

FOURNIER'S GANGRENE THE APPROACH SHOULD BE BLOODY, BOLD AND RESOLUTE

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ABSTRACT

Objective: To determine the role of aggressive surgical debridement on the mortality and morbidity associated with Fournier's gangrene.

Study design: This is a retrospective study.

Place and Duration: Surgical Department of Khyber Teaching Hospital, Peshawar from June 2007 to June 2011.

Patients and Methods: During the four years duration of this study an overall 37 cases with Fournier's gangrene were studied. All of them underwent extensive surgical debridement in operation theatre along with minor debridements and dressings in ward. The patient's age, the site, extent and origin of the ulcers were documented. The patient's social class, nutritional status, associated illness and constitutional disturbance were also investigated. Blood was taken for fasting sugar, hemoglobin, white cell total and differential counts. Broad spectrum antibiotics were started immediately.

Results: The mean age of presentation was 41.2 (33-72 years). Most patients presented with prodromal symptoms of fever and lethargy, which was present for 2-7 days with increasing genital pain and tenderness and edema 12 patients presented with obvious gangrene of a portion of the genitalia with purulent drainage from wounds. Aggressive surgical debridement was done in all cases. 23 patients were operated within 24 hours of admission and 5 patients were operated within 3 to 4 days, in 7 patients the delay was due to patients seeking late help from hospital. Broad spectrum antibiotics were started immediately which were changed according to C/S report within 24-48 hours. The mortality was 16 out of 37.

Conclusion: Fournier's gangrene is a very lethal disease even under optimal conditions and the best approach towards it is aggressive surgical debridement with proper antibiotics and nutritional support.

INTRODUCTION

In 1764, Baurienne originally described an idiopathic, rapidly progressive soft-tissue necrotizing process that led to gangrene of the male genitalia¹. However Jean-Alfred Fournier, a Parisian venereologist presented his papers "Gangrene foudroyant de la verge" (violent gangrene of the penis) in 1883 is more commonly associated with this disease, which bears his name². Fournier's gangrene is synergistic necrotizing fasciitis — a suppurative bacterial infection of the perineal, rectal, or genital area which leads to thrombosis of small subcutaneous vessels along with infection, resulting in the development of gangrene of the overlying skin³. Since Fournier's description, subsequent experience has shown that, in most cases, Fournier gangrene has an identifiable cause and that it frequently manifests more indolently³. Trauma to the genitalia continues to be a frequently recognized vector for the introduction of bacteria that initiate the infectious process⁴.

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Most authorities believe the poly microbial nature of Fournier gangrene is necessary to create the synergy of enzyme production that promotes rapid multiplication and spread of the infection⁵. Culture from the wound show poly microbial infections by aerobes and anaerobes which include coliforms, klebsiella, streptococci, staphylococci, clostridia, corynebacterium and bacteroids^{5,6,7}. Fournier's gangrene has a vast heterogeneity of presentation from mild and insidious onset to rapid onset and fulminant course, the later being the most common presentation in most cases^{6,7}. Despite advances in management the mortality still remains high averaging 30 -50%^{4,6}.

PATIENTS & METHODS

This study was carried out in surgical "B" ward of Khyber Teaching Hospital for a duration of four years from June 2007 to June 2011. A total of 37 cases with Fournier's gangrene were included in this study.

Inclusion Criteria: All patients with suppurative bacterial infection of the perineal, rectal, or genital area.

Exclusion Criteria: Patients with necrotizing fasciitis of other areas.

Once Fournier's gangrene was suspected the following principles were adopted. Broad spectrum antibiotics like ampicillin-sulbactam combined with metronidazole, ticarcillin-clavulanate or piperacillin-tazobactam

and a fluoroquinolone, an amino glycoside, or a third generation cephalosporin were started immediately. Emergency aggressive and extensive debridement of all necrotic tissues (skin, subcutaneous tissues and fascia) was carried out until healthy bleeding tissue was reached. The wound was thoroughly washed with hydrogen peroxide, pyodine and saline. Excised tissues were sent for histo- pathological examination and culture. After not less than 12 hours the wound was inspected and further debridement carried out in case it was needed.

