ORIGINAL RESEARCH PAPER

General Surgery

A CROSS-SECTIONAL STUDY TO ASSESS CLINICO-EPIDEMIOLOGICAL FACTORS, DIAGNOSIS AND MANAGEMENT IN PATIENTS WITH ACUTE SCROTAL CONDITIONS

KEY WORDS:

Dr. Varsha Bijwe Professor in Department of Surgery, Dr. Panjabrao Deshmukh Memorial Medical College, Amravati

Dr. Hemant Patil* Junior resident in Department of Surgery, Dr. Panjabrao Deshmukh Memorial Medical College, Amravati *Corresponding Author

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, blunt trauma to testis, fournier's gangrene, haematocele, pyocele, etc. **Aim:** Assessment of clinico-epidemiological factors, diagnosis and management in patients with acute scrotal conditions. Methods: This observational, cross-sectional study was conducted on 75 patients which includes all cases of acute scrotal conditions within age group of 5 years to 70 years presenting to surgery OPD or casualty and getting admitted in a tertiary care centre in eastern part of Maharashtra during the period. **Results:** In our study acute epididymo-orchitis (46.7%) was the commonest cause of acute scrotal pathology followed by Fourneir's gangrene (24%). Incidence of scrotal cellulitis, pyocele, torsion testis, haematocele, were 9.3%, 8%, 6.7%, 2.7% respectively. One case each of testicular abscess(1.3%) and testicular tumour(1.3%) were also found. Out of 75 cases, 36 cases (48%) were managed conservatively. In Fournier's gangrene, only debridement was done in 8 cases, multiple debridement with secondary suturing was done in 5 cases, multiple debridement followed by skin grafting was done in 5 case. Scrotal exploration and drainage of testicular abscess was done in 1 case. Scrotal exploration with evacuation of hematoma was done in 2 cases of haematocele. Orchidectomy was done in total of 4 cases in which 3 cases have clinical diagnosis of testicular torsion and one case of testicular tumour. Also orchidectomy with contralateral orchidopexy was done in 2 cases of testicular torsion. Conclusion: The most common cause of acute scrotum was epididymo-orchitis which can be managed conservatively. Early exploration can salvage the testis in cases torsion of testis.

INTRODUCTION

The acute scrotum is a common presentation in casualty. It is at times associated with swelling of scrotum affecting both adults and children. "Acute scrotum1 is defined as "the acute onset of pain and/or swelling of scrotum that requires either emergency surgical intervention or specific medical therapy." The conditions that present are testicular torsion, torsion of appendix testis, epididymo-orchitis, blunt trauma to testis, fournier's gangrene, haematocele, pyocele, Henoch-scholein purpura, etc. Testicular torsion is the true surgical emergency which affects gonadal blood supply, the likelihood of testicular salvage decreases as the duration of torsion increases. The patient history and physical examination plays key role in diagnosis and often guides regarding surgical intervention required or not. Most diagnostic ones are USG, Doppler studies and radionucleotide scanning. The main objective of management of the acute scrotum is to avoid testicular loss. However, the testicular salvage is critically dependent on early surgical intervention, so the delay faced in diagnostic imaging studies may serve to extend the period of testicular ischemia and jeopardise the prospect of testicular salvage. It does not involve major expenditure with negligible surgical morbidity and also proved to be the best investigation modality as definite diagnosis can be reached in every case of exploration. Similarly, a torsion testis can present with abdominal pain, nausea, and vomiting. This suggests that scrotum cannot be looked upon as an area isolated from the rest of the body. In most of the patients it should be possible to establish a reasonably accurate diagnosis based on detailed history and physical examination combined with the appropriate use of imaging studies. Despite all the investigations, many of which are available only in few centers in India, early scrotal exploration remains to be one of the most important diagnostics as well as therapeutic modality.

MATERIALS AND METHODS

This observational, cross-sectional study was conducted on 75 patients in a tertiary care centre which includes all cases of acute scrotal conditions within age group of 5 years to 70 years presenting to surgery OPD or casualty and getting admitted in a tertiary care centre in eastern part of Maharashtra during the period between 01/01/2020 to 30/06/2021 with the follow up of 3 months. Patients presenting with painless scrotal swellings, chronic scrotal pain and open trauma to scrotum are excluded from the study. We had studied all patients presenting and getting admitted with pain and swelling in scrotum for clinico-epidemiological factors, diagnosis and management of acute scrotal conditions. We had collected data from each patient which include age, annual income, education, occupation, history (fever, pain etc.), past history, clinical parameters, laboratory parameters (pre-operative profile, LFT, KFT), Radiological examination like USG Scrotum, Doppler study of scrotum (if required), diagnosis and further management either conservatively or by emergency surgical intervention if needed. On admission detailed history was taken and thorough clinical examination of the patient was carried out. Foleys catheterization was done if needed. Emergency investigations were done. On basis of investigations the decision of managing conservatively or prompt surgical intervention in emergency cases was taken. Intra-operatively in presence of pus, sample was taken for pus culture and sensitivity. We had sent specimen for histopathological examination after an operative procedure. From data socio-economic status was determined using Modified Kuppuswamy scale on the basis of education, occupation and annual income of head of the family.[2]

