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Research Paper

Observational Study of Fournier's Gangrene in Rural Hospital

Medical Science

KEYWORDS : Fournier's Gangrene, Predisposing Factor, Testicular, Scrotum

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ABSTRACT

Background: Fournier's gangrene is an infective necrotizing fasciitis of scrotum & perineum associated with high morbidity and mortality. Predisposing factors include various states of immunosuppression, such as diabetes mellitus, chronic alcoholism, acquired immune deficiency syndrome, and malnutrition.

Objective: To study different clinical and prognostic parameters in relation to presentation and management of Fournier's gangrene in a rural set up.

Methods: Retrospective observational study .Detailed record of each patient's data was obtained from institution's record section and case papers. Written informed consent of procedures was checked from each patient for necessary surgical procedure

Results: In this study we found boil over genital region as cause in 5 patients, trauma in 2, periurethral conditions such as periurethral abscess and long standing indwelling catheter in 5 patients, perianal conditions in 8 patients. we found associated predisposing comorbid conditions such as DM in 11 patients, alcoholism in 10 patients, HIV in 1 and other like COPD , HTN, Steroid abuse etc. were 7 patients. study we had 6 patients with scrotal involvement, 8 patients with both scrotum & inguinal region,4 patients with Scrotum & perineum involvement. While 5 patients had Scrotum, perineum, inguinal & abdomen involved. 3 patients had scrotum, perineum & inguinal involvement. Of all 28 patients, 11 patients had polymicrobial involvement while Staphylococci & Klebsiella were found in 4 and 5 patients respectively. 3 patients had Streptococcal infection, 1 had clostridiumand 3 had E. Coliinfection. Among all, 8 patients required 1 debridement, 11 patients required 2 debridement's, 8 patients required 3 debridement's& only 1 patient required 4 times debridement. Of 28 patients 7 were managed with secondary suturing and 6 required testicular reposition with creation of pouch in thigh and inguinal region and 14 patients required critical care management in surgical ICU. Average Total hospital stay for each patient was about 31.5 days ranging from 21 to 63 days. Out of 28 patients one patient died after 2 days of admission.

Conclusion: The Fournier's gangrene is sever surgical emergency which presents in adult age group more common in males. Surgical debridement, IV antibiotic and secondary reconstructive procedure involves the treatment strategy.

INTRODUCTION-

Fournier's gangrene is an infective necrotizing fasciitis of scrotum & perineum associated with high morbidity and mortality. Predisposing factors include various states of immunosuppression, such as diabetes mellitus, chronic alcoholism, acquired immune deficiency syndrome, and malnutrition[1]. The pathology was first described in 1883 by Jean Alfred Fournier who presented five male diabetic patients with fulminating gangrene of the genitalia. Fournier's gangrene is caused by normal skin commensals of the perineum and genitalia that act synergistically to cause infection and invade the tissue, causing micro-thrombosis of the small subcutaneous vessels leading to ischemia. Various cytotoxic agents are released at the gangrene site and cause the progressive destruction of local tissue. Therefore, good management is based on aggressive debridement, broad spectrum antibiotic therapy, and intensive supportive care. The cause of infection is identifiable in 95% of cases, mainly arising from anorectal, genito-urinary and cutaneous sources[2].

Predisposing factors such as diabetes and Immunosuppression lead to vascular disease and suppressed immunity that increase susceptibility to polymicrobial Infection. Diagnosis is based on clinical signs and physical examination[3]. The mortality rate for FG is still high, at 20–50% in most contemporary series. Fortunately, it is a rare condition, with a reported incidence of 1.6/100,000 males with peak incidence in the 5th and 6th decades. Fournier's gangrene was originally described as scrotal gangrene in young males. Today, it is generally accepted as synergistic necrotizing fasciitis of perineal, genital, or perianal regions and the epidemiologic data have changed. This polymicrobial infection, which is caused by both aerobic and anaerobic bacteria, leads to thrombosis of subcutaneous and cutaneous blood vessels, resulting in severe gangrene of the overlying skin[4,5] .

