

## Original Article

## AGGRESSIVE SURGICAL MANAGEMENT OF FOURNIER'S GANGRENE (NECROTIZING FASCIITIS): REVIEW OF 13 CASES

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**Objective:** To study the aggressive management of patients of Fournier's gangrene, and to assess the importance of aggressive early debridement in the prognosis and survival.

**Material and Methods:** A retrospective study conducted over period of one year at Shalamar Medical and Dental College, Lahore. A retrospective study conducted over period of one year at Shalamar Medical and Dental College, Lahore.

**Results:** In our study of 13 cases, all the patients were males with age range of 40-70 years. In 8 patients, there was a history of immunosuppression (10 cases of diabetes mellitus and history of surgery in 1 cases) while in 2 patients we could not identify any underlying cause. Surgical debridement was done in all the cases, 5 cases developed acute renal failure which was managed while one patient died.

**Conclusions:** Fournier's gangrene is an abrupt, rapidly progressive, gangrenous infection of the external genitalia and perineum and a real urological emergency. Prompt diagnosis and early surgical intervention is required for a better outcome of these patients.

**Keywords:** Diabetes mellitus, Fournier's gangrene, perineum.

### Introduction

Fournier's gangrene is a fulminant synergistic necrotizing fasciitis of the scrotum, penis, perineum and, at times, the lower abdomen, first described by French venereologist Jean A. Fournier in 1883.<sup>1</sup> The infection can also be seen in the women; often beginning in the vulva. This is more commonly seen in middle aged having immunosuppressive disorder like diabetes mellitus, malignancy and chronic alcoholism.<sup>2</sup> Despite aggressive treatment, it has high mortality rate.<sup>3</sup>

### Materials and Methods

The study was conducted in the Department of Urology, Shalamar Hospital over a period of one year. Thirteen cases of Fournier's gangrene were retrieved. After baseline investigations i.e. CBC, PT/APTT, RFTs, LFTs, an urgent debridement which was extensive and limited only by healthy bleeding tissue was done. The tissue and pus were sent for culture and histopathology. Re debridement was done on first post op day and progress of wound was noted. The plan to do daily/ twice daily dressing or regular debridement was done. On the average, 5-6 debridements were done for each patient. Dressing/wound wash was done daily (twice daily in 2 cases) as per following protocol.

- Daily wash with pyodine solution.

- Wash with normal saline (3 lit).
- Wound packing was done with EUSOL solution if slough/pus present.
- Wound packing with OXOFERIN if healthy granulation present.

Clinical files and histology slides were available in all the cases. Special stain (Gram's stain) was done in these cases.

### Result

The age of the patients ranged from 40 to 70 years with majority of patients in 50-60 years of age. All the patients were males. There was history of diabetes mellitus in 10 cases, history of surgery in 1 case while 2 cases had no such predisposing factors. In 3 patients less than half of the scrotum was involved while in 10 patients more than half of the scrotum was involved. Five patients showed extension of the disease in perineal and anterior abdominal wall. On histological examination, there was ulceration of the epidermis. The dermis and subcutaneous tissue showed oedema, necrosis, bacterial colonies, acute inflammatory cell infiltrate in all the cases while thrombotic vessels were observed in 10 cases. On culture, 5 cases showed *Pseudomonas aeruginosa*, 4 cases *E. coli*, and mixed flora in 4 cases. (Table-1).

### Results

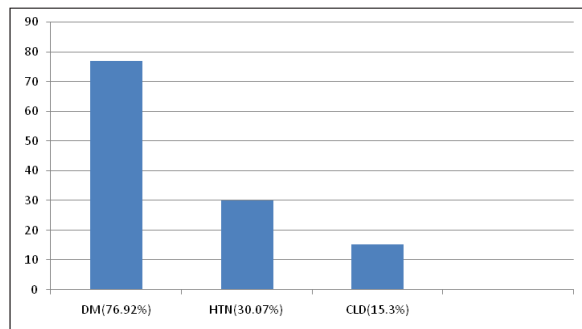
Surgical debridement was done in all the cases. Two

