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General Surgery

"A CLINICO PATHOLOGICAL STUDY OF ACUTE SCROTAL SWELLINGS"

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ABSTRACT **Background and Objectives:** Acute scrotal swellings are the commonest swellings affecting both children and adults. Though these swellings are frequently encountered, many a times correct diagnosis is not made and testis have been sacrificed. Therefore the aim is to study the clinical presentation, pathophysiology differential diagnosis and management of acute scrotum after required investigations. **Methods:** Patients reporting to surgical out patient department with acute pain and swelling in scrotum, patients admitted as inpatient for similar complaints or any other patients referred for such complaints during some other ailment from Feb 2021 to December 2022 were evaluated clinically as well as imaging studies such as color Doppler sonography and Blood investigation. **Results:** Epididymo-orchitis was found in 29 out of 90 cases, followed by Torsion Testes (16) and Scrotal Abscess (12). Maximum incidence occured during 3rd decade of life. Factors like urinary symptom and similar symptoms in the past were important predisposing factors for epididymo-orchitis. The average duration of symptoms from onset till presentation of epididymo-orchitis was 5.48 days and in case of torsion testes it was 29 hours. Haemogram and urine analysis were not conclusive but supportive to the clinical diagnosis. The period of hospitalisation was found to be more in fournier's gangrene (mean 24 days). **Conclusion:** The commonest acute scrotal condition is epididymo-orchitis followed by torsion testis and scrotal abscess. Presence of urinary symptom and similar complaints in the past are found to be important predisposing factors. Investigations are not conclusive but are supportive. Acute scrotal swellings can affect the entire life of the patient in the form of sterility. So needs careful examination, proper evaluation and aggressive treatment. Follow up is essential to find out the complications in the form of sterility so as to take the total care of the patient.

KEYWORDS : Acute scrotum; Epididymo-orchitis ; Fournier's gangrene; Torsion Testis.

INTRODUCTION

Acute scrotum is defined as "the acute onset of pain and swelling of the scrotum that requires either emergency surgical intervention or specific medical therapy" [1]. Acute scrotal swellings are potential emergency that affect both children and adults.

The differential diagnosis include : torsion of testis, torsion of appendix testis, epididymo-orchitis, scrotal wall abscess, Fournier's gangrene, scrotal haematoma, testicular tumour and some of the miscellaneous conditions like 'idiopathic scrotal oedema, scrotal fat necrosis, Henoch Schonlein purpura, ischemic orchitis etc.' Amongst these conditions - testicular torsion, epididymo-orchitis & Fournier's gangrene deserve special attention because of their prevalence and severity.

Torsion of testis: Testicular torsion was first described in 1840 by Delasiauve [2]. Majority of the patients, history and physical examination are sufficient to make an accurate diagnosis [3].

Two types of testicular torsion are recognized, Intravaginal spermatic cord (testicular) torsion and extravaginal testicular torsion(occurs in the perinatal period before fixation of the tunica vaginalis within the scrotum) [4]. Testicular torsion is most common in adolescence, although a few cases occur in infancy [5].

If Detorsion within 4 hours of occurrence testis can be saved; and chances of testes viability decreases as time progress . For testicular viability surgery should always be an emergency procedure [6].

The primary goal is to avoid testicular loss. Surgical exploration without delay increases the chance of testicular salvage. Routine investigation like urine analysis, haemogram, blood sugar, urine culture and sensitivity and special investigations like USG are supportive to clinical diagnosis. For testicular torsion diagnosis Pulsed Doppler sonography with mechanical sector scanner is a better than Colour Doppler USG [7]. Urgent surgical exploration is the best option in case of Torsion testis, Fournier's gangrene, Pyocele & Hematocele. It is a cost effective procedure with minimal surgical morbidity, and also proved to be both therapeutic and diagnostic.

MATERIALS AND METHODS

Source of Data :

The patients reported to surgical out patient department with acute pain and swelling in the scrotum, patients admitted as inpatients for similar complaints or any other patients referred for such complaints during some other ailment from february 2021 to December 2022 were studied in detail as per the preforma

Duration Of Study : february 2021 to December 2022

Method of Collection Of Data :

Clinical features, symptoms, imaging studies, operative findings, post operative complications, morbidity and mortality were entered in the proforma and analysed. Patients were followed up for one month or for longer period wherever necessary . A total of 90 patients were studied. In all patients Complete blood count, Urine Routine Examination & Culture sensitivity, culture sensitivity of pus, Color Doppler Inguinoscrotal Sonography was done.

