

# EXPERIENCE IN MANAGEMENT OF FOURNIER'S GANGRENE: A REVIEW OF 19 CASES

Ikramullah Khan

Department of Surgery, District Headquarter Teaching Hospital, D.I.Khan, Pakistan.

## ABSTRACT

**Background:** Fournier's gangrene is a polymicrobial necrotizing fasciitis of the perineal, perirectal or genital area. The purpose of this study was to report our experience and results in the management of Fournier's gangrene.

**Patients & Methods:** Retrospective review of charts of 19 consecutive patients of Fournier's gangrene treated between January 2005 and December 2008 in surgical unit, District Headquarter Teaching Hospital, D.I.Khan.

**Results:** 19 male patients were identified (mean age 54.7 years, range 39-68 years). Etiology included anorectal in 21%, urogenital in 26.3%, cutaneous in 31.6% where as in 21% of cases the cause remained undetermined. Comorbid conditions were identified in 57.9% cases and included diabetes mellitus, chronic renal failure, malnutrition, cirrhosis and chronic steroid therapy. The most common organisms found on culture were *Bacteroides fragilis*, *E coli*, *Streptococci* and *Staph aureus*. The treatment plan was resuscitation, broad spectrum intravenous antibiotics and multiple debridements (mean 2.9, range 1-8) per hospital stay (mean 26 days, range 10-52 days). Diversion procedures were also performed, which included cystostomy (15.8%) and colostomy (5.3%). Reconstructive measures included local skin flaps in 2 cases and split thickness skin grafts in 3 cases. The mortality rate was 10.5% (2 patients died due to severe sepsis).

**Conclusion:** Early recognition of the pathology and aggressive surgical debridement are the mainstay of the management of Fournier's gangrene. Additional strategies to improve wound healing and increased patient survival are also needed.

**Key words:** Fournier's gangrene, necrotizing fasciitis, cystostomy, colostomy.

## INTRODUCTION

Fournier's gangrene is a polymicrobial necrotizing fasciitis of the perineal, perirectal or genital area. It is actually a progressive, synergistic, bacterial gangrene. It was first described in 1883 by a French dermatologist and venerologist Jean Alfred Fournier (1832-1914) as an idiopathic condition. But now its etiology can be identified in upto 95% of cases. The portal of entry may be rectal, urethral or cutaneous. The disease is rapidly progressive with a reported mortality rate of 10 to 30% (even upto 67%).<sup>1</sup> Successful treatment depends upon early diagnosis, aggressive radical debridement of all areas of subcutaneous necrosis and prompt institution of broad-spectrum intravenous antibiotics. Comorbid conditions are common and most common in the literature are diabetes mellitus, alcoholism, advanced age, malignancy and immunosuppression.<sup>1,2,3,4</sup> The purpose of this study was to report our experience and results in the management of Fournier's gangrene.

## PATIENTS AND METHODS

The medical records of all those patients treated for Fournier's gangrene between January 2005 and December 2008 were reviewed retrospectively at Surgical unit, District Headquarter Teaching Hospital, D.I.Khan. Patients' age, etiology, predisposing factors, microbiological findings, duration of hospital stay, treatment and outcome were recorded and discussed in the light of literature.

## RESULTS

In our retrospective study we identified 19 patients who were diagnosed and treated for Fournier's gangrene. All the patients were male with mean age of 54.7 years (range 39 to 68 years).

Identifiable causes could only be found in 15 patients (79%). Etiological origin of the gangrene was found to be anorectal in 4 cases (21%), urogenital in 5 cases (26.3%) and cutaneous in 6 cases (31.6%). Among these 19 patients 3 had perirectal abscess, 4 had scrotal carbuncle, 1 had hemorrhoidectomy for prolapsed piles with infec-

tion, 1 had indwelling urethral catheterization for a long time, 3 had traumatic urethral catheterization, 1 had urethral stricture dilatation and interestingly 1 had an insect bite in the groin and 1 had a traumatic laceration in perineum.

Predisposing conditions were identified in only 11 patients (57.9%). 6 were diabetic, 2 had chronic renal failure, 1 was malnourished because of chronic drug addiction and lack of self care, 1 was cirrhotic with hepatitis B surface antigen positive, and 1 was using steroid for chronic medical illness. Majority of them were of low socio-economic status.

The specific flora isolated in purulent tissue culture were *Bacteroides fragilis* in 91%, *E coli* in 84%, *Streptococci* in 72%, *Enterobacteriaceae*, *Pseudomonas* and *Klebsiella* in 59% and *Staphylococcus aureus* in 43%. The pathology was limited to genitalia in 8 cases (42.1%), extending to perineum in 7 cases (36.8%), groin, upper thigh and infraumbilical region in 3 cases (15.8%) and even above the umbilicus in 1 case (5.2%).

