

Acute Scrotum : A Prospective Study of the clinical presentation,differential diagnosis, and management

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Abstract

Background :Many acute scrotal conditions can present in similar way, Testicular torsion is a true surgical emergency because,the likelihood of testicular salvage decreases,as the duration of torsion increases. Other conditions that present in similar way to testicular torsion include,torsion of appendix testis,epididymo-orchitis,traumato testis, haematocele, strangulated inguinal hernia.**Aim:** To study the clinical presentation,differential diagnosis, and management of acute scrotum.**Methods :**This is a prospective study conducted for a period of 12 months and 100 patients satisfying the inclusion criteria were included in the study.**Results :**In present study,the most common condition is epididymo orchitis(35%) followed by Fournier's gangrene (30%), pyocele (16%), haematoma (10%), torsion (8%) and scrotal wall abscess(1%). Doppler vascularity was absent in all case of torsion (100%) and increased in all cases of epididymo-orchitis (100%). All cases of epididymo-orchitis were treated conservatively. All cases of Fournier's gangrene underwent debridement. 8 cases of pyocele underwent unilateral orchidectomy and 8 cases were treated by incision and drainage. 8 cases of hematoma were treated by exploration and evacuation and 2 cases were treated by orchidectomy. 6 cases of testicular torsion underwent unilateral orchidectomy and contralateral orchidopexy. 2 cases underwent bilateral orchidopexy. Scrotal wall abscess was treated by incision and drainage.**Conclusion :**The most common cause of acute scrotum was epididymo-orchitis. Early exploration is the gold standard treatment for torsion.

Keywords :Acute Scrotum, Torsion Testis, Orchidectomy, Epididymo-Orchitis

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Introduction

The occurrence of gangrene in the genitals is rare but potentially lethal[1].The Fournier's gangrene is characterized by an acute necrotizing fasciitis of an infectious origin that affects the genital, perineal and perianal regions. The infectious process leads to a thrombosis of the subcutaneous vessels resulting in skin gangrene [2].The Fournier's gangrene is a urologic urgency that needs a precocious diagnosis and aggressive treatment with the use of wide spectrum antibiotics and surgical debridement[1,3].In spite of the development of new treatment techniques, the rate of mortality of Fournier's gangrene is close to 50% [2,4].Many conditions are associated to this pathology,the main ones are diabetes, alcoholism, immunosuppression,local trauma and genitourinary infections[2] Patients presenting with acquired immunodeficiency syndrome also present a higher predisposition to the disease [2].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]." Several acute scrotal conditions can present in a similar way, testicular torsion is by far the most significant[2]. Other conditions that present in a similar way to testicular torsion include, torsion of appendix testis, epididymo-orchitis, trauma to the testis, haematocele, strangulated inguinal hernia, etc. We wanted to study the clinical presentation, differential diagnosis, and management of acute scrotum

Materials and methods

This prospective study was conducted at NMCH, Patna from December 2005 to December 2010. The study was approved by the Institutional Research and Ethical committee. After taking informed

and written consent the prospective and observational study involving all those who have developed acute scrotum was undertaken. 100 patients with acute scrotal swellings will be included in the study. At admission we recorded the data of all patients after taking informed consent and further subjected the patients for immediate needful management which include routine blood investigations and radiological investigations like USG scrotum USG doppler of scrotum and timely surgical management in patients for whom surgery is indicated. With this we evaluated the case as per protocol till the patient is discharged. All patients with complaints of acute pain and swelling in the scrotum between 13-80years of age, who were willing to participate in the study, were included in the study.Patients with painless scrotal swellings and chronic scrotal pain were excluded from the study.

