

Early Exploration in the Management of Acute Scrotum in Children

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Abstract

Objective: Acute scrotal conditions are a common clinical setting that present with pain and swelling of the hemiscrotum. The aim of our study has been to evaluate the findings in boys operated on acute scrotum.

Methods: A descriptive study was conducted on 100 patients with acute scrotum admitted to Mofid Children's Hospital from March 1993 to March 2007. Data included history, age, primary symptoms, definite diagnosis, side involvement, paraclinical tests, imaging modalities, medical or surgical management and type of the surgery.

Findings: Diagnosis was made mainly by clinical signs and symptoms and surgical exploration. Torsion of testis (n=31) was the most common cause of acute scrotum followed by incarcerated inguinal hernia (n=30), torsion of testicular appendage (n=27), epididymo-orchitis (n=7), idiopathic scrotal edema (n=4) and hematocele (n=1). Most (34%) of the patients were in the first year of life and the mean age was 5.4 years. The commonest signs were pain and swelling (62%) followed by pain, swelling and redness (21%) and pain alone (16%). 83 patients consisting of 31 with torsion of testis, 14 with torsion of testicular appendage, 30 with incarcerated hernia and 7 with epididymo-orchitis underwent surgical exploration after careful physical examination. 10 of 31 patients with torsion of testis had orchiectomy and orchiopexy of contra-lateral testis and the rest had detorsion and bilateral orchiopexy. 80% of patients were referred to the hospital after 12 hours of clinical onset of symptoms.

Conclusion: Early exploration of scrotum based on careful physical examination excludes the risk of misdiagnosis by diagnostic procedures and unnecessary delay by diagnostic techniques. Exploration of scrotum is a relatively safe and simple procedure with good cosmetic results, it also allows an accurate diagnosis to be made.

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Introduction

The term acute scrotum refers to signs and symptoms associated with local inflammation of

the scrotum that appear suddenly and usually are not associated with trauma. Such signs and symptoms include scrotal pain, swelling, redness

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and heat^[1]. Acute scrotum is defined as an acute painful swelling of the scrotum or its contents accompanied by local signs and general symptoms. The most common causes of acute scrotum in children constitute testicular torsion, appendix testis torsion, epididymitis, orchitis and pyocele^[1].

Torsion of testis or spermatic cord is undoubtedly the most serious condition affecting the scrotum^[2] that needs urgent diagnosis and treatment to save the affected testis and avoid testicular loss, fertility problems and medicolegal issues^[1].

Testicular loss commences past twelve hours of initiation of symptoms. Beyond twenty-four hours of symptoms testicular loss will definitely happen and this is the main reason why in the absence of ancillary studies surgeons immediately explore the acute scrotum^[1].

Torsion of testis involves nearly 15-40% of all acute testicular pain and this position depends on abnormal relation of testis to scrotal tissue coverage.

The two most commonly used preoperative studies are testicular scan and color Doppler ultrasound. Testicular scans reliably show whether the testes have vascular flow or not, but are difficult to be obtained during the night. Doppler ultrasounds are operator dependant and when done by experienced physician, can help reduce the number of emergency operations and hospitalization days.

Normally, testis is partially covered by tunica vaginalis derivated from procesus vaginalis in anterior part. If testis, epididymis and distal part of spermatic cord is covered by tunica-vaginalis, torsion of the testis may happen in this serosal space^[3]. The main differential diagnoses are acute epididymitis, strangulated hernia, hematocle, hydrocle, testis tumor and idiopathic scrotal edema^[4].

Clinical judgment by the surgeon is probably the most important factor in assessing testicular salvage. In the face of doubt the next step in management is immediate surgical scrotal exploration. Definite diagnosis of testicular torsion mostly can be confirmed by prompt scrotal exploration. Prognosis is good when detorsion of the affected testis is performed within first 6 hours^[1,5].

The aim of this study was to evaluate the role of early exploration in the management of acute scrotum, testicular torsion as the most common emergency in acute scrotal condition and other causes of common acute scrotal conditions such as torsion of testicular appendage, epididymo-orchitis and idiopathic scrotal edema in patients referred to emergency department of Mofid Children's Hospital during 1993 to 2007.

Subjects and Methods

This descriptive study was conducted on patients with acute scrotal pain or swelling referred to emergency department of Mofid Children's Hospital in Tehran, Iran during March 1993 to March 2007. We excluded those patients who had fever, rising leukocytosis, and tenderness of spermatic cord. A total of 100 patients were evaluated in this study, and data was collected from the medical records of patients in the archives and analyzed in terms of age, primary symptoms, definite diagnosis, side involvement, surgical treatment, non-surgical management, clinical presentation, time of hospital admission, orchiectomy, contralateral testis fixation, urine analysis and other diagnostic tools, to evaluate the findings in boys operated on acute scrotum.

Findings

One hundred patients, aged one day to 13 years (mean 5.4 years) were studied. Most (34%) of the patients were in the first year of life (Table 1). The commonest signs were pain and swelling (62%), pain, swelling and redness (21%) and pain alone (16%); fever was the less common (1%) symptom in our patients (Table2).

Acute scrotum was found 51% in left side, 45% in right side, and only 4% bilateral caused by epididymo-orchitis.