Management in all cases involved wide debridement of the necrotic tissue and broad spectrum intravenous antimicrobial therapy i.e. triple regimen including third generation cephalosporin, aminoglycoside and metronidazole, after resuscitative measures where required. Most patients received multiple debridement ranging from one surgery to eight (mean 2.9) per hospital stay, and the mean hospital stay was 26 days (range 10 to 52 days)

According to the indications urinary diversion (cystostomy) was performed in 3 cases (15.8%), and fecal diversion (colostomy) in 1 case (5.3%). Orchidectomy or penectomy were not indicated in any case.

Reconstructive measures performed were local skin flaps coverage in 2 cases (10.5%) and split thickness skin grafts in 3 cases (15.8%). The remaining wounds, once clean, were approximated. Two patients died in our study due to severe sepsis. Mortality rate was 10.5%.

## DISCUSSION

Fournier's gangrene, which is not so rare as is generally considered, is still associated with a high morbidity and mortality, which can be reduced only by improving medical awareness and early treatment both of the primary cause and of necrotizing fasciitis.<sup>5</sup> In 1992 Paty and coworkers<sup>6</sup> calculated approximately 500 cases reported in literature since Fournier's 1883 report. Using Medline and its abstracted journals, others researchers have reported 600 cases of Fournier's gangrene in world literature since 1996. This apparent increase is most likely due to increased reporting.

The disease now differs from its original description (of 1883) in that it now affects both gen-

ders and is no more idiopathic in the majority of cases,<sup>1,7,8</sup> but in our study all the patients were male. A majority of the patients belong to the older age group as also found in our study. The interval from onset of clinical symptoms to the initial surgical intervention appears to be the most important prognostic factor with a significant impact on outcome. A typical patient presents 2-7 days after initiation of symptoms.<sup>9</sup> Late presentation was evident in our patients, possibly due to social taboos causing reluctance to examination of the perineal/genital regions.

In our study the etiologic origin of gangrene was anorectal (21%), urogenital (26.3%) and cutaneous (31.6%), which are supported by figures in literature as 11%, 43% and 25% respectively<sup>2</sup> and 43%, 30% and 21% respectively.<sup>10</sup> Among urogenital causes reported in literature are urethral stricture, traumatic or prolonged urethral catheterization or instrumentation.<sup>11</sup> Colorectal causes included perirectal abscesses, malignancies, diverticulitis,<sup>12</sup> rectal or anal surgery,<sup>11</sup> foreign body perforation of rectum<sup>13</sup> and inflammatory bowel disease.<sup>14</sup> Where as our study correlates well with national and international literature with regard to many of these etiologies, the interesting finding was that of insect bite as a cause which has not previously been reported. Among other rare causes reported in literature are vasectomy,<sup>15,16</sup> circumcision,<sup>17</sup> and herniorrhaphy.

The comorbid conditions found in our study were diabetes mellitus, chronic renal failure, malnutrition, cirrhosis, and chronic steroid therapy. These conditions are also cited in world literature.<sup>1,2,3,4</sup> Interestingly alcoholism, morbid obesity and AIDS<sup>18</sup> were not found to be comorbid conditions in our study, predictably because of different social and religious setup compared with western studies.

In our study we found Fournier's gangrene to be a polymicrobial infection with *Bacteroides fragilis* and *E coli* being the most common organism, found. This finding is also supported by other studies.<sup>11,19</sup>

The main aspects of treatment of Fournier's gangrene are resuscitation, broad-spectrum intravenous antibiotics and radical surgical debridement followed by multiple debridements if needed.<sup>20</sup> This was the strategy in all our cases. Literature reports hyperbaric oxygen,<sup>21</sup> honey application to wounds<sup>2</sup> and enzymatic debridement<sup>22</sup> as promoters of the wound healing process. The use of diversion procedures (cystostomy and colostomy) and others like orchidectomy and penectomy is supported where needed.<sup>2,10</sup> In our study cystostomy and colostomy were used where indicated. Some studies support minimal debridement and the use of Penrose drains through bivalved scrotal and inguinal incisions,<sup>19</sup> but in our study all cases received radical debridements. Our

study showed the use of local skin flaps and split thickness skin grafts for the reconstruction of skin defects, which are usually used at many centers in world.<sup>2,23</sup>

The mortality rate of Fournier's gangrene ranges from 0 to 67%<sup>1</sup> but in the majority of studies it is 10 to 30%. The mortality rate in our study was 10.5%.

## CONCLUSION

Necrotizing fasciitis of the perineum and genitalia is a severe and rapidly progressive condition with considerable morbidity and mortality. Survival can be improved in a patient with Fournier's gangrene by combining aggressive surgical and medical management. The key to a more favourable outcome includes: a high index of suspicion, prompt fluid resuscitation, rapid initiation of broad-spectrum intravenous antibiotic therapy, urgent surgical intervention with radical debridement, frequent repeated debridements and finally a reconstructive procedure where required. Despite decrease in the number of cases where the cause remains unknown, and the extensive therapeutic efforts, Fournier's gangrene remains a surgical emergency.

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### Address for Correspondence:

Dr. Ikramullah Khan  
 Assistant Prof. Surgery  
 Gomal Medical College  
 D.I.Khan, Pakistan  
 Cell: +923339960995  
 E Mail: ikramgandapur@yahoo.com