EXPERIENCE WITH REGIONAL NECROTIZING FASCIITIS

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ABSTRACT

Objective: *To identify the systemic predisposing factors, in patients ..... Regional Necrotizing fasciitis, local etiological factors and to assess the role of aggressive debriedement as a part of treatment.*

Material and Methods: *This prospective study was conducted at the surgical departments of Khyber Teaching Hospital, Lady Reading Hospital and Hayatabad Medical Complex Peshawar Pakistan from 1st January 2002 to 30th Jun 2007. Total number of patients was 60. Both male and female were included. Detail history and examination of all patients was carried out. After initial resuscitation all patients were treated aggressively including surgical debridement.*

Results: *Total number of patients studied was 60. Male to female ratio was 5:1. Age ranged 25-75 with mean 48.2+18.5(SD) years. Extent of the disease was to scrotum in 30%(n=18), to perineum in 50%(n=30), to abdominal wall in 20%(n=12).Systemic predisposing factors identified in our study was Diabetes Mellitus in 30%(n=18), Chronic alcohol abuse in 7% (n=4), long standing steroid therapy in 7%(n=) while in 56%(n=34) patients no cause could be ascertained. The local etiological origin of Fournier's gangrene was urogenital in 24.33% (n=14), anorectal in16.67%(n=10), cutaneous in 13.33%(n=8) of patients where as in 46.67%(n=28) no local pathologies could be identified. . The mean time interval between first symptom and initial treatment was 2.5 days with a rang 1-7 days. Debridement sessions ranged 2-5(mean3.14). Mean hospital stay was 30±7 days with range 10-50 days. Mortality was 6.67% (n=4).*

Conclusion: *Necrotizing Fasciitis can occur in perfectly healthy population. Local etiological pathologies in the form of urogenital, anorectal, and cutaneous may trigger this dreadful disease in some patients. Early recognition and aggressive surgical debridment are the main stay of treatment.*

Key Words: *Necrotizing fasciitis, Fourniers Gangrene, Surgical debridement.*

INTRODUCTION

In this study regional Necrotizing Fasciitis refer to the disease involving the genital, perineam and perianal region as shown in Fig.No1 and 2. This condition is also named as Fourniers Gangrene. This infective process leads to thrombosis of the subcutaneous blood vessels resulting in gangrene of the overlying skin.[1]

Fournier's gangrene was originally described by Baurienne in 1764 and was formally given its name by Jaen Alfered Fournier in 1883. In Fournier description the disease arose abruptly in previously healthy young males with out an obvious cause. However more recent studies indicate a definite urologic or colorectal source of infection and an underlying systemic disorder like diabetes mellitus and chronic alcoholism. Fournier's gangrene may pursue a more fulminant and aggressive course in immunosuppressed patients e.g. Post chemotherapy for malignancy or transplantation and in patients with HIV/AIDS. It may also occur in a wide age range of population from new born to very aged.[2,3]

The infection is usually polymicrobial and synergistic with both aerobic and anaerobic organisms implicated. Commonly isolated bacteria include E-coli, becteroides species, streptococcal strains, staphylococci, peptostreptococci and clostridia have also been found, and most of these organisms are the normal commensals of perineum