For all 75 cases, routine investigations like complete blood count, urine analysis, blood glucose, were done. Urine culture and sensitivity was done for most of the cases especially who presented with urinary symptoms. Urine culture was positive in 37 cases. It was not done in 38 cases. Pus culture and sensitivity was done for infected cases. The urine examination showed presence of albumin in 21 cases. Urine sugar was present in 34 cases. The microscopic examination showed significant WBC's in 35 cases. The increase in total leucocyte count in 45 cases showing acute infection. VDRL and HIV ELISA was done in all the cases. Ultrasound scrotum was done in almost all cases except Fournier's Gangrene. On

Ultrasonography, testis was diffusely hypoechoic and swollen in case of acute epididymo-orchitis. The epididymis was swollen and hyperechoic. In case of pyocele and hematocele, the echogenicity surrounding the testis was not uniform. However, it is sometimes difficult to differentiate pyocele from hematocele sonographically. In pyocele cases there was presence of purulent collection with thickened scrotal sac. Scrotal wall found to be thickened and oedematous in cases of scrotal wall cellulitis. Special investigation like colour flow doppler was done in certain doubtful cases. Absent flow was seen in 5 cases of torsion of testis and in one case of testicular abscess.

Management:

TREATMENT	No. of cases	Percentage
A. Conservative	36	48%
B. Surgical	39	52%
a. Incision & Drainage	12	16%
b. Debridement only	08	10.67%
c. Multiple debridement with skin grafting	05	6.67%
d. Multiple debridement with secondary suturing	05	6.67%
e. Orchidectomy with orchidopexy	02	2.67%
f. Orchidectomy	04	5.34%
g. Scrotal exploration with drainage of testicular abscess	01	1.34%
h. Scrotal exploration with evacuation of hematoma	02	2.67%
Total	75	100.0%

Statistical analysis was done by using SPSS Software and chi square test was applied with 'p value < 0.005 test of significance.

RESULTS

The study consists of analysis of 75 patients presenting with acute scrotal conditions as an outpatient or inpatient basis.

Distribution of various types of acute scrotal conditions :

After analysis, patients of acute scrotal conditions were as follows.

TABLE NO.1: DISTRIBUTION OF VARIOUS TYPES OF ACUTE SCROTAL CONDITIONS

Diagnosis	No. of cases	Percentage
Epididymo-orchitis	35	46.7%
Fournier's gangrene	18	24.0%
Scrotal wall cellulitis	7	9.3%
Pyocele	6	8.0%
Torsion of testis	5	6.7%
Hematocele	2	2.7%
Testicular abscess	1	1.3%
Testicular tumour	1	1.3%
Total	75	100.0%

Incidence of age in acute scrotal conditions :

In our study maximum incidence of acute epididymo-orchitis is seen in 31-40 years age group, fournier's gangrene is seen in >50 years age group and testicular torsion is seen in <30 years of age group.

Socio-economic status :

The socio-economic status was determined using Modified Kuppuswamy scale on the basis of education, occupation and annual income of head of the family.[22]

TABLE NO.2: SOCIO-ECONOMIC STATUS

Socio-economic status (Modified Kuppuswamy scale)	No. of cases	Percentage
UPPER CLASS	2	2.7%
UPPER MIDDLE	8	10.7%
LOWER MIDDLE	31	41.3%
UPPER LOWER	23	30.7%
LOWER	11	14.7%
Total	75	100.0%

Maximum number of patients belongs to lower middle and upper lower class followed by lower and upper middle class. Diseased conditions are seen rarely in upper class families.

Duration of symptoms :

The duration of symptoms patients presented is more between 5-10 days 60%(45) followed by 1-5 days 30.7%(23). And less number of patients had presentation after 10 days. Only two patients of torsion testis were presented within 24 hrs of symptoms.

DISSCUSSIONS

In our study, clinical analysis of 75 patients of acute scrotal conditions is presented.