Surgical exploration was performed in 83 (83%) patients, and only 17 (17%) patients (13

Table 1: Age of patients with acute scrotum in Mofid Children's Hospital (1993– 2007)

Age	Number	Percent
0-1	34	34%
1-5	31	31%
5-10	24	24%
>10	11	11%
Total	100	100%

cases with torsion of testicular appendage and 4 cases due to idiopathic scrotal edema) underwent non-surgical management. Etiology of acute scrotal condition is shown in Table 3.

The diagnoses of 83 patients treated surgically were as follow: torsion of testis 31, incarcerated inguinal hernia 30, torsion of testicular appendage 14, epididymo-orchitis 7, and only one patient had hematocele.

In 10 out of 31 patients with testicular torsion orchiectomy and contralateral orchiopexy was performed. In these 10 patients one was referred at the age of 6 months and with the duration time of 6 hours and others after 48 hours of onset.

In 14 out of 27 patients with torsion of testicular appendage surgical intervention was performed and appendectomy + ipsilateral orchiopexy carried out. 13 patients were managed conservatively. Only 9 (9%) out of our 100 patients had preoperative ultrasonography and in 3 cases due to inflammation and heterogenic tissues were suspected to have testicular torsion which was confirmed by surgical exploration.

In 49 patients urine analysis and urine culture were performed, 3 patients (one with testicular torsion and 2 patients with torsion of testicular

appendage) had leucocyturia. In all patients with epididymo-orchitis this test was normal.

Fifty patients (50%) with acute scrotum were referred to our hospital within the first 24 hours, 80% of which were treated surgically over 12 hours, and all of them had pain and swelling. Etiology of acute scrotum is shown in Table 3.

Discussion

The most common symptom in our series was pain and swelling (62%), whereas in the series of Granados et al with 33 patients, pain alone was the predominating symptom^[5]. Urinalysis was mostly normal in our patients, and diagnosis generally was established by clinical symptoms and careful physical examination. Patients usually presented with scrotal pain. The duration of symptoms was shorter in testicular torsion (69% present within 12 hours) compared to torsion of the appendix testis (62%) and acute epididymitis (31%)^[6]. In the early phase, location of the pain can lead to the diagnosis.

Patients with acute epididimitis experience a tender epididimis, while patients with testicular torsion are more likely to have a tender testicle and patients with torsion of the appendix testis feel isolated tenderness of the superior pole of the testis^[6]. In our study 50 (50%) patients with acute scrotum were referred to our hospital within the first 24 hours, 80% of which were treated surgically over 12 hours, and all of them had pain and swelling.

Sidler et al^[7] in 1997 reported their series in which the most common (32%) etiology was testicular torsion, 70% in left testis, 31% torsion

Table 2: Primary symptoms of patients with acute scrotum

Primary symptoms	Number	Percent
Pain + swelling	62	62%
Pain + swelling + redness	21	21%
Pain	16	16%
Fever	1	1%
Total	100	100%

Table 3: Etiology of acute scrotum

Etiology	Number	Percent
Torsion of testis	31	31%
Incarcerated inguinal hernia	30	30%
Torsion of testicular appendage	27	27%
Epididymo- orchitis	7	7%
Idiopathic scrotal edema	4	4%
Hematocele	1	1%
Total	100	100%

of testicular appendage and epididymo-orchitis in 28% of the patients. whereas in our series common etiology was torsion of testicle (31%),torsion of testicular appendage (27%), and epididymo-orchitis (7%).

In Sidler^[7] series orchiectomy was performed in 61.2% within 24 to 48 hours of clinical onset, in our study it occurred in 10 (10%) patients within 12 to 24 hours and that was due to earlier diagnosis and surgical management.

Mean age of patients in Sidler's series for testicular torsion was 6.3 years and for torsion of testicular appendage it was 10 years, in our series it was 3 and 8.8 years, respectively. Early diagnosis was the clue of successful management.

When a child is referred for scrotal redness and swelling, early surgical intervention is mandatory. Even in cases of torsion of testicular appendage, surgical management is suggested, not to miss torsion of testis^[8]. Sonography is the imaging modality of choice for the scrotum because it is simple, relatively inexpensive, and quick (Carkaci S, et al)^[9]. Doppler ultrasound (DUS) is able to differentiate between surgical emergencies and other etiologies. Schalamon J et al reported 84% success in this differentiation^[10]. Galejs et al^[11] in 1998 suggested that Doppler sonography is very effective in torsion diagnosis; the accuracy being sometimes even 100%. Radio-isotop is a useful diagnostic tool for acute scrotum^[12-14]. In our hospital, ultrasound with an expert sonologist, is only available during day time and not during the late afternoon and at night.

As pain and swelling of scrotum are the most common symptoms in testicular torsion and also there are paucity of diagnostic tools, so some

studies suggest early surgical exploration^[15-17], as we have done this for the indicated patients in our study.

Conclusion

Early exploration of the scrotum with careful physical examination, excludes the risk of misdiagnosis and unnecessary delay by diagnostic techniques. Exploration of the scrotum is a relatively safe and simple procedure which allows an accurate diagnosis to be made.

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Conflict of Interest: None

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