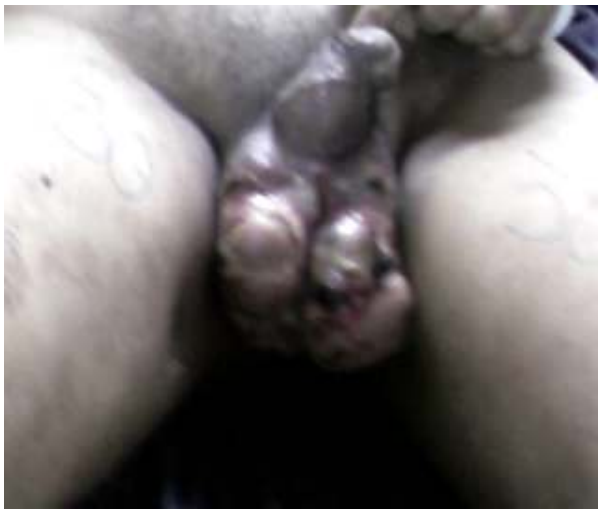

Fig. 1

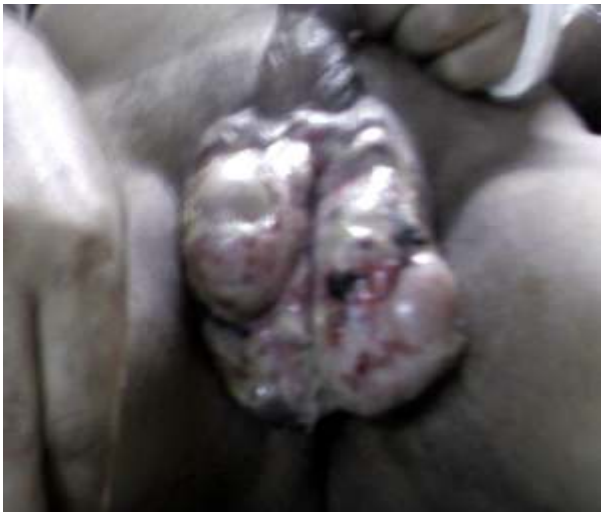

Fig. 2

and lower GIT.[4] Urogenital source of infection include urethral stricture, traumatic catheterization, indwelling catheters, prostatic massage and biopsy. Anorectal source include ischiorectal, perianal and intersphinteric abscess. Cutaneous infection may arise in a carbuncle, pressure sore or vulval and bartholin abscess.[5]

Early recognition of the pathology and aggressive surgical debridement are necessary for favorable outcome. However minimal cutaneous manifestation of the underlying infection make the early diagnosis difficult. Therefore a high index of clinical suspicion is required to clench the diagnosis.[6]

Diagnosis of Necrotizing fasciitis is clinical, however, radiological investigations may be helpful. A plane radiograph may demonstrate air in the soft tissues or facial planes. An ultrasound study may show gas or thickening of the wall of the scrotum and helps to differentiate from testicular pathology. CT scan of the pelvis and perineum may be helpful to outline the extent and source of infection.2,7

MATERIAL AND METHODS

This was a prospective, observational and analytic study of sixty consecutive patients who were diagnosed as Necrotizing fasciitis and treated from 1st January 2002 to 30th Jun 2007 in the surgical units of Khyber Teaching Hospital, Lady Reading Hospital, and Hayatabad Medical Complex Peshawar (Pakistan).

Both male and female of all age group and diagnosed as Fournier gangrene were included in the study. Patients who were diagnosed and treated somewhere else and then referred were excluded.

An informed consent was obtained from all patients for inclusion in the study. A detailed history was taken and patients were examined thoroughly to know the extent of the disease on presentation. All the base line investigations were performed including Hepatitis B and C screening while HIV screening was done in 2 patients. Ultrasound abdomen and scrotum and CT pelvis and perineum were performed in 4 patients. Immediately after diagnosis patients were started on treatment including fluid and electrolyte resuscitation, broad-spectrum antibiotic (Ceftriaxone 1gram bd and metronidazole 500mg tid). Aggressive surgical debridement followed by daily normal saline wash and dressing was instituted in all patients. In some cases the sessions of debridement were five.

RESULTS

Total No. of patients included in the study was 60. Male to female ratio was 5:1 as shown in Fig.No.3. Age range was from 25-75 years with an average age of 48.2 $\pm$18.5 (SD) years.

The disease was limited to the scrotum in 30% (n=18) patients, extending to the perineum in 50% (n=30) patients and the anterior abdominal wall was involved in 20% (n=12) patients as shown in Fig. No 4.

