

Prospective Study of Fourniers Gangrene: Clinical Presentation and Outcome

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Abstract

Introduction: Fournier's gangrene (FG) is a fulminant necrotizing fasciitis of the perineum and genitalia. It has a high morbidity and mortality. This disease is a result of infections of the Urogenital tract, Anorectal area, and Genital skin, appearing usually in immunocompromised patients and patients with co morbidities such as Diabetes, Obesity, and malignant neoplasm. The aim is to study the Etiological factors, Microbiological factors, Clinical presentation, Management modalities and Outcome of patients of Fournier's Gangrene.

Materials And Methods: This was a prospective study conducted from April 2023 to September 2024 at Khaja Bandanawaz Teaching and General Hospital, Kalaburagi, Karnataka, India. Patients presenting to OPD and ED with clinical diagnosis of Fournier's Gangrene and agreeing for follow up was included in the study.

Results: A total of 35 patients were included in the study. The mean age of presentation was 44.94±10.34 years. The male to female ratio was 33:2. The source of the infection was most commonly Urogenital followed by Anorectal. Diabetes mellitus was the most common co morbid factor associated. Most commonly the disease was Aerobic and Polymicrobial with Escherichia Coli being the commonest grown organism. The average number of wound debridement required was 2.74±1.02. Primary closure of the scrotal skin defect was the most common reconstructive procedure performed. Mortality associated with the disease in our series was 8.5%.

Conclusion: Fournier's Gangrene is very severe and prevalent disease in Indian Population. Early aggressive management decreases mortality and morbidity rates and improves the clinical outcome in patients. Extensive raw area following the infection and wound debridement can be managed by simple reconstructive procedures with good outcome.

Keywords: Fournier's Gangrene, Necrotizing Fasciitis, Reconstructive Procedure.

Abbreviations: FG- Fournier's Gangrene

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Introduction

A urologic emergency with a potentially high mortality rate is Fournier gangrene. The disease was named after Jean-Alfred Fournier, a French Venereologist who described it. It is a quite uncommon illness that is more prevalent in people from lower socioeconomic backgrounds. It has a mortality rate of 15% to 50%. It is a polymicrobial necrotising fasciitis of the Vaginal, Perianal, and Perineal areas that progress rapidly[1,2]. Majority of cases are seen between 3rd-6th decades of life. Males are predominantly affected. The incidence of Fournier's Gangrene is about 1.6 per 100000 population. People with diabetes and other immunocompromised conditions are more readily effected with the disease. The synergistic action of aerobic and anaerobic organisms typically results in a polymicrobial illness[3,4].

The organisms produce Collagenase and Hyaluronidase enzymes that work in conjunction to destroy fascial planes. The Anorectum, Urogenital tract, or Genital skin are frequently the sites of infection for the illness process. In addition to adjuvant medical resuscitation, suitable antibiotics, and treatment of pre-existing co-morbid diseases, early and aggressive surgical debridement remains the primary treatment. Wider deformities of the Vaginal, Perineal, and Abdominal walls requires reconstructive procedures. The aim of reconstruction in Fournier defects is to protect the testes, maintain testicular function, and produce aesthetically pleasing results with the least amount of morbidity and mortality possible[5].

In this study we intend to study Etiological factors, Microbiological factors, Clinical presentation,

Management modalities and Outcome of patient of Fournier's Gangrene.

Material and Methods

This prospective study was carried out at Khaja Bandanawaz Teaching and General Hospital in Kalaburagi, Karnataka, India, between April 2023 and September 2024. The study consisted of patients who presented to the emergency room and outpatient department with a clinical diagnosis of FG. The study was started after receiving approval from the institution's ethical committee. Prior to enrolment, written informed consent was sought from each patient when they were admitted. The study included those who presented with clinical features of Fournier's Gangrene and agreeing for follow up. Scrotal discomfort, erythema and cellulitis, fever, and signs of systemic toxicity are some of the clinical features of Fournier's Gangrene. The clinical examinations and histopathological findings, was used to make the diagnosis.