Incidence of various types of acute scrotal conditions :

In the present study most common condition is Epididymo-orchitis was found to be the commonest condition followed by Fournier's gangrene, scrotal cellulitis, pyocele and hematocele. Each one case of testicular abscess and testicular tumour were also encountered. Paul Sanjay et al.3 studied acute epididymo-orchitis 30%(15) was the commonest cause of acute scrotal pathology followed by Fourneir's gangrene 24%(12). Incidence of haematocele, epididymitis, scrotal cellulitis, pyocele were 12% (06), 10% (05), 08% (04), 06% (03) respectively. Two cases (04%) of torsion testis were also found. Narayan R. et al.4 analysed epididymo- orchitis (35)35% followed by Fournier's gangrene (30)30%, pyocele(16)16%, haematoma(10)10%, torsion of testis(08)08% and scrotal wall abscess(01)01%.

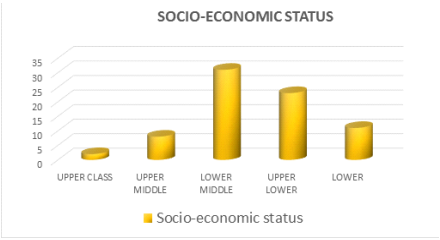
Incidence of age in acute scrotal conditions :

In our study incidence acute epididymo-orchitis is seen in 31-40 years age group, fournier's gangrene is seen in >50 years age group and testicular torsion is seen in <30 years of age group. In the study conducted by Paul Sanjay et al.3 the age distribution of acute epididymo-orchitis and Fournier's gangrene were maximum in the 25-35 year age group, mean age of occurrence being 33.06 years and 33.5 years respectively. And in the study conducted by Narayan R. et al.4 the age distribution of epididymo-orchitis is more among 21-30 years age group and fournier's gangrene is seen more in 41-50 years age group. Testicular torsion is seen more commonly in younger age group from 13-25 years.

Socio-economic status:

I didn't found any literature mentioning about socio-economic status of the patients, but many of the literature has mentioned about the occupations of the patients. The socio-economic status was determined using Modified Kuppuswamy scale on the basis of education, occupation and annual income of head of the family. In our study, maximum number of patients belonged to lower middle and upper lower class followed by lower and upper middle class. Most common were farmers and few were labourers. Diseased conditions are seen rarely in upper class families. One of the parameter of Modified Kuppuswamy scale is occupation and it is mentioned in some literatures. A.V. Ingale et al.5 studied that acute scrotal swellings were found to be more common in people who were subjected to strenuous work involving manual labour like farmers and laborers. In the series of 100 cases, 62 cases were manual laborers. Only 36 cases were sedentary workers such as students, clerks etc. Paul Sanjay et al.3 concluded that out of

50 cases, 64% (32) were manual labourers and 36 % (18) were sedentary workers such as students, clerks etc. Narayan et al.4 found out that acute scrotum is common in manual laborers i.e., people who are involved in strenuous work like agricultural laborers. In this study out of 100 patients, 65 patients are manual laborers (65%) and 35 patients (35%) have sedentary lifestyle like students, officers, software job holders.



Duration of symptoms :

In our study regarding the duration of symptoms, patients presented is more between 5-10 days 60%(45) followed by 1-5 days 30.7%(23). And less number of patients had presentation after 10 days. Only two patients of torsion testis presented within 24 hrs of symptoms. A.V. Ingale et al.5 explained that the shortest symptoms in this study was 10 hours and longest duration was 1 week. The average duration of pain from onset till presentation in case of epididymo-orchitis was 3 days. The average duration of symptoms from onset till presentation in case of Fournier's gangrene was 5 days. Paul Sanjay et al.[3] found that the majority of patients presented late and in 20(40%) cases duration of symptoms were more than 72 hours at the time of presentation. Only 12 %(6) cases presented within 24 hours of symptoms. Narayan et al.4 found that 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.

CONCLUSION

Acute scrotal swellings are common in younger and middle age individuals with variable symptomatology. The primary objective of management of acute scrotum is to avoid testicular loss. Surgical exploration undertaken without delay maximizes chances of testicular salvage. The commonest cause for acute scrotum in our study is epididymo-orchitis followed by Fournier's gangrene. Presence of scrotal pain is the most common feature followed by swelling. Presence of fever, urinary symptoms, similar complaints in the past is an important predisposing factor for acute scrotum. However, in doubtful cases of acute scrotal conditions patients must be subjected for USG Doppler of the scrotum, USG scrotum only is not always very much conclusive to the final diagnosis but is supportive to clinical diagnosis. Conservative treatment with magnesium sulphate dressing, scrotal support, antibiotics and analgesics is more effective in case of epididymo-orchitis and in some cases of scrotal wall cellulitis. Emergency surgical exploration proved to be the best in case of Torsion of testis, Fournier's gangrene, pyocele, and hematocele. It doesn't involve major expenditure with negligible surgical morbidity, and also proved to be the best investigation modality as definite diagnosis can be reached in every case with 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. In patients with torsion testis, presenting within 6 hours of onset of symptoms, testis can be salvaged.

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