Results

The present study was conducted at N.M.C.H. , Patna. 100 patients satisfying the inclusion criteria were taken for the study. The following are the results are observed in the study. In the present study most common condition is epididymo-orchitis (35 cases-35%) followed by Fournier's gangrene (30 cases-30%), pyocele (16 cases- 16%), haematoma (10 cases-10%), torsion (8 cases-8%) and scrotal wall abscess (1 case-1%). Torsion is common in younger age groups, whereas epididymo-orchitis and Fournier's gangrene are common in middle and elder age groups. Acute scrotum is common in manual laborers i.e.people who are involved in strenuous work like agricultural laborers. In the present study out of 100 patients, 65 patients are manual laborers (65%) and 35 patients (35%) have a sedentary lifestyle like students, officers, software job holders. Symptom wise pain and swelling were the presenting complaints in all the patients involved in the study. Fever was present in 64 cases (64%), burning micturition was present in 11cases(11%)and trauma in 12 cases (12%). Fever was present in all cases of pyocele, torsion,

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scrotal wall abscess (100%) and in 8 cases of hematoma (80%), 16 cases of Fournier's gangrene (53.33%) and 15 cases of epididymo-orchitis (42.85%) Burning micturition was present in 11 cases (11%). Burning micturition was present in 6 cases (20%) of Fournier's gangrene, 3 cases (18.7%) of pyocoele and 2 cases (5.7%) of epididymo-orchitis History of trauma is present in all cases of hematoma (100%) and in 2 cases of epididymo-orchitis (2%). Most of the patients of torsion and some cases of trauma presented to casualty within few hours whereas other conditions presented within 1-8 days after onset of the symptoms Fournier's gangrene was bilateral in all cases (100%). In epididymo-orchitis 17 cases were on right side, 15 on left side and in 3 cases there was bilateral involvement. In pyocoele cases 7 cases were on right side and 9 on left side. In haematoma 3 cases were on right side, 5 cases were on left side and in 2 cases bilateral involvement. Torsion was distributed equally on both sides. Out of 100 cases diabetes was predisposing factor in 17 cases. It was present in 9 cases (30%) of Fournier's gangrene, 3 cases (18.7%) of pyocoele and in 5 cases (14.28%) of epididymo-orchitis. Cremasteric reflex and Prehn's sign were

absent in all cases of testicular torsion. They were not elicited in Fournier's gangrene and scrotal wall abscess. They were present in rest of all cases. On Doppler USG vascularity was absent in all cases of torsion (100%) and increased in all cases of epididymo-orchitis (100%). Vascularity was absent in half of the cases of pyocoele (50%) and 2 cases (20%) of haematoma. In 17 cases it was normal (17%). It was not done in Fournier's gangrene as all cases were clinically obvious. All cases of epididymo-orchitis were treated conservatively with antibiotics, analgesics and scrotal support. All cases of Fournier's gangrene underwent meticulous debridement followed by secondary suturing in 8 patients and split thickness skin grafting in 22 patients. 8 cases of pyocoele underwent unilateral orchidectomy and the other 8 cases were treated by incision and drainage. 8 cases of hematoma were treated by exploration and evacuation and 2 cases were treated by orchidectomy. 6 cases of testicular torsion underwent unilateral orchidectomy and contralateral orchidopexy. 2 cases underwent bilateral orchidopexy. Scrotal wall abscess was treated by incision and drainage.

Table 1: Distribution of Cases

Diagnosis	Number	Percentage
Epididymo-orchitis	35	35
Fournier's gangrene	30	30
Pyocoele	16	16
Hematoma	10	10
Testicular torsion	8	8
Scrotal wall abscess	1	1
Total	100	100

Table 2: Age Distribution

Age Group	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall Abscess	Total
13-20	1	0	0	0	4	0	5
21-30	15	1	0	2	3	0	21
31-40	8	1	3	7	1	0	20
41-50	8	12	7	1	0	0	28
51-60	1	8	4	0	0	1	14
61-70	1	3	2	0	0	0	6
>70	1	5	0	0	0	0	6
Total	35	30	16	10	8	1	100

Table 3: Incidence Based On Occupation

Occupation	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall Abscess	Total
Manual Labourer (agricultural, coolie, driver, porter etc.)	20	23	13	6	2	1	65
Sedentary (officers, students, software, etc.)	15	7	3	4	6	0	35
Total	35	30	16	10	8	1	100