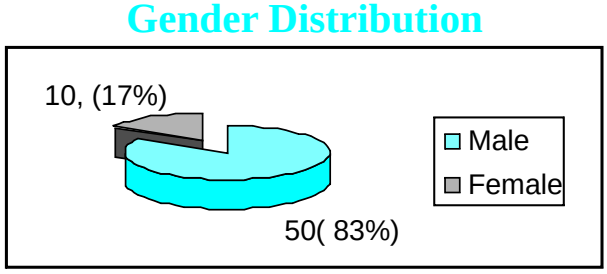

Fig. 3

Extent of involvement

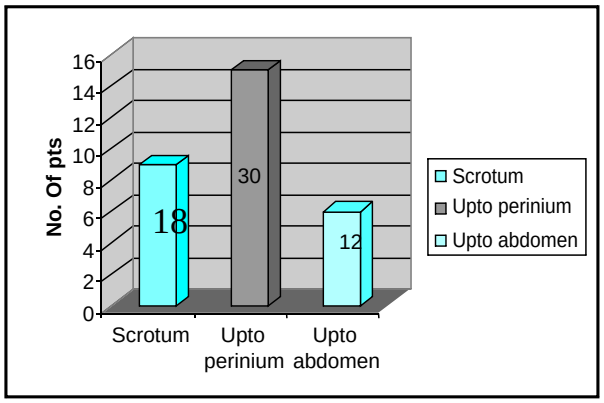

Fig. 4

Systemic predisposing conditions noted in this study were diabetes in 30% (n=18), chronic alcohol abuse in 7% (n=4), immune suppression by long standing steroid therapy in 7% (n=4) and no obvious cause was found in 56% (n=34) as shown in Fig.No.5.

The local etiological factors of Necrotizing fasciitis identified in this study were Urogenital in 23.33% (n=14), colorectal in 16.67% (n=10), cutaneous in 13.33% (n=8), while in 46.67% (n=28) no definite cause was found as in Fig No.6.

The average time between the onset of the symptoms and first debridement was 2.5 days with range from 1- 7 days.

Debridement sessions ranged 2-5 with mean3.14. Mean hospital stay was 30±7 days range of 10-50 days. Mortality noted in this study was 6.67%(n=4).

DISCUSSION

Necrotizing fasciitis is a life threatening condition in which infection of the scrotum and perineum spreads along the facial planes causing soft tissue necrosis. If urgent surgery is delayed the disease will soon result in septic shock, multi organ failure and death.[1,4,18]

The syndrome of acute Necrotizing fasciitis is an uncommon but serious condition and initialy thought to be a disease of young men. The disease is no longer restricted to young men but can affect both male and female with a wide age range, from neonates to the very elderly Most of the studies show male predominance with a mean age of 55 years[1,5,6,8,11] Our study also showed the same results i.e male predominance with a mean age of 48.2+_18.5(SD) years. Originally Necrotizing fasciitis was thought to be an idiopathic process, but recent studies including ours showed systemic as well as local predisposing factors. Analysis of the available studies show that any condition which weakens the immune system

Systemic predisposing conditions

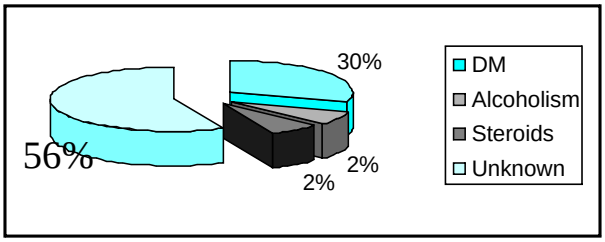

Fig. 5

of the body can contribute to the development of this dreadful disease. The systemic factors which are more obvious in the available studies are Diabetes Mellitus, chronic alcohalism, patient on dialysis, HIVinfection, chronic liver diseases, steroids, cytotxic therapy, radiotherapy, malnutrition, drug abuse, poor socioecnomic condition, poor hygein, and hot humid season.Some cases remains idiopathic.[5,9,10,12,22] The frequencies of different systemic predisposing factors in our study were Diabetes Mellitus 30% (n=18), long term steroid therapy 7%(n=4), chronic alcohlic abuse 7%(n=4), and no deffinit systemic cause in 56%(n=34). Analysis of the socioecnomic status of patients included in our study showed that 60% (n=36) were poor. Patients presented mostly in July, August, September of the year. Keeping in veiw the anatomical, physiological, and mirobiological status of the periniam and perianal region, one can easily appreciate the importance of the local factors in the contribution of the Fourniers Gangrene. Review of the available studies[12,13,15,16,17,21] have highlightened the following local factors in the development of Fourniers Gangrene in almost semilar frequencies: 1) Urological diseases like infection,stricture urethra,acute scotum, parasitic infection like Sparganosis, or any urological operation. 2)Anorectal pathologies like anorectal sepsis, or operations. 3)Impaired sensation of the region secondary to spinal injuries. 4) Cutanious pathologies like acute allergic reaction to an antiseptic. 5)Drug abuse using penile vein for injection. 6) Poor hygeine of the scrotum and perianal region.