Stabilisation and vigorous management was undertaken before taking up for operative management. Detailed history including the co morbidities was taken. A complete blood count, Serum creatinine level, Blood urea nitrogen, blood glucose levels were performed. Ultrasonography of abdomen and pelvis, Computed tomography (selective cases) was performed in order to identify degree of illness and infectious origin. All patients underwent pus for culture and sensitivity testing. IV Fluids were chosen according to patient status and all patients were empirically started on third generation Cephalosporins and Metronidazole and antibiotics were escalated based on culture and sensitivity report. Patients were taken up for surgical management in the form of surgical debridement, primary closure of defect, skin grafting upon stabilisation. The number of times of debridement varied for different patients depending upon the amount of necrotic tissue. Patients were followed up till discharge from the hospital and the results were

reported. For data analysis descriptive statistics was used.

Results

Thirty-five patients were treated in the Khaja Bandanawaz Teaching and General Hospital during the specified study period. Highest numbers of patients were from fourth and fifth decade of life. Mean age of presentation was 44.94 ± 10.34 years. The minimum age of the patient in our series was 25 years and the maximum age was 70 years. The mean age of presentation among deceased was 53 ± 4.24 years and the mean age among survivors was 42.07 ± 8.4 years. The male to female ratio was 33:2. There were no patients in the pediatric age group. The source of the disease was most commonly Urogenital (65.7%), followed by Anorectal (34.2%) (Table 1). Diabetes mellitus 21/35 (60%) was the most common co-morbid factor present followed by smoking 10/35 (28.5%), Alcoholics 8/35 (22.8%), combined co-morbid factors 9/35 (25.7%) (Table 2). One of the two females in our study had history of Diabetes Mellitus with recurrent cellulitis of groin. Most commonly the disease was Aerobic in 21 patients (60%) followed by Polymicrobial in 10 patients (28.5%). *Escherichia coli* was most common isolated organism in 21 patients (60%). The bacteroides was the most commonly isolated anaerobe being isolated in 4 patients (11.4%) (Table 3). In 20 out of 35 cases the disease was limited to the genitalia (57.1%). In addition to genitalia, perineum was also involved in 14 out of 35 (40%) patients. Genitalia, perineum and anterior abdominal wall were involved in 4 out of 35 (11.8%) patients. Multiple wound debridement were required in 10 patients. The average number of wound debridement needed per patient was 2.70 ± 1.02 . Single wound debridement was sufficient in 5 patients. 10 of 35 patients required a maximum of 4 wound debridements. Primary closure of defect after debridement was done in 10 patients (29%), and skin grafting in 5 patients (15%). The Mortality associated with our study was 8.5%.

Table 1: Source of infection

Source of infection	Number of patients (n)	Percentage of patients (%)
Urogenital	23	65.7
Anorectal	12	34.2

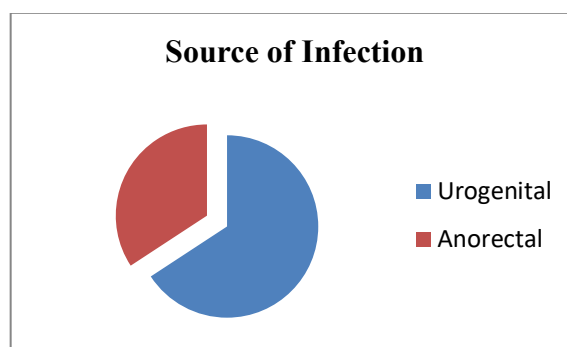


Table 2: Co morbidities

Comorbid conditions	Number of patients (n)	Percentage of patients (%)
Diabetes Mellitus	21	60
Chronic Alcoholism	10	28.5
Smoking	8	22.8
Diabetes+ Smoking	5	14.2
Diabetes + Alcohol	4	11.4