Sample Size :

Cases admitted for acute scrotal swelling at our tertiary care centre, during the study period.

Selection Of Patient

Inclusion Criteria :

All the patients with complaints of acute pain and swelling in the scrotum irrespective of age were included in the study.

Exclusion Criteria :

Patients with painless scrotal swelling and chronic scrotal pain were excluded from the study.

OBSERVATIONS & RESULTS

The study consists of analysis of 90 patients of acute scrotal swellings admitted in Goverment medical college & Associated group of hospital, kota Rajasthan from February 2021 to December 2022.

1. Incidence Of Various Types Of Lesions :

The incidence of various conditions which led to acute scrotum were found as follows.

Table-I : Incidence of lesions

Sl. No.	Lesion	No. of Cases	Percentage
1.	Epididymo-orchititis	29	32.22%
2.	Orchitis	4	04.44%
3.	Epididymitis	4	04.44%
4.	Fournier's gangrene	9	10.00%
5.	Pyocele	2	02.22%
6.	Haematocele	3	03.33%
7.	Idiopathic scrotal edema	9	10.00%
8.	Scrotal wall abscess	12	13.33%
9.	Torsion testis	16	17.77%
10.	Testicular abscess	2	02.22%
	Total	90	100%

2. Incidence of age :

Table 2 - Incidence of Age

Age in year	No. of cases	Percentage
0-10	2	02.22
11-20	17	18.88
21-30	19	21.11
31-40	16	17.77
41-50	12	13.33
51-60	12	13.33
61-70	8	8.88
71-80	4	04.44
Total	90	100%

3. Incidence of Occupation.

Table 3 : Incidence of Occupation

Occupation	No. of Cases	Percentage
Manual Labourer (Farmer, Coolie, Driver, Vendor etc)	52	57.77%
Sedentary (Teacher, Student, Engineer, Clerk etc.)	38	42.22%
Total	90	100.00%

4. Duration of Symptoms

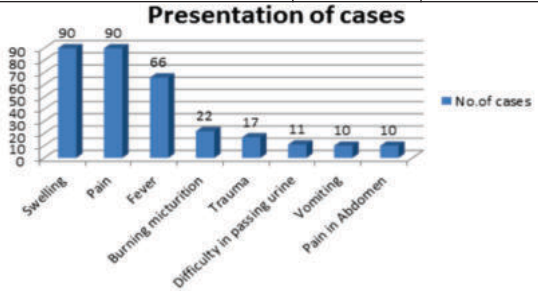
Table 4 - Duration of Symptoms

Duration	No. of Cases	Percentage
0-24 hr.	12	13.33%
1-7 days	57	63.33%
8-15 days	18	20.00%
16-30 days	3	03.33%
> 30 days	-	-
Total	90	100.00%

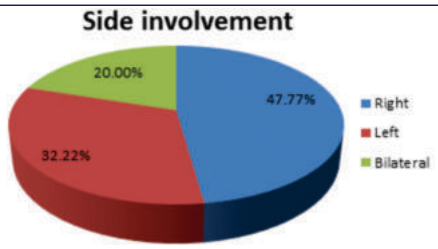
5. Predisposing factors:

Table 5- History of predisposing factor

History	No. of Cases	Percentage
Trauma	17	18.88
Urinary symptoms	22	24.44
Similar complaints in the past	12	13.33
Exposure to STD	03	3.33
Idiopathic	36	40.00
Total	90	100%



6. Presentation of cases



7. Side involvement

8. Treatment :

Table 8 : Treatment.

Treatment given	No.of cases	Percentage
1. Conservative	48	43.2
2. Surgical		
a. Incision & drainage	12	13.33
b. Scrotal exploration with drainage of testicular abscess	2	2.22
c. Debridement only	5	5.55
d. Multiple dibridement followed by secondary suturing	4	4.44
f. Scrotal exploration with evacuation of haematocele and repair of testicular tear.	1	1.11
g. Orchidectomy	2	2.22
h. Orchidectomy of affected side with orchidopexy of contra lateral side	9	10.00
i.Detorsion of affected side with bilateral orchidopexy	7	6.33

DISCUSSION

Incidence of various types of lesions :

In our study Acute epididymo-orchitis 32.22% being the commonest cause for acute scrotal pathology followed by torsion testis 17.77% and scrotal wall abscess 13.33% and Fourneir's gangrene 10.0% and idiopathic scrotal edema is 10.10% Haematocele was seen in 3.33% cases.

