ORIGINAL ARTICLE

Management of Fournier's Gangerene : Experience at Nawaz Sharif Social Security Hospital, Lahore

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Objective: To analyze the results obtained in the Department of Urology, N.S.S.S. Hospital, Lahore presented with Fournier's Gangerene.
Method : The charts of 32 patients were reviewed who were diagnosed with Fournier's Gangerene and admitted in Urology Department from January 2002 to December 2011. Frequencies of Age, Diabetes Mellitis, Mortality, Unilateral Orchidectomy, Skin grafting, duration of Hospital stay and time of secondary closure of wound were calculated.
Results : All the patients were male with mean age of 53 $\pm$ 5 years (min. 45 and max. 65 years). Among these 32 patients 2 patients (9.1 %) died due to Extensive disease. The location and extent of injury of all the patients was perineum. Among all 16 patients (50 %) were suffering with uncontrolled Diabetes Mellitis. All patient underwent surgical debridment. The testes of all the patients were burried in thigh anteriorly. Unilateral Orchidectomy was done in 2 patients (9.1 %). The testes of 3 patients (13.6 %) were placed back in scrotum at the time of secondary closure. Skin grafting was done in 3 patients (13.6 %). The mean duration of hospital stay was 17 $\pm$ 8 days (min. 1 and max. 35 days). The secondary closure of wound was done on 14th $\pm$ 4 day on an average (min. 7 and max. 24 day).
Conclusion : Despite all the current advances in the treatment today, Fournier's Gangerene continues to show high mortality and morbidity rates. Early recognition of infection associated with aggressive and invasive treatment are essential to reduce these prognostic indices.

Keywords: Fournier's gangrene, Necrotizing fasciitis, Surgical infection, Debridement

INTRODUCTION

Fournier's gangrene (FG) is a rapidly-spreading necrotizing infection of the perineal, perianal and periurethral tissues that can disseminate even at the subcutaneous tissue of the thigh or the abdomen following the planes of the dartos fascia of the scrotum and penis, Colle's fascia and Scarpa's fascia [1]. It was named after Jean Alfred Fournier, a venereologist, who originally described it in 1883 as an idiopathic, rapidly progressing gangrene of the scrotum occurring in previously healthy young men with no obvious etiologic factors or definite causes [2]. Nevertheless, the disease is no longer considered idiopathic and several causes are known. The majority of the cases occur between 20 and 50 years of age. The male: female ratio is about 10: 1 [1, 3]. The mortality of this entity remains high, despite the aggressive treatment modalities (surgical, medical, adjuvant and supportive) that have been incorporated through the years. Anorectal causes present the highest mortality rates. Several surgical reports give a mortality that ranges between 3 and 67% [1, 3–5].

METHOD

It is a reterospective study in which the admission charts of 32 patients were reviewed who were diagnosed with Fournier's gangrene. These patients were admitted in Urology Department, Nawaz Sharif Social Security Hospital, Lahore during the period of January 2002 to December 2011. A detailed history and complete physical examination was done. Baseline investigations of all these patients were done on urgent bases and shifted to operation theatre for surgical debridement. Per-operative and post-operative findings were recorded. Charts were maintained and prepared for an audit.

RESULTS

Frequencies of age, Diabetes Mellitis, Mortality, Unilateral orchidectomy, skin grafting, duration of hospital stay and time of secondary closure were calculated. All the patients admitted with Fournier's gangrene had a mean age of 53 $\pm$ 5 years with minimum age of 45 years and maximum 65 years. Among these patients 2 patients (9.1 %) expired on table in operation theatre due to extensive

disease. the patients were received unconscious. Mainly perineum of all the patients was involved. The patients were admitted and emergency surgery planned. A generous surgical debridement was done. The testes of all the patients were buried in respective thighs. Unilateral orchidectomy was done in 2 patients (9.1 %). At the time of secondary closure the testes of 3 patients (13.6 %) were placed back in scrotum. There was excessive loss of penile skin of 3 patients (13.6 %). So skin grafting was done in these patients. Among these 32 patients 16 (50 %) were suffering from uncontrolled Diabetes Mellitis. Secondary closure of the wound was done on 14th $\pm$ 4 day (minimum on 7th and maximum on 24th day). After recovery and on satisfactory condition, patients were discharged on 17th $\pm$ 8 day (minimum 1 and maximum 35 days).