21 patients were shifted to ICU during the course of their treatment, 9 of them died in ICU and 11 were shifted back to ward once stabilized.

Daily twice dressings and necrosectomies were carried out until the wound started to granulate with no traces of necrosis. When the cultures did not isolate any organisms, procedures for closure of the wound were carried out. Delayed secondary closure was done in 11 patients, orchidectomy with delayed closure was done in 2 patient, 5 patients had split thickness skin grafting, 5 patients had medial placement of testis in thigh pouch, while 3 patient had cutaneous flap. Following discharge patients were followed for 3-6 months.

RESULTS

The mean age of presentation was 41.2 (33-72 years). Most of the patients presented late after 5 to 6 days of the initiation of symptoms, 29 (78.37%) patients presented with pain, fever, swelling and erythema of the affected area, in 17(45.94%) patients crepitus was noted on initial examination. 9 (24.32%) patients reported flu like illness before development of symptoms of skin infection, 27 (72.97%) patients reported fever associated with body aches.

Regarding predisposing conditions in our study 6 patients had diabetes mellitus, 5 patients were on dialysis, 4 patients were having cirrhosis, 4 patients had urethral strictures, 4 patients had history of perianal abscesses, 4 patient reported minor trauma to the

scrotum while shaving themselves while 1 patient had a sigmoid colostomy for a firearm injury two days ago, 1 patient had lapratomy for gangrenous gut following obstructed inguinal hernia, and in rest of the patients no cause could be found.

The age of the patients ranged from 41.2 (33-72 years), the most common age group was between 51-65 years (58%) followed by 41-50 years (22%). Low socioeconomic status was the most common associated factor (70% of the patients).

The association of the Fournier's gangrene with the possible predisposing conditions is given in Table 1. No etiological factor was found in the majority of the patients (21.62%). Among the patients in which etiology was found, diabetes (16.21%) was the most common followed by chronic renal failure (13.52%), chronic hepatic failure in 13.52% and urethral stricture (10.81%).

There were sixteen deaths in all out of which two died on the first day due to multi organs failure and while the rest died due to septicemia and uncontrolled infection two of them were having diabetes, two renal failures and one had cirrhosis. The mortality rate was 43.24%.

Aggressive surgical debridement was done in all cases. 27 patients were operated within 24 hours of admission and 7 patients were operated within 3 to 4 days, in 7 patients the delay was due to patients seeking late help from hospital. Broad spectrum antibiotics were started immediately and pus and tissues for culture and sensitivity was taken from all cases with first debridement session and antibiotics were then changed according to C/S report.

DISCUSSION

Originally, the term Fournier gangrene was used to describe idiopathic gangrene of the genitalia; however, it has also has been used to describe most soft-tissue necrotizing infections of the perineum, independent of cause¹. In a review of Fournier gangrene in 1992, Paty and coworkers calculated that approximately 500 cas-

Table 1: Predisposing factors and outcome in patients with Fournier's gangrene

Predisposing Factors	%ge	Average number of debridements	Average hospital Stay	Outcome Dead/re-covered	Number of patients
Idiopathic	21.62	4	26.57	4/8	8
Diabetes Mellitus	16.21	6	58.42	3/3	6
Ch. Renal Failure	13.52	6	28.33	3/2	5
Cirrhosis	10.81	6	41.57	2/2	4
Urethral stricture	10.81	5	43.33	1/3	4
Trauma	10.81	4	27	1/4	4
Perianal abscess	10.81	6	33	2/4	4
Firearm (colostomy)	2.70	4	25	0/1	1
Lapratomy	2.70	6	29	0/1	1