OBJECTIVES:

To study different clinical and prognostic parameters in relation to presentation and management of Fournier's gangrene in a rural set up.

MATERIAL AND METHODS:

Necessary approval was obtained from institutional ethics committee at initiation of the study. Detailed record of each patient's data was obtained from institution's record section and case papers. Written informed consent of procedures was checked from each patient for necessary surgical procedure. All patients data from Jan 2012 to Dec 2014 admitted in SRTR GMC & Rural hospital Ambajogai Dist.- Beed, Maharashtra ,India.

Study design-

Retrospective observational study

Sample size- 28

Study method-

All patients admitted and treated in SRTR GMC AND RURAL HOSPITAL, AMBAJOGAI DIST-BEED in department of general surgery during period of JAN 2012 to DEC 2014. Data regarding patients name age, sex, chief complaints, period since complaints, preadmission treatment taken, any predisposing and

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risk factor , vitals at time of admission , post admission surgeries required and their details, days of post-operative intensive care therapy required , type of and days of IV antibiotics required , post-operative surface area involved, reconstructive procedures done and total hospital stay, final outcome was reviewed from the records.

Inclusion criteria-

1. Patients with necrotizing fasciitis with involvement of scrotum, perineum , inguinoscrotal and /or abdominal skin.
2. Patients with above presentation admitted and surgically treated in above mentioned hospital.
3. Patients who were willing and ready to give written informed consent for the surgical procedures required for the procedure.
4. Patients whose all required data was available in the record.

Exclusion criteria-

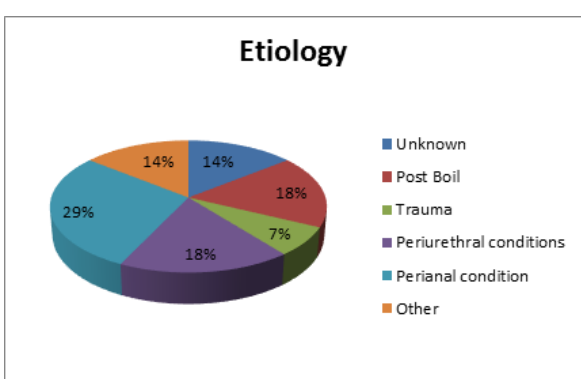
1. Patients with perineal abscess with no signs of necrotizing fasciitis.
2. Patients not ready for surgery required.
3. Patients who left the hospital and the study before final outcome.
4. Patients whose records were incomplete were excluded from study.

RESULTS AND OBSERVATIONS:

1. In our study mean age of presentation of patients with Fournier's gangrene was 52.6 years with range from 23 years to 70 years.
2. In our study total 26(92.85%) male and 2(7.15%) female patients presented with fourniers gangrene.

3 ETIOLOGY-

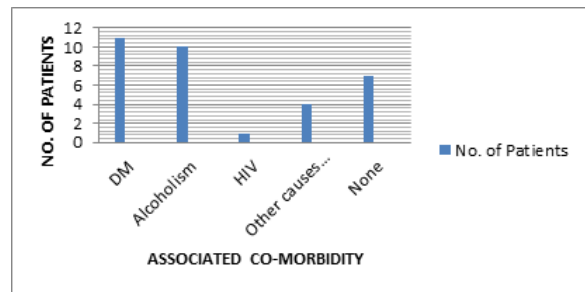
Etiology	Unknown	Post-boil	trauma	Peri-urethral conditions	Peri-anal condition	Others
No. of patients	4	5	2	5	8	4



In this study we found boil over genital region as cause in 5 patients, trauma in 2, periurethral conditions such as periurethral abscess and long standing indwelling catheter in 5 patients, perianal conditions in 8 patients. Other specific causes such as skin infection, hidradenitis supurativa, infected sebaceous cyst etc. in 4 patients. However in 4 patients etiological factor could not be traced and assumed to be spontaneous.