These studies also could not detect any

Local Etiological Factors

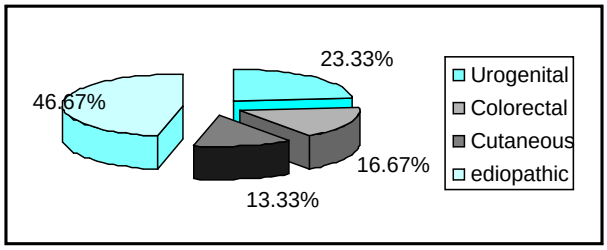

Fig. 6

local pathologies in some percentage of cases.Our study showed almost semilar results to these studies i.e Urogenetal in 23.33% (n=14) , anorectal in 16.6% (n=10), cutanious in 13.33% (n=8) and no obvious local pathologies in 46.6%(n=28)as shown in Fig.No.6. Rewiev of most of the available studies showed that the most common presenting features of Fourniers Gangrene are pain, erythema with or without crepitus, and swelling of the scrotum, often associated with fever. Pain usually is prominent early on, but numbness and analgesia gradually set in due to compression and destruction of the cutaneous nerves.[9,17,21,22,23,24] In our study, the clinical presentation of most of the patients was the same. Traditionally, the central principles of management are aggressive hemodynamic stabilization, parenteral broad-spectrum antibiotics, and urgent surgical debridement. The first two components of this triad are an adjunct to, and not a substitute for, surgical removal of devitalized tissue, which is the critical step in halting the progress of the infection.[5,6,19,20] All frankly necrotic tissue and that with doubtful viability should be carefully debrided and excised.[24,25,26,28] No of sessions of debridements varies in different studies.Norton.K.S et al reported 1-7 (mean3.25) sessions per hospital stay.Testes and spermatic cords are generally not affected by the disease as they maintain an adequate and independent blood supply. Some authors recommend a suprapubic cystostomy in all patients, but others would divert the urine only in patients with extensive urethral involvement. Urinary and feacal diversion might be required to prevent wound contamination or to treat an underlying condition that caused the necrotizing infection. A suprapubic cystostomy is required when there is gross urinary extravasation or periurethral inflammation.[27,28,] Adjuvant therapy, such as the irrigation of wounds with hydrogen peroxide to generate nascent oxygen to destroy the anaerobic organisms or the use of hyperbaric oxygen, have all been tried with sound reasons and justifiable results. More recently, the value of topical unprocessed honey also has been recognized and used, with an impressive acceleration of healing for Necrotizing fasciitis and peptic ulcers. Honey has a low pH of 3.6 and contains enzymes that digest necrotic tissue. It contains antimicrobial agents to which the infecting organisms are usually sensitive. It also stimulates the growth and multiplication of epithelial cells at the wound edges.[29] Our management included resucitation and early aggressive debridement of dead and necrotic tissues followed by daily normal saline and hydrogen peroxide wash. In some cases we did more than one session of debridement. A suprapubic cystostomy was performed on one patient because of urethral extension of the gangrene. Semilarly colostomy was done on one patient with extensive perianal abscess.

Necrotizing fasciitis of the perineum and genitalia is a serious condition with a high morbidity and mortality. Morbididy can be appreciated from the prolonged duration of hospital stay reported in various studies.[24,27.28,29]

Xeropotamos et al[30] reported in their sudy the mean (SD) duration of hospital stay to be 35±8 days range 8-62.We found mean(SD) duration 30±7 days ranged 10-50 days in our study .The mortality rates reported in the literature range between 3% and 45%.[28,27,31,32,33] Death occurred mostly due to septicaemia. We found mortality rate of 6.67 %(n=4) in our study. Uncontroled infection was the cause of death.

CONCLUSION

1) Regional Necrotizing Fasciitis It can occur in perfectly healthy population.
2) Local etiological pathologies in the form of urogenital, anorectal, and cutaneous may trigger this dreadful disease in some patients.
3) Early recognition and aggressive surgical debridement is the main stay of treatment.

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