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Research Article

**PREDISPOSING, ETIOLOGICAL FACTORS AND  
OUTCOMES OF FOURNIER'S GANGRENE**<sup>1</sup>Dr. Shumaila Chaudhary, <sup>2</sup>Dr. Borairah Rashid, <sup>2</sup>Dr. Sana Ali<sup>1</sup>WMO Allama Iqbal Medical College Lahore<sup>2</sup>Women Medical Officer, Allama Iqbal Medical College**Article Received:** January 2020 **Accepted:** February 2020 **Published:** March 2020**Abstract:**

**Objective:** The main objective of this research work was to confirm the FG (Fournier's Gangrene) over a duration of past eight years and to evaluate the prompting factors which can influence mortality rate.

**Methodology:** Total 65 patients who got admission in the Emergency Surgical Department of Mayo Hospital, Lahore suffering from FG were the participants of this research work. This research work started from January 2011 and lasted up to December 2019. We retrospectively reviewed the anatomical spot of the infective gangrene, prompting and etiological factors and final outcomes.

**Results:** There were total eight females and fifty seven males in this research study. Mean age of the male patients was  $51.0 \pm 13.90$  with a range from 19 to 75 years and mean age of the females was  $63.0 \pm 10.50$  with a range of age from 52 to 76 years. Mean duration of hospitalization was  $9.20 \pm 6.60$  with a range of age from 5 to 25 days. Most common comorbidity was DM (Diabetes Mellitus) and most common etiology was the perianal abscess. We performed colostomy in eleven patients, two patients underwent orchiectomy and cystostomy in only 2 patients. It is much important to note that all of eight patients who died because of FG were also suffering from DM and they were from low socioeconomic class. There was requirement of more than single debridement in 6 patients who died of FG.

**Conclusions:** There is very high rate of mortality of FG which is a serious surgical emergency. Low socioeconomic condition, DM and greater than single debridement perform main role in the rate of morbidity as well as mortality.

**KEY WORDS:** FG, debridement, prompting, diabetes mellitus, emergency, surgery, outcome.

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**INTRODUCTION:**

FG is a fulminant necrotizing contagion of periurethral and perianal tissues that can disseminate even at the tissues of abdomen or thigh following planes of the penis & dartos fascia of scrotum, colle's fascia and scarpa's fascia [1]. Most important predisposing factors are increases age, low social and economic class, abscess, primary genitourinary infection, leakage of urine, DM, local trauma, perineal surgery, alcohol abuse and immune-suppression [2-4]. The patients who are present with adverse condition of general health, are highly prone to this complication. These poor conditions include obesity or malnutrition, diseases of liver and kidney and some other condition which are the main cause of immune-suppression [5, 6]. The cultures of wound generally yield variety of organisms, implicating anaerobic and aerobic synergy [7]. In this research work, we assessed the patients who got admission in the Emergency Surgery Department of our institute because of FG in terms of site of infective gangrene, prompting and etiological factors and final outcome.

**METHODOLOGY:**

We retrospectively reviewed the hospital files of sixty five patients from January 2011 to December 2019. Review of these clinical records included age of patient, sex, etiological agents, predisposing factors, period from start of symptoms and first debridement, total amount of surgical interventions, clinical outcome, culture findings and total stay in the hospital. We calculated the 90-day rate of mortality. FG's diagnosis was depending upon the clinical signs and symptoms as necrosis, swelling, erythema, crepitus and rash in regions of perianal, perineal or genital. There was collection of samples of wound and healthy tissue with swab margin. Once, there was diagnosis of FG by physical checkup, all the patients underwent treatment with parenteral broad spectrum triple anti-microbial agents, utilizing penicillin G, metronidazole, and amino glycoside and obtained the hemodynamic support at the time of requirement. All the patients experienced extensive debridement under SA (Spinal Anesthesia) or GA (General Anesthesia). Debridement of the necrotic areas carried out and the removal of the necrotic tissues carried out in different stages so that bleeding tissues must be apparent.

There was conduction of this method each other day. Cleaning of the wound carried out with betadine, saline and 2.0% oxygenated water and then covering of the wound carried out with the nitro-furazon dressing. Cultures of tissues were gathered at regularly at debridement time for the identification of the microorganisms which are main causative agents. There was accomplishment of cystostomy in the patients suffering from urethral or/and penile pathology. There was accomplishment of colostomy in the patients present with fecal contamination of severe nature. SPSS V.20 was in use for the statistical analysis of the collected information. Various risk factors that are able to have impact on disease prognosis and demographic traits, were compared according to the state of survival. We used T-test for the comparisons. P value of less than 0.050 was significant.

