and avoid testicular loss, fertility problems and medico legal issues. Testicular damage commences past six of initiation of symptoms. Beyond twenty-four hours of symptoms testicular loss will occur [4].

METHODOLOGY

This prospective descriptive study was conducted on patients with acute scrotum presented to paediatric surgery departments of Khartoum teaching hospital, Bahri teaching hospital and Gezira National Centre of Paediatrics Surgery in Sudan during March 2013 to November 2014. We excluded those patients who are older than 13 years. Data was collected in questionnaires from the patients, parents, doctors, medical records and analyzed in terms of age, side involved, duration of complain, clinical presentation, urine analysis and other diagnostic tools, surgical treatment, duration from symptoms onset till surgery, intraoperative findings and procedures done, to evaluate the clinical profile and management of acute scrotum in paediatric surgery.

RESULTS

Seventy six patients, aged one month to 13 years (mean age 7.8±4.8years) were studied. Most (64.5%) of the patients were in the six to 13 years age group (Table 1). Both right and left side were equally involved (42.1%), and only 15.8% bilateral caused mainly by epididymoorchitis. The commonest symptoms were pain in all patients, swelling (90.8%) and fever (46.1%). Most of the patients (76.3%) presented with sudden onset of symptoms.

Table 1: Relation between different age groups and final diagnosis in the study

Final diagnosis	Age group				Total
	0-2 Months	3-12 Months	1-5 Years	6-13 Years	
Testicular torsion	2	2	4	18	26
Torsion of testicular appendage	0	0	0	8	8
Epididymoorchitis	1	2	11	16	30
Scrotal abscess	1	0	1	3	5
Obstructed inguinal hernia	0	1	2	0	3
Haematocele	0	0	0	4	4
Total	4	5	18	49	76

The common triad of signs was tenderness, erythema and oedemain 96.1%, 82.9% and 80.3% respectively. Undescended testes were found in 5.3%.

Final diagnosis was made by Doppler ultrasound ± surgical exploration in all cases; include epididymoorchitis (39.5%), testicular torsion (34.2%), torsion of testicular appendage (10.5%), scrotal abscess (6.6%), haematocele (5.3%) and obstructed inguinal hernia (3.9%).

In testicular torsion group, abnormal testicular axis was found in 26.9%, absent crimasteric reflex 65.3% and high riding testicle in 61.5% (Table 2). The left side was affected more common (61.5%).

Table 2: Relation between physical examination findings and final diagnosis categories in the study

Signs	Final diagnosis					
	TT(n=26)	TTA(n=8)	EO(n=30)	SA(n=5)	OIH(n=3)	H(n=4)
Erythema	17	8	27	5	2	4
Oedema	14	8	27	5	3	4
Tenderness	26	7	29	5	3	3
High riding testicle	16	1	2	0	0	0
Abnormal testicular axis	7	0	0	0	0	0
Absent cremasteric reflex	17	0	1	0	0	0
Thick cord	9	0	5	0	0	0
Undescended testes	4	0	0	0	0	0
Blue dot sign	0	2	0	0	0	0

TT: Testicular torsion, TTA: Torsion of testicular appendage, EO: Epididymo-orchitis, SA: Scrotal abscess, OIH: Obstructed inguinal hernia, H: Haematocele

All patients underwent urine analysis, pyuria±bacteruria detected in 21(27.2%) patients of epididymoorchitis (n=12), testicular torsion (n=5) and scrotal abscess (n=4).

Doppler ultrasound was performed in 43 (56.6%) patients, results was epididymoorchitis (n=23), testicular torsion (n=15), haematocele (n=4) and obstructed inguinal hernia in one patient. All patients diagnosed as epididymoorchitis or haematocele by Doppler ultrasound (n=27) treated medically.

Surgical exploration was performed in 49 (64.5%) patients, findings were testicular torsion (n=26), torsion of testicular appendage (n=8), epididymoorchitis (n=7), scrotal abscess (n=5) and obstructed inguinal hernia (n=3). In testicular torsion group, salvage rate was 38.5% (n=10), and most of them (n=9) operated within 24 hours from symptoms onset (mean time 13.9±6.1 hours). In contrast, most patients underwent orchiectomy (n=15) operated after 24 hours (mean time 94.1±43.9 hours) (Table 3). Contralateral orchidopexy was done in the same operation in 6 (23%) patients.

Table 3: Relation between time fromonset of symptoms till operation and testicular viability in testicular torsion in the study population (n=26)

Duration (hours)	Viable testicles	Non-viable testicles
6 - 12	4 (40%)	0
13 - 24	5 (50%)	1
24 - 48	1 (10%)	2
> 48	0 (0.0%)	13
Total	10 (100%)	16

DISCUSSION

The incidence of these scrotal pathologies varies from study to study. Nason *et al*. [3] and Sidler *et al*. [5] referred spermatic cord torsion, while Mäkelä *et al*. [6] and Alsbou *et al*. [7] referred torsion of the appendages as the most common aetiology of acute scrotum in children. In accordance with other series [8, 9] the present study showed that the most common cause was epididymoorchitis.

The three major diagnostic categories (epididymoorchitis, testicular torsion and testicular appendage torsion) represent 84.2% of all patients in our series, this result is near to Sidler *et al*. [5], Mäkelä *et al*. [6] and Nason *et al*. [3] results (90%, 81% and 92% respectively).

The most common symptoms in our series were pain and swelling (90.8%), as in Ibrahim *et al*. [10] (78.5%) and Tabari *et al*. [4] (62%). Pain had sudden onset in most patients (overall 76.3%, testicular torsion 84.6%, testicular appendage torsion 87.5% and epididymoorchitis 63.3%).

Our series found that clinical profile were not absolute to identify the cause of scrotal pathology due to signs and symptoms overlap among different categories. This result supported by Murphy *et al*. [11] and Sidler *et al*. [5] results.

Theoretically, the combination of intermittent and variable degrees of torsion may allow a testis to survive beyond 12 hours symptomatology (both are impossible to detect clinically) [2]. In Mushtaq *et al*. [12] series, the overall salvage rate was 70%, but when the duration of symptoms exceeded 12 hours the salvage rate dropped to 30%, Alsbou *et al*. [7] series reported a salvage rate of 60% and all patients who were explored after 24 hours had gangrenous testicles. In the present series the salvage rate of testis was quite low as 38.5%, the minimum duration of pain was eight hours and the mean duration of pain was 63.3 hours. Late presentation to hospital is the major cause of delay leading to orchidectomy.

Same surgery contralateral orchidopexy for patients with testicular torsion was done in 53.8% in Yu *et al*. [13] series, and 23% in our series.

In our series, epididymoorchitis and testicular torsion groups had positive urinalysis in 40% and 19.2% respectively, indicating that urinalysisis a poor test to diagnose epididymoorchitis.

Doppler ultrasonography is an excellent, safe, and reliable method for evaluating patients with scrotal diseases. It aids in diagnosis of nonsurgical conditions and reduces the number of unnecessary exploratory operations [14].The present series limited use of Doppler ultrasound supported this. However, it is operator dependent and may delay testis saving surgery [3].

CONCLUSION

Although epididymoorchitis is the most common cause of acute scrotum in paediatric, testicular torsion is the most important differential diagnosis since delay in management leads to testicular loss. Unfortunately, Testicular torsion cannot be consistently confirmed or rule out by history and clinical examination due to overlap of signs and symptoms among different acute scrotal categories.

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