Table 4: Presenting Complaint

	Epididymo-orchitis	Fournier's	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall
Swelling	35	30	16	10	8	1

Pain	35	30	16	10	8	1
Fever	15	16	16	8	8	1
Burning Micturition	2	6	3	0	0	0
Trauma	2	0	0	10	0	0

Table 5:Duration of Symptoms

Time	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall Abscess
<6 hrs	0	0	0	0	1	0
6-23 hrs	0	0	0	2	4	0
1-2 days	21	0	2	8	3	1
3-4 days	10	19	5	0	0	0
5-6 days	3	9	5	0	0	0
>=7 days	1	2	4	0	0	0

Table 6:Distribution of Symptoms in Cases

	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall Abscess	Total
Right	17	0	7	3	4	0	31
Left	15	0	9	5	4	1	34
Bilateral	3	30	0	2	0	0	35
Total	35	30	16	10	8	1	100

Table 7: Diabetes Mellitus

	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Haematoma	Testicular Torsion	Scrotal Wall
Diabetes	5	9	3	0	0	0

Table 8:Signs in Acute Scrotum

	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Haematoma	Testicular Torsion	Scrotal Wall Abscess
Cremasteric Reflex (present)	35	Not Elicited	16	8	0	Not Elicited
Prehn's Sign (present)	35	Not Elicited	16	8	0	Not Elicited

Table 9:Vascularity of Testis on Doppler

Vascularity	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall Abscess	Total
Normal	0	0	8	8	0	1	17
Absent	0	0	8	2	8	0	18
Increased	35	0	0	0	0	0	35
Not done	0	30	0	0	0	0	30
Total	35	30	16	10	8	1	100

Table 10: Treatment Given for Different Cases

Treatment	Epididymo-orchitis	Fournier's Gangrene	Pyocoele	Hematoma	Testicular Torsion	Scrotal Wall
Conservative	35	0	0	0	0	0
Debridement	0	30	0	0	0	0
Orchidectomy u/l	0	0	8	2	0	0
Exploration and Evacuation of Haematoma	0	0	0	8	0	0
U/l Orchidectomy & u/l Orchidopexy	0	0	0	0	6	0
B/l Orchidopexy	0	0	0	0	2	0
Incision and Drainage	0	0	8	0	0	1

Discussion

In the present study most common condition is epididymo-orchitis (35 cases-35%) followed by Fournier's gangrene (30 cases- 30%), pyocoele (16 cases-16%), haematoma (10 cases-10%), torsion (8 cases-8%) and scrotal wall abscess (1 case-1%). Torsion is common in the younger age groups, epididymo-orchitis and Fournier's gangrene in middle and elder age groups respectively.

Epididymo-Orchitis

In the present study, there were total 35 cases of epididymo-orchitis of which 17 were on the right side and 15 were on the left side. There was bilateral involvement in 3 cases. 5 cases have diabetes mellitus as a predisposing factor and 2 cases have a trauma as a predisposing factor. The mean age at presentation is 36.08 years, the youngest individual is of 20 years and the eldest is 75 years. Pain, swelling is the presenting complaint in all the cases and there was fever in 15 cases and burning micturition in 2 cases. The duration of symptoms ranges from 1-7 days with a mean of 2.6 days. 5 cases showed elevation of leucocyte count. Urine albumin is present in 9 cases and urine sugar is present in traces in 4 cases. Urine microscopy showed pus cells in 10 cases. Urine culture was positive in 6 cases (4 cases- E.coli, 2 cases- Proteus). On Doppler ultrasound, there is mild to severe thickening of the epididymis and mild enlargement of the testis with increased vascularity. All cases were managed conservatively with antibiotics, analgesics and scrotal support.