Table 2: Organisms isolated from different patients

Organisms	No. of patients	%age
Streptococcus species	16	43.24
Klebsiella pneumoniae	13	35.14
Staphylococcus species	15	40
Escherichia coli (E. coli)	15	40
Bacteroides species	13	35.14
Pseudomonas	11	29.73
Clostridium welchii	09	24.32
Corynebacterium	07	18.92
Proteus species	06	16.22
Pepto streptococcus	06	16.22
Porphyromonas species	05	13.52
Enterococci	05	13.52



Figure 1: Scrotal wall edema and skin discoloration



Figure 2: The infected and dead tissues removed thoroughly

es of the infection have been reported in the literature since Fournier's 1883 report, yielding a prevalence of 1 case in 7500 persons^{1,7}. Using Medline and its abstracted journals, other researchers have reported approximately 600 cases of Fournier gangrene in the world literature since 1996^{1,7}. The frequency of Fournier

gangrene has not likely changed appreciably; rather, the apparent increase in the number of cases in the literature most likely results from increased reporting. Fortunately, Fournier gangrene is an uncommon, but not rare, disease. No seasonal variation occurs, and Fournier gangrene is not indigenous to any region of the world, although the largest clinical series originate from the African continent⁸.

In our study, 41.8% of the patients were of advanced age while 65.5% were from low socioeconomic strata. Diabetes mellitus is the most common predisposing factor in the case series of Wolach⁹ et al and Bosglu¹⁰ et al, whilst in the present study, it was also the most common predisposing factor detected in 42.4% of the patients.

Two other important risk factors for Fournier's gangrene described in literature are HIV infected patients and patients of organ transplant on immunosuppressant drugs¹¹ however in present series we did not come across patients with any of these two conditions.

The age of the patient is also an important factor in the prognosis of the patient with necrotizing fasciitis¹¹, in our study the commonest age group was 51-60 and in most cases the outcome becomes worse with increased age. Ashok M Bhatnagar¹² et al series trauma was most common etiology followed by urinary and colorectal causes. Asfar et al. in their description of 16 cases of necrotizing fasciitis, eight of which were Fournier's gangrene, identified all the predisposing comorbid and aetiological factors¹³. While in present study diabetes was the common predisposing factor followed by chronic renal failure and hepatic failure, while trauma was a factor in 5% of cases.

Percolation of the infected tissue fluid into the scrotum through the patent processus vaginalis leading to Fournier's gangrene could be the possible aetiology⁷ and we noticed it in one of our patient who had laprotomy for obstructed and gangrenous inguinal hernia.

Baskin¹³ et al found that more than half of his patients were affected by streptococci, followed by Bacteroides spp. and E. coli. Wolach⁹ et al found the most common infections were caused by E. coli and streptococci. Streptococci was the most commonly isolated organism found in the present study (45%) followed by E coli (40%) and staphylococci (40%).

There has been several studies regarding the role of Intravenous immune globulin — in neutralization of circulating streptococcal when hypotension is present¹⁴. We could not use IVIGs because they are not widely available in Pakistan and most patients can not afford them.

Hyperbaric oxygen therapy may decrease mortality and limit the extent of debridement in Fournier's gangrene¹⁵, but results are conflicting.

Ashoka⁷ et al correlation was found between these

two factors. The patients with more than 2% surface area involvement had a grave prognosis, longer hospital stay, and required a major reconstructive procedure for the coverage of the wound. Indeed, among the eight patients who died, six had a surface area involvement of more than 4%. While Clayton⁵ et al found statistically no significant correlation between the death rate and proportion of body surface area involved. Similarly in present study no statistically significant relationship was found between body surface area and death.

Robert¹⁶ in his case report had mentioned sepsis and renal failure as most common complications associated with death and in our study the most common cause of death was multi-organ failure.

CONCLUSION

Fournier's gangrene is a rare but not very uncommon disease with drastic and lethal progression, so it needs a bloody, bold and resolute approach, with early diagnosis, prompt and aggressive surgical debridement, broad spectrum antibiotics and the full range of intensive care support care.

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