4 ASSOCIATED COMORBIDITIES

Associated morbidity	DM	alcoholism	HIV	Other	None
No. of patients	11	10	1	4	7



In our study, we found associated predisposing comorbid conditions such as DM in 11 patients, alcoholism in 10 patients, HIV in 1 and other like COPD , HTN, Steroid abuse etc. were 7 patients.

5 AREA INVOLVED

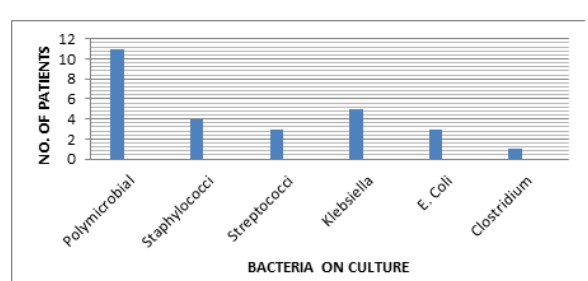
Area involved	S	S+I	S+P	S+P+I	S+P+I+A	P+I+A	I+P
No. of patients	6	8	4	3	5	1	1

S- Scrotum, I- Inguinal, P- Perineal, A- Abdomen.

In this study we had 6 patients with scrotal involvement, 8 patients with both scrotum & inguinal region,4 patients with Scrotum & perineum involvement. While 5 patients had Scrotum, perineum, inguinal & abdomen involved. 3 patients had scrotum, perineum & inguinal involvement.

6 ORGANISM INVOLVED

Organism involved	Polymicrobial	Staphylococci	Streptococci	Klebsiella	E.coli	Clostridium
No. of patients	11	4	3	5	3	1

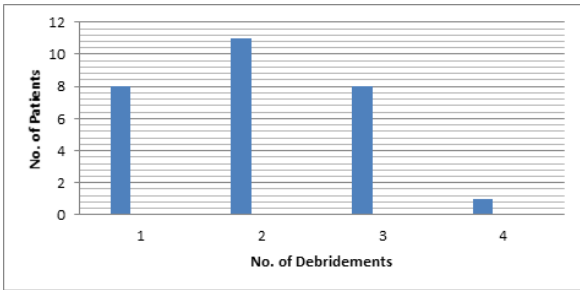


Of all 28 patients 11 patients had polymicrobial involvement while Staphylococci & Klebsiella were found in 4 and 5 patients respectively. 3 patients had Streptococcal infection, 1 patient had clostridium and 3 patients had E. Coliinfection.

7 NO. OF DEBRIDMENTS

No. of debridement's	1	2	3	4
No. of patients	8	11	8	1

Average- 2.07



Of all patients the average debridement required for healing of wound for each patients were 2.07. Of 28 patients 8 patients required 1 debridement, 11 patients required 2 debridement's, 8 patients required 3 debridement's & only 1 patient required 4 times debridement.

8 Septicemic shock

Septicemic shock at presentation	Yes	No
No. of patients	11	17

Out of 28 patients included in study 11 patients were in septicemic shock. For study purpose patients with systolic blood pressure less than 100 mmHg were considered to be in shock.

9. RECONSTRUCTIVE PROCEDURES DONE

Reconstructive procedures done	SS	TR	SS+TR	SS+SSG	TR+SSG	SS+TR+SSG
No. of patients	7	6	5	3	4	3

Of 28 patients 7 were managed with secondary suturing and 6 required testicular reposition with creation of pouch in thigh and inguinal region. While rest of the patients required multiple procedures with combination of secondary suturing, testicular reposition and split skin grafting.

10. SS ICU STAY

SS- ICU STAY Required	YES	NO
NO. patients	14	14

Of 28 patients, 14 patients required critical care management in surgical ICU. Average Total hospital stay for each patient was about 31.5 days ranging from 21 to 63 days. Out of 28 patients one patient died after 2 days of admission(3.5%).

DISCUSSION:

The average age of the patients was 47.5 years, in most published series from 40.9 to 61.7 years . In our study mean age of presentation of patients with Fournier's gangrene was 52.6. In the literature containing female patients, the ratio of females to males varied between1:25 and 1:49.11,19-25 In his review of 1726 cases, Eke gives a female to male ratio of 1:10.