Fournier's Gangrene-30 cases of Fournier's gangrene were encountered in the study. The mean age at presentation is 55.06 years with the youngest of 30 years of age and eldest of 78 years age. All cases presented with pain and swelling. In 16 cases there is fever and in 6 cases there is burning micturition. The duration of symptoms ranges from 3-7 days with a mean duration of 4.26 days. 9 patients are diabetic. In 8 cases there are traces of sugar in urine and in 11 cases there are traces of albumin. Urine microscopy showed pus cells in 10 cases and urine culture was positive in 12 cases with E.coli isolated in 8 instances and Proteus isolated in 4 cases. All cases were clinically apparent and so Doppler USG was not done. All cases were treated by debridement under spinal anaesthesia. Later secondary suturing was done in 8 cases and in 22 cases split-thickness skin grafting was done.

Pyocoele-Total 16 cases were encountered in the present study. 9 cases were on left side and 7 cases were on right side. Age group ranges from 31-67 years. Mean age at presentation is 48.06 year. Youngest age at presentation is 31 years and the eldest person is of 67 years. All cases presented with pain and swelling. All cases also have fever at presentation. 3 cases have diabetes mellitus as predisposing factor. On urine routine examination 4 cases had

traces of albumin and 3 cases had traces of sugar. On microscopic examination, pus cells were seen in 6 cases. Urine culture was positive in 11 cases. In 8 cases E.coli was isolated. In 2 cases proteus was isolated and in 1 case culture shows mixed growth. On Doppler USG 8 cases showed absent vascularity. 8 cases were treated with orchidectomy and the remaining 8 cases were treated by incision and drainage of pus.

Hematoma-In the present study, a total of 10 cases of hematoma were encountered. The age group ranges from 21-48 years. The mean age at presentation is 34.8 years. The youngest individual is of 21 years and the eldest individual is of 48 years. 5 cases were on the left side, 3 cases were on the right side and in 2 cases it is bilateral. The duration of symptoms is between 16hr-2 days. All the cases presented with pain and swelling. All cases have a history of trauma. In 6 cases the trauma is due to direct aspiration and in 4 cases there is a history of blunt trauma. In 8 cases fever is present. There is no history of bleeding diathesis in all cases. On USG colour Doppler vascularity of testis was absent in 2 cases. 8 cases were treated by exploration and evacuation of the haematoma. In 2 cases as the testis is nonviable orchidectomy along with evacuation of hematoma was done.

Testicular Torsion-In the present study, 8 cases of testicular torsion were encountered. The age group ranges from 13-35 years. The mean age at presentation is 21.87 years. The youngest individual is of 13 years and the eldest individual has 35 years. Overall younger individuals are predominantly affected by torsion. Both sides were equally involved in the present study. In 4 cases the right side is involved and in 4 cases left side is involved. All the cases presented with pain and swelling. The duration of symptoms ranges from 4 hours to 36 hours. USG colour Doppler showed the absence of vascularity in all cases. All cases were treated by emergency exploration. Testicular salvage is possible only in 2 cases. In 6 cases unilateral orchidectomy was done with contralateral orchidopexy. In 2 cases where testicular salvage is possible detorsion is done followed by bilateral orchidopexy.

Scrotal Wall Abscess-Only 1 case of scrotal wall abscess was encountered in the present study. The individual is of 54 years and left side was affected. He presented with pain, swelling, and fever. The duration of symptoms was 2 days. Total leucocyte counts were elevated. Urine culture was a positive and mixed group of organisms including E.coli, Proteus was isolated. USG colour Doppler showed normal vascularity with viable testis. Incision and drainage were done and the patient recovered well.

Conclusion

Testicular torsion and epididymo-orchitis are frequently encountered in younger individuals whereas pyocoele and

Fournier's gangrene are common in middle and older age groups [3].USG Colour Doppler should be done in all cases except in clinically obvious cases of Fournier's gangrene [4].Thorough debridement followed later by graft cover or secondary suturing is an effective treatment in case of Fournier's gangrene[5].Early exploration is the gold standard treatment for torsion[6].

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