DISCUSSION

Every patient admitted with scrotal cellulitis must be considered a potential urological emergency, since Fournier's Gangrene represents one of the most challenging diseases in urology. Although, most of the scrotal cellulitis cases will prove to be minor and they will only require oral or intravenous antibiotic treatment.

Diabetes mellitus (present in 32–66% of all cases of FG), chronic ethanol abuse (reported in 20–60% of patients), steroid therapy, hematologic or other malignancy, chemotherapy and HIV infection, paralysis or neurologic deficit are conditions that predispose to the development of Fournier's Gangrene. Most of these conditions are related to impaired microcirculation and to immunosuppression [3, 7–11].

The basic pathological mechanism of the disease process is believed to be an obliterative end arteritis caused by the spread of the pathogens, on the ground of distal arterial disease and immunocompromise (i.e. diabetes mellitus) that most commonly pre-exists in the patients [3, 7, 12–14]. The source of the infecting organisms in Fournier's Gangrene is most commonly the periurethral glands. Other portals of microbial entry have been reported to be scrotal abscesses, urethral strictures, perirectal abscesses, ruptured appendices, colonic carcinoma, diverticulitis and dermatological conditions, the latter being more common in the developing world [3, 15, 16]. Other, less common portals include hernia repair, hemorrhoidal banding, urethral catheterization, neonatal circumcision, prostatic biopsy [3], vasectomy operations [17, 18] and tension-free vaginal tape procedure [19]. Even local trauma from coitus has been described as a potential reason for microbial entry [1]. A wide variety of pathogens had been reported to be responsible for the infection, such as streptococcal and staphylococcal strains, *Bacteroides* species, *Enterococcus, Escherichia coli* and other bacterial species as well as fungi [3, 9]. The highest rates of isolation in diabetic patients have been reported to be *Streptococcus* spp. and *Staphylococcus* spp., and also mixed anaerobic flora [9, 20]. Local discomfort, scrotal pain, redness, edema and crepitus due to subcutaneous emphysema which may extend up to the axillae, thighs and perianal tissues, implies that there are anaerobic conditions in the area [14, 15, 21]. Fever, malaise, leukocytosis, anemia and electrolyte abnormalities can also be present. The testes and spermatic cords are spared from the infection due to their independent blood supply, but in 21% of patients there will be a need for orchidectomy of the affected side because the testis will become nonviable [7].

Prompt recognition of the infection and its aggressiveness is essential for the final outcome regardless of the final treatment method. The diagnosis is primary clinical, despite the inclusion of several imaging modalities like scrotal ultrasonography, CT scan or MRI. There is an ongoing debate in the literature regarding the impact of the time period between disease onset and treatment initiation. Some investigators have observed that the survivors have a shorter period than the nonsurvivors while others do not find any difference [6].

The management of the infection must be aggressive, with adequate fluid resuscitation and hemodynamic support, mostly in the intensive care setting. Empirical broad-spectrum antibiotic therapy (penicillin, metronidazole and third generation cephalosporin with gentamicin are appropriate) is essential [1]. One must always keep in mind that antibiotic therapy may cause a possible fungal infection to get out of control. Wide (and often repeated, due to the dynamic nature of fasciitis) excision of the necrotic tissue is important. Urinary diversion (in the form of suprapubic cystostomy) is recommended in all patients by some authors [22], whilst others suggest that it should be reserved for patients with extensive urethral involvement [23]. We favored the urinary diversion in patients with significant

urethral or penile pathology. In the latter cases, the diversion served the same way that the colostomy serves in the population of Fournier's Gangrene. The urinary diversion allows the sites of urethral or penile pathology to heal without the influence of urine on them. Surgical wounds are left open. Irrigation with hydrogen peroxide can be incorporated as an adjuvant therapy, providing both mechanical cleaning of the wound and destruction of anaerobic organisms often associated with the infection. Proper wound dressing exchange and constant wound condition evaluation is mandatory. Surgical debridement should be performed promptly when there are signs of infection progression and/or necrosis on wounds. Reconstructive surgery should be performed after the successful management of the disease and may require the contribution of plastic surgeons. The use of hyperbaric oxygen therapy has been reported and evaluated by several authors. However, the efficiency of the method in the treatment of Fournier's Gangrene remains questionable [6]. The currently presented population of patients did not have any difference regarding demographic parameters such patients age, gender and patient co-morbidities in comparison to other presented series. The mortality rate compares favorably to recently presented series. Only 2 patients (9.1 %) expired in our series in comparison to 7.5–40% mortality in recently presented series [3, 6, 24].

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