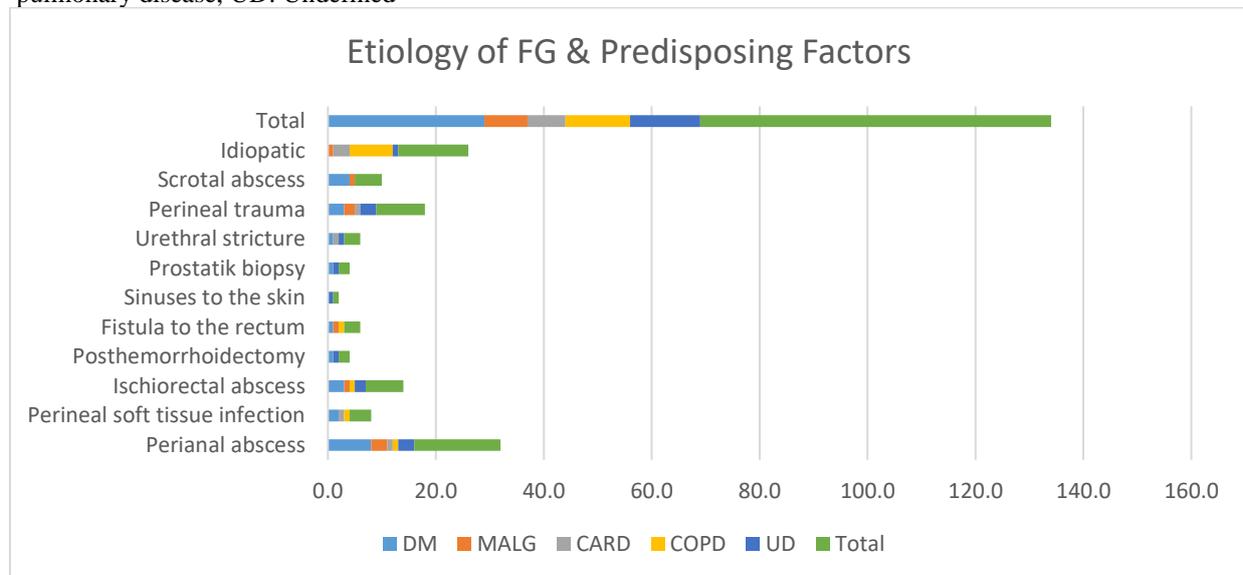
**RESULTS:**

There were total sixty five patients who were diagnosed with suffering from FG. There were 12.30% (n: 8) female and 87.70% (n: 57) male patients. Mean age of the male patients was  $51.0 \pm 13.90$  with a range from 19 to 77 years. Mean age of females was  $63.0 \pm 10.50$  years with a range of age from 52 to 76 years. Statistically, we found a significant difference between sex and age of the patients ( $P < 0.050$ ). Average duration from the start of symptoms to the time of admission was  $3.740 \pm 2.090$  days with a range from 1 to 10 days. Furthermore, average duration of hospitalization was  $9.20 \pm 6.60$  days with a range from 5 to 25 days. There was development of sepsis in 20.0% (n: 13) patients. Average debridement number was 2.50. There was requirement of greater than single debridement in 18.40% (n: 12) patients and six patients among them died. The average age of the 12.30% (n: 8) patients who met their death was  $57.83 \pm 6.70$  years, whereas average age of the survivors was  $51.67 \pm 14.90$  years ( $P = 0.340$ ). There was not much difference in the mean stay at hospital for dead and survivors ( $7.0 \pm 1.70\%$  vs  $10.90 \pm 4.70$ ,  $P = 0.060$ ). Most frequent factor of etiology was anorectal conditions followed by urogenital abnormalities and trauma. There was no observance of etiologic factors for complication of FG 20.0% (n: 13) patients and the classification of these patients carried out as idiopathic FG. FG's etiology and predisposing agents are present in Table-1.