With regard to gender, the male predominance is reported in 96%, so the female was present only in 4%. Our study matches to that of eke et al in the terms of the female to male ratio being 1:13. Czymek et al[6]., comparedmortality between male and female in a series of 38 patients(26 M vs 12 F). Authors found that mortality issignificantly higher among female (50% F vs 7.7% M,p = 0.0011). We could not confirm this result, as female gender in itself being at greater risk of death in fournier's gangrene needs further study.

In the earlier reports Fournier's gangrene was described as an idiopathic entity, but in most cases a perianal infection, urinary tract infection , local trauma or local skin condition at that site can be identified by Benjelloun et al[7]. Previously, FG was generally known as a urological disease but is now primarily a concern of general surgeons, since the most common etiology is infections of the colorectal origin. In FG of colorectal origin, infection usually progresses first to the Colle's fascia. It may then extend to the dartos fascia of the scrotum, Buck's fascia of the penis, and sometimes the Scarpa's fascia of the lower abdomen. As a result, FG causes thrombosis in the arterioles of the subcutaneous tissue and leads to necrosis of the skin, subcutaneous tissue and fascia. Stephens et al found a higher mortality in patients with FG of colorectal origin compared to other aetiologies. In our present study, perianal conditions were detected in eight (29%) of the patients of the total cases studied which thus remains the most common cause of fourniers gangrene. Our study thus correlates also with Eke's review[8] where anorectal conditions remains the foremost etiology for fournier's gangrene. Urinary tract disorders such as urethral strictures and chronic urinary infections, or cutaneous sources such as complications of elective surgical procedures or occult trauma, are also frequently associated with Fournier's gangrene as reported by Çakmak et al. In our study periuretheral conditions were the second most common etiology for fourniers gangrene.

Diabetes mellitus was the most reported co-morbid disease associated with this pathology. Some authors estimate the prevalence of DM among FG patients between 50 and 70 percent. DM remains the most common comorbid condition in our study also. Despite of being risk factor for FG and associated with a more progressive and fatal outcome (decreased phagocytic and intracellular bactericidal activity and neutrophil dysfunction), most reported studies along with our have failed to demonstrate the influence of DM onoutcomes in FG. Alcoholism and diabetes mellitus are the most common predisposing factors inwestern countries with rates of 25%-50% and 10%-60%, respectively, as do our study. Other common predisposing factors include malignancies, immuno-compromised status of hypertension, cardiac diseases, neurologic deficit, obesity, smoking, drug addiction, and diseases of peripheral arteries.

The most commonly isolated microorganisms are Escherichia coli, Proteus mirabilis, Klebsiella pneumoniae, Bacteroides species, Streptococci, Staphylococci, Pepto-streptococcus species, Clostridia, and Pseudomonas aeruginosa. Our results are however different from those in the literature in polymicrobial infection being the most common isolate form the wounds followed by kliebsiella, staphallococcus and ecoli. However the patient cohort being small the findings cannot be generalized and needs a study on large scale to establish the suggested findings or to rule out them.

In this study we had 6 patients with scrotal involvement, 8 patients with both scrotum & inguinal region, 4 patients with Scrotum & perineum involvement. While 5 patients had Scrotum, perineum, inguinal & abdomen involved. 3 patients had scrotum, perineum & inguinal involvement.Of all patients the average debridement required for healing of wound for each patients were 2.07. Of 28 patients 8 patients required 1 debridement, 11 patients required 2 debridement's, 8 patients required 3 debridement's & only 1 patient required 4 times debridement. El Bachir Benjelloun et al[7], in there study of 50 patients found average of 2.5 debridement required for patients ranging from 1 to 10. Out of 28 patients included in study 11 patients were in septicemic shock. For study purpose patients with systolic blood pressure less than 100 mmHg were considered to be in shock. Average Total hospital stay for each patient was about 31.5 days ranging from 21 to 63 days. Out of 28 patients one patient died after 2 days of admission(3.5%).In the study of 50 patients by El Bachir

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Benjelloun et al[7] , The median hospitalization time (MHT) for the surviving patients was 26.00 days.