Table 3: Composition of isolated organism

Isolated microbe	Number of patients (n)	Percentage of patients (%)
Escherichia Coli	21	60
Streptococcus	8	22.8
Klebsiella	9	25.71
Pseudomonas	8	22.8
Staphylococcus	9	25.71
Proteus	6	17.1
Bacteroides	4	11.4

Table 4: Comparison of results with other studies

Sl No.	Parameters	Results (Our Study)	Results (Other Studies)	Reference
	Age of presentation	25-70 years	24-85 years	Morpurgo E et al ²
	No of males	32	57	Ersay A et al ²
	No of Females	2	23	
	Clinical presentation	Pain -29% Swelling-50% Pain and swelling-21%	Pain – 37% Swelling -40% Pain and swelling – 23%	Korkut M et al ⁴
	Cause for Fourniers gangrene	Urogenital-23 (67%) Anorectal-11(33%)	Urogenital - 45(56%) Anorectal -32(40%) Skin lesions -3(4%)	Korkut M et al ⁴
	Presence of DM	20 (58%)	46(57%)	Yanar H et al ³
	Organism isolated	Aerobes-24(70%) Anaerobes- 4 (13%) Polymicrobial- 6(17%)	Aerobes – 14(18%) Anaerobic -0 Polymicrobial-24 (30%) Negative culture- 6	Eke N et al ⁶
	Average number of times debridement	3	3	Chawla SN et al ⁸
	Other modalities of treatment	Secondary suturing-10(29%) Skin grafting-5(15%)	Secondary suturing Fecal diversion-18 (22%) Urinary diversion-4(5%)	Dahm P et al ¹⁰
	Mean hospital stay	2 weeks	2-7 weeks	Atakan I et al ¹ .
	Mortality rate	8.5%	21%	Yilmazlar T et al ⁷

Figure:**Figure 1****Figure 2****Figure 3****Figure 4**

Figure: figure 1 depicts clinical presentation of patient with Fournier's gangrene. Figure 2 depicts intraoperative finding in case of Fournier's Gangrene. Figure 3 depicts post debridement state of issue of Fournier's Gangrene. Figure 4 depicts primary closure following debridement.

Discussion

The basis of successful therapy in Fournier gangrene is early recognition and the rapid initiation of surgical debridement. Accompanied by hemodynamic resuscitation, broad-spectrum antibiotics. Imaging and laboratory testing should not delay the start of surgery in obvious or critical cases. It is a relatively uncommon disease. The real incidence of the disease is unknown. In a large population-based study FG represented less than 0.02% of hospital admissions. Poor socioeconomic status contributes to the development of FG. Most cases occur in the age group of 30-60 years. The mean age of the patients in our series was 44.94 ± 10.34 years. Male to female ratio in our study was 33:2, while it was 57:23 in other study[10]. Although paediatric population can be affected [10] there were no paediatric cases in our study. Urogenital region was most commonly effected in 23 patients (65.7%) followed by Anorectal region in 12 patients (34.2%) (Figure 1) and it is compared

with other study (Table 4), Diabetes mellitus was most common co morbid factor in 21 patients (60%) followed by smoking in 10 patients (28.5%) and it is comparable with other study (Table 4). In our present study, Aerobic infection was found in 60% followed by polymicrobial in 28.5% (Table 4) which was compared with other study. The average numbers of debridement needed were 2.7 ± 1.02 /patient. The mean hospital stay in our study was 2-3 weeks on average while it ranged from 2-7 weeks in the compared study (Table 4). The mortality rate is lower than that of others forms of necrotizing fasciitis. It is probably because, the scrotal area allows for a relatively more efficient surgical debridement. The mortality rate in our study was 8.5% and 21% in the compared study (Table 4).

Conclusions

Fournier's Gangrene is very severe and prevalent disease in Indian Population. Early aggressive management decreases mortality and morbidity rates and improves the clinical outcome in patients. Extensive raw area following the infection and wound debridement can be managed by simple reconstructive procedures with good outcome

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