**Table-I: Etiology of FG and predisposing factors in patients.**

Etiological factors	DM	MALG	CARD	COPD	UD	Total
Perianal abscess	8.0	3.0	1.0	1.0	3.0	16.0
Perineal soft tissue infection	2.0	-	1.0	1.0	-	4.0
Ischiorectal abscess	3.0	1.0	-	1.0	2.0	7.0
Posthemorrhoidectomy	1.0	-	-	-	1.0	2.0
Fistula to the rectum	1.0	1.0		1.0		3.0
Sinuses to the skin	-	-	-	-	1.0	1.0
Prostatik biopsy	1.0	-	-	-	1.0	2.0
Urethral stricture	1.0	-	1.0	-	1.0	3.0
Perineal trauma	3.0	2.0	1.0	-	3.0	9.0
Scrotal abscess	4.0	1.0	-	-	-	5.0
Idiopathic	-	1.0	3.0	8.0	1.0	13.0
Total	29.0	8.0	7.0	12.0	13.0	65.0

DM: Diabetes mellitus, MALG: Malignancy, CARD: Cardiac disorders, COPD: Chronic Obstructive pulmonary disease, UD: Undefined



The prevalence of DM in the patients of this research work was 44.60%. It is important to note that the patients who were died, they were also suffering from DM. We obtained the culture results of thirty six patients. The most common cultured bacterial organisms from the surface of wound were *Escherichia coli* (n: 9, 25.0%), anaerobic species of *Streptococcus* species (n: 4, 11.10%), *Staphylococcus aureus* (n: 4, 11.10%), *Enterobacter* spp. (n: 2, 5.60%), *Bacteroides* (n: 2, 5.60%), *P. aeruginosa* (n: 2, 5.60%), *Proteus* (n: 2, 5.60%), *Clostridia* (n: 2, 5.60%) and mixed organisms in nine cultures (25.0%). There was application of multiple resection methods in 80.0% (n: 52) patients. Colostomy carried out in eleven patients, diverting to cystostomy in only two patients. Reconstructive surgical intervention carried out in eleven patients after the treatment of FG. There was no use of vacuum assisted closure in any patient.

### DISCUSSION:

Bacterial overgrowth can create nitrogen & oxygen that gather in the tissues resulting crepitation [6]. Most of these patients have more than twenty year of age [6, 8, and 9]. Some research work revealed the dominance of male gender in FG as compared to the female gender [2, 10]. In this current research work, there was dominance of male gender (87.70%). There are few research works in this field

which showed the FG in pediatric patients [11]. There was no pediatric patient in this research work. Urgent surgery, hyperbolic oxygen and antibiotic treatment are the best options for management [12]. Sterile dressing was in use for the open wounds after debridement [13]. In one other research work, there was comparison of the effectiveness of the management of wound with the povidone iodine dressing and Dakin's solution which has high

antimicrobial effectiveness against microorganisms. Various authors discovered that hospitalization period was much lower in the patients who underwent management by Dakin's solution in comparison with the iodine dressing [14].

Honey also has the ability to prevent microbial treatment in accordance with some studies [15]. The rate of mortality of this complication is very high regardless of the advances in the facilities of health care for FG. The range of rate of mortality of this research work is from 4.0% to 80.0% [2, 6, 8, and 16]. The rate of mortality in this research work is 12.30%. Some authors stated that there was no association of DM with the high rate of morbidity as well as mortality [17]. High duration of hospitalization, high debridement numbers lead to high rate of morbidity as well as mortality [18, 19]. In this research work, anorectal diseases were most important reason (n: 33, 50.80%), followed by idiopathic (n: 13, 20.0%) and some others which are in consistent with other research works [20, 21].

*E. coli* has been stated to be the most frequent isolated organism from cultures of wound (43.0% to 80.0%). There is less isolation of the anaerobes than expectations which can be the result of technical faults [22, 23]. There are rare reports about some other isolated microorganisms as *Candida Albicans* & *Lactobacillus Gasseri* [12, 24, and 25]. There is requirement of colostomy to reduce the fecal contamination [26, 27] but in some situations, there is need of cystostomy [27]. In one research work conducted by Ayan, he reviewed the records of forty one patients retrospectively, he carried out bilateral orchidectomy in 9.70% (n: 4) patients & unilateral orchidectomy in 12.10% (n: 5) patients because of necrosis [28].

### CONCLUSIONS:

FG is much severe surgical emergency. DM, Low social as well as economic status and greater than single debridement perform a main role in increasing the rate of morbidity as well as mortality. The standard treatment is aggressive debridement and use of antibiotics but still the rate of mortality is very high.

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