In Cass et al.,[8] study 72.57% had epididymitis compared to 20.67% cases of testicular torsion. But in study conducted by N.H. Moharib et al.,[9] testicular torsion (33.92%) was the most common cause for acute scrotal pathology followed by torsion of hydatid of Morgagni. Epididymitis was found in 8.92% cases.

In a study conducted by N.A. Watkin et al.,[10] torsion of the testis was the most frequent diagnosis (39.5%). Torsion of twisted testicular appendage was found in 29% of cases and 15% had epididymo-orchitis. The remaining 16% consisted of hydrocele, haematocele etc

Incidence of Age:

The maximum incidence occured between the age group of 21-30 years. Barker and Paper [9] in their study, noted that none of the patient was less than 14 yrs, where as in our study 2 patients was below 10 yrs. In our study the age incidence for acute epididymo-orchitis was maximum in the 21-30 group (31.03%). In study conducted by A.S. Cass & B.P Cass,[8] the maximum incidence of epididymo-orchitis was in 21-30 age group(62%).

In our study the mean age for the occurrence for epididymo-orchitis was 39.34 yrs which differs from the study conducted by N.A. Watkin[10] (30 Yrs.). In our study the mean age for the occurrence for torsion testis was 19.31 yrs and the mean age for the Fournier's gangrene was 49.55 yrs. which correlates with study conducted by R.B.Jones. et al.[11] (51.3yrs.)

Incidences of Occupation

In our study, Acute scrotal swellings were found to be more common in people who were subjected to strenous work, involving manual labourers like farmers & labourers. In a series of 90 cases, 57.77% of case were manual labourers. Only 42.22% cases were sedentary workers such as students, clerks etc .

Duration of Symptoms:

In our study, Duration of symptoms varied from few hours to as long as 1 month(fourniere gangrene). The shortest duration of symptoms in this study was 6 hour(torsion testis) & longest duration was one month(fourniere gangrene). In the study conducted by Thorsteinn, the

shortest duration of symptoms was 3 hour and the longest was 21 days. The average duration of pain from onset till presentation in case of epididymo-orchitis was 5.48 days where as it was 4 days in a study conducted by Ricardo et al.[12] The average duration of symptoms from onset till presentation in case of Torsion testis was 29 hour in our study. The average duration of symptoms from onset till presentation in case of Fournier's gangrene was 11.44 days in our study.

Predisposing Factors:
In our study there was history of trauma in 10 cases of torsion testis, in 3 cases of haematocele and in 4 cases of epididymo-orchitis. There was history of urinary symptoms in 15 cases of epididymis- orchitis, 2 case of pyocele and 5 cases of scrotal abscess. There was history of similar complaints in the past in 4 cases with epididymo-orchitis and 4 cases of epididymitis and 4 cases of orchitis, Also there was history of exposure to STD in cases of epididymo-orchitis. 46.66 % case were idiopathic.

In study conducted by Ricardo C. Del Villar[12] of 45 cases, history of similar complaints in the past was found in 2 cases of epididymitis & in 6 cases of torsion testis. Also there was history of trauma in 7 cases of epididymitis & in 3 case of torsion testis. Dysuria were present in 7 cases of epididymitis and in 1 case of torsion. In a study conducted by Paul S Sanjay et al[13] in 2106, there was history of trauma in 6 cases of haematocele and in one case of torsion testis. There was history of urinary symptoms in 9 cases of epididymo-orchitis & in 1 case of epididymitis.

Presentation of Cases:
In our study all cases had swelling of scrotum, associated with pain at the time of presentation.73.33% patients had history of fever while 24.44% patients had history of burning micturation. Eleven patient had difficulty in passing urine, 11 patient had history of pain in abdomen associated with pain in scrotum and vomiting Fever was present in 82.76% cases of epididymo-orchitis and 66.66% cases of Fournier's gangrene. Urinary symptoms was found in 62.8% cases of epididymo-orchitis.