CONCLUSION

The Fournier's gangrene is sever surgical emergency which presents in adult age group more common in males. It extends to scrotum, perineum, inguinal region and abdominal wall in sever cases. Surgical debridement, IV antibiotic and secondary reconstructive procedure involves the treatment strategy.

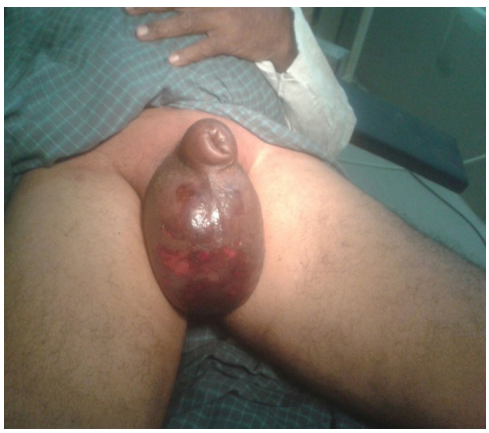

Fig Shows: Fourniers Gangrene involving scrotum

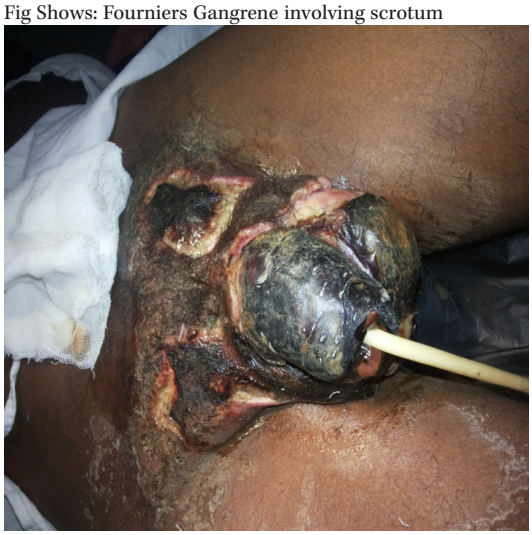

Fig Shows: Fourniers Gangrene involving scrotum, Perineum and inguinal region

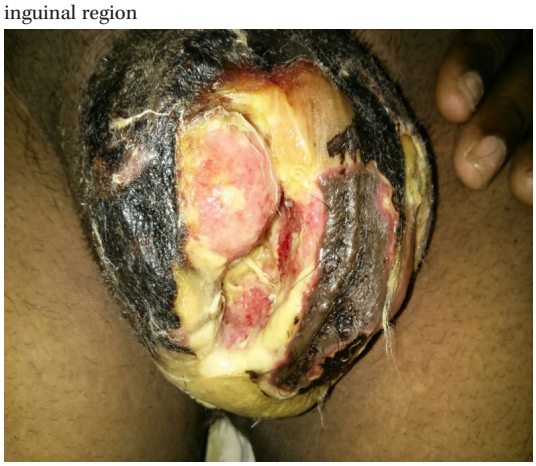

Fig Shows: Fourniers Gangrene involving only scrotum

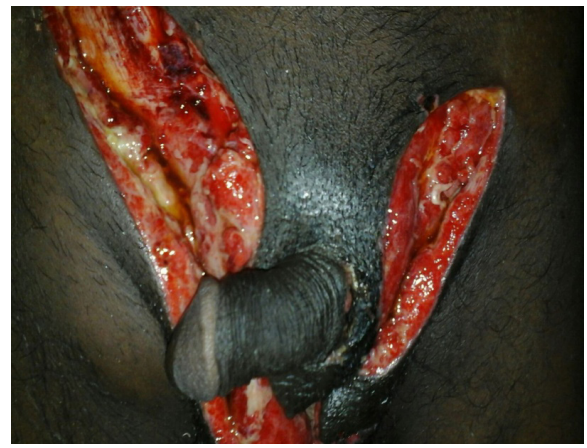

Fig Shows: Post debridement wound of fourniers gangrene involving scrotum and inguinal region

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