**Table-1:** Clinico-pathological data of 13 patients.

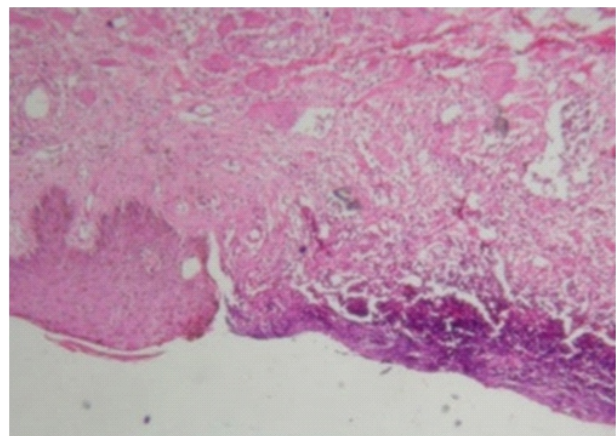
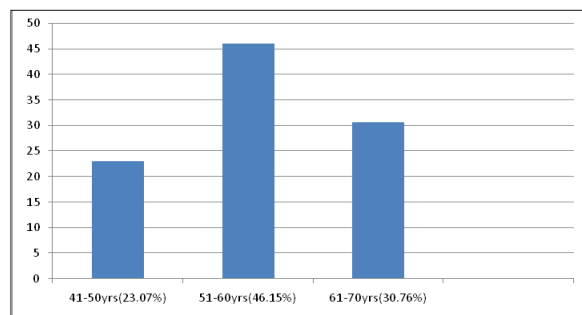
Age/ Sex	Extent of involvement	Predisposing Factor	TLC	Urea / Creatinine	Thrombotic Capillaries	Culture/ Sensitivity	Surgical Treatment	Remarks
51/M	Less than half srotum	DM	13400	45/1.1	+	Pseudomonas	Debridements	Developed renal failure/Recovered
61/M	More than half srotum	NTN DM	18000	139/3.7	+	Pseudomonas/E.Coli	Debridements	Recovered
62/M	Less than half srotum	DM	16300	20/1	+	E.Coli	Debridements	Recovered
55/M	More than half srotum	Operated for hydrocele	17000	140/3.5	+	Pseudomonas enterobactor	Debridements	Developed renal failure/Recovered
55/M	More than half srotum	Type-2 DM	8200	160/2	+	Mixed	Debridements	Developed renal failure/Recovered
70/M	More than half srotum	HTN,DM,CRF,CLD,H C	22400	344/12.6	-	Pseudomonas	Debridements	Recovered died
56/M	Less than half srotum	DM	9200	34/0.8	+	Pseodomonas	Debridements	Recovered
50/M	More than half srotum	HC/+,CLD,HTN	13400	13/0.8	-	E.Coli	Debridements	Recovered
59/M	More than half srotum	Operated for inguinal hernia	12800	97/2.0	+	Pseudomonas	Debridements	Developed renal failure/Recovered
50/M	More than half srotum	Type-2 DM	18200	80/1.6	-	Streptococcus	Debridements	Developed renal failure/Recovered
70/M	More than half srotum	DM, HTN	6000	44/1.4	+	Mixed	Debridements	Recovered
52/M	More than half srotum	Type-DM	15600	21/0.9	+	E.Coli	Debridements	Recovered
48/M	More than half srotum	DM	12000	34/0.8	+	E.Coli	Debridements	Recovered

cases required transverse colostomy with restoration of bowel continuity at a later stage. Five patients developed acute renal failure which was managed with proper antibiotic therapy and adequate hydration, while one patient died of multiorgan failure, despite of all attempts his diabetic control could be optimized.

**Fig-1:** Percentage of comorbidities.



**Fig-2:** Percentage of age groups.



**Fig-3:** Photomicrograph showing presence of ulcerated epidermis. The dermis shows presence of thrombosed blood vessel and bacterial colonies (H&E, X200).

### Discussion

Fournier's gangrene is a rapidly progressive bacterial infection of perianal, perineal and genital areas leading to obliterative endarteritis resulting in gangrene.<sup>4,5,6</sup>

The disease is classified as Type 1 when caused by a mixed anaerobic flora and other bacteria, and Type 2 when caused by Group A Streptococcus alone or in association with Staphylococcus aureus. Predisposing factors include chronic and malignant diseases, psoriasis, surgery, and opened or closed trauma, among others.<sup>8,9,10</sup>

The cause of Fournier's gangrene can usually be traced to one of the following: (1) trauma to the groin area that allows organisms to enter subcutaneous tissues, (2) extension from urinary tract infection eg, one involving the periurethral glands or (3) extension from an infection of the perineal space or intestinal tract, with extension along the fascial plane as far cephalad as the axilla or as far caudad as the thighs.<sup>11</sup>

Clinical features are intense pain, severe edema, fast progress and poor antibiotic therapy feed back. The differential diagnosis includes cellulitis at initial stage. Both the conditions are painful and have same predisposing factors. The confirmation is mainly by histopathological examination of excised surgical material. The key feature in distinguishing necrotizing fasciitis from cellulitis is the location of the inflammation. In the former, the inflammation involves the subcutaneous fat, fascia, and muscle in addition to the dermis. Bacteriological tests from the wound exudates, blister fluid, excised tissue and aspirate material are essential for appropriate microbiologic diagnosis.<sup>12</sup>

Radiologic examination may also be helpful for the establishment of early diagnosis, aiding in differential diagnosis and providing early surgical intervention.<sup>13,14,15</sup> Approximately half of these patients develop septicaemic shock leading to thrombocytopenia, disseminated intravascular coagulation and/or multiple organ failure.<sup>16</sup>

The treatment options include radical surgical debridement of the entire necrotic tissue, frequent wound dressings with hypertonic saline, hyperbaric oxygen therapy, broad spectrum parenteral antibiotic therapy, and general and aggressive patient support measures.<sup>12,17,18</sup>

The prognosis of necrotizing fasciitis depends on age, co-morbidities and severity of the septic syndrome. For patients under the age of 35, the mortality rate is significantly lower (0%) when compared to mortality in patients over 70 years of age (65%). Mortality may reach 100 % in surgically non treated patients.<sup>19</sup>

In conclusion, Fournier's gangrene is an abrupt, rapidly progressive, gangrenous infection of the external genitalia and perineum and a real urologic emergency. Prompt diagnosis and early surgical intervention is required for a better outcome of these patients.

## Conclusion

Fourniers gangrene is a rapidly progressing severe disease process. Early aggressive debridement is the corner stone of management. Prompt aggressive management is mandatory for ensuring a better prognosis.

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