In a study conducted by kumar Rahul et al[14] of 50 cases in 2020 History of trauma was present in 3 cases of haematocele and in 1 case epididymo-orchitis, Pain was present in all cases and swelling was present in 47 cases (97%), Fever was seen in 22(44%) patients while urinary symptoms were seen in 12(24%) patients. urinary symptoms were most commonly seen in the patients of epididymo-orchitis and Fournier's gangrene

Distributaion of Symptoms:
In our study of 90 cases, it was observed that acute scrotal swelling was common on right side occuring for 47.77% case as compared to left side (32.22%) Bilateral swelling were found in 20.00% of cases.

In a study conducted by kumar Rahul et al in 2020 it was observed that acute scrotal presented in Right side in 19 cases (38%), in left side in 18 cases (36%), whereas in 13 cases (26%) presented in bilateral.

Treatment: In our study

Conservative treatment :
In this series of 90 cases, 48 cases (43.2%) were managed conservatively. 29 cases of epididymo-orchitis, 4 cases of orchitis, 4 case of epididymitis, 2 cases of pyocele, and 9 case of acute scrotal edema were treated conservatively with rest, scrotal support, antibiotics and analgesics. Conservative treatment was given for 7 days to 21 days.

Surgical Treatment :
- Incision and drainage of scrotal abscess was carried out in all cases. Scrotal exploration with drainage of testicular abscess was done in 2 case.
- Out of 9 cases of Fourneir's gangrene, only debridement was carried out in 5 patients. Multiple debridement followed by secondary suturing in 4 cases.
- Scrotal exploration with evacuation of haematoma and repair of ruptured testis was carried out in 1 patients. Orchidectomy was required in 2 cases of haematocele.
- Out of 16 cases of torsion testis, orchidectomy of affected side with contralateral orchidopexy done in 9 cases and Detorsion of affected side with bilateral orchidopexy done in 7 cases.

Results of Treatment :
Patients treated conservatively responded well with complete recovery. In surgically treated patients, post operative recovery was uneventful in 32 cases while 4 cases developed wound infection as a complication. 1 patient of Fourniere gangrene expired on the same day of operation due to septicaemia. 5 patient left the hospital against medical advice.

The average hospital stay in patients with conservative treatment was 7.31 days. The average hospital stay in patients with torsion testis is 4.93 days . Patients with Fourneir's gangrene, the average hospital stay was 24 days. In other cases treated surgically, the average hospital stay was 9.69 days.

Follow up :
All patients were followed up for period of one month to six months. None of the patient developed complications.

CONCLUSION
Acute scrotal swellings are common in younger individuals with variable symptomatology. Such conditions presenting to emergency department needs careful examination, proper evaluation and prompt treatment.
- This is an observational study comprising of 90 cases of acute scrotum admitted at Goverment Medical College and associated Hospitals Kota, Rajasthan, during the period of Feb 2021 to Dec. 2022.
- Acute epididymo-orchitis was the commonest cause followed by torsion of testis, scrotal abscess and fourniere gangrene
- Most common age group involved was 21-30yrs followed by 11-20yrs.
- Acute scrotal swelling were found to be more common in people who were subjected to strenuous work involing manual labourer, farmer, coolie.
- Majority of the patients presented with complaints for about 1-7 days.
- Most common predisposing factor for Acute scrotum was Idiopathic followed by urinary symptoms and trauma
- Pain and swelling in the scrotum were the commonest presenting symptoms followed by fever and urinary symptoms.
- Majority of the patients had right sided involvement.
- Conservative management was followed in 43.22% patients while the rest required surgical exploration.
- Torsion of testis is an important differential diagnosis in case of an acute scrotum which requires emergency scrotal exploration.
- Any young patient presenting with acute scrotum, torsion of testis must be considered and evaluated.
- All the cases of acute scrotum must be subjected for Complete blood count, Urine routine examination and Color Doppler study of the scrotum
- In patients with torsion testis, presenting within 6 hours of onset of symptoms, testis can be salvaged.
- The testicular torsion was common in our study. The rare acute conditions like scrotal fat necrosis, H S purpura, testicular tumour etc, have not been encountered in the present study. So, no remarks can be made in this respect.

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