Original Article

Fournier Gangrene Following Iatrogenic Urethral Trauma

Abdul Mannan, Muhammad Farooq, Riaz Ahmed Tasneem

ABSTRACT

Objectives: To assess outcome of 17 patients with Fournier gangrene due to iatrogenic urethral trauma after aggressive treatment.

Materials and Methods: Record of patients with Fournier gangrene due to iatrogenic urethral trauma was reviewed retrospectively between Jan 2000 to Dec 2007 in Department of Urology Services Hospital, Lahore. Etiology, duration of injury, extent of involvement, management, hospital stay and course of rehabilitation were evaluated.

Results: Seventeen patients were identified. Mean age of the patients was 43.5 years. Mode of urethral injury included traumatic catheterization (9 cases), traumatic bougienage (6 cases) and urological endoscopy (2 cases). Mean time interval between injury and presentation in the hospital was 7.14 days (range 1-30 days). All patients were treated with broad spectrum antibiotics, suprapubic cystostomy and multiple sessions of debridement (mean 3.07). Mean hospital stay was 21.3 days and mean time taken for rehabilitation of urethra and skin cover was 16.5 weeks. Optical urethrotomy was required in 11 patients, end to end urethral anastomosis in four and perineal urethrostomy in one patient. Bilateral orchiectomy was done in two and penectomy in one patient. Five patients required skin grafting.

Conclusion: Urethral trauma due to transurethral manipulations may lead to Fournier gangrene. Patients usually present late in our set up. Multidisciplinary approach towards management including aggressive repeated sessions of debridement can improve survival. Rehabilitation takes a long course. Measures should be taken to prevent iatrogenic urethral injury.

Key Words: Fournier Gangrene, Iatrogenic urethral trauma, debridement, rehabilitation.

INTRODUCTION

Fournier gangrene is a devastating condition. It can rapidly involve penis, scrotum, perineum and even abdominal wall. Associated morbidity and mortality is significant. Mortality rate may be as high as 45% in spite of multi modality treatment [1].

Sources of infection may be urogenital, anorectal or cutaneous. Urogenital route is responsible for about 50% cases of Fournier gangrene [2,3]. Various urogenital foci include urethral strictures, trauma, indwelling catheters, urethral calculi and prostatic biopsy [4]. Itrogenic urethral trauma may result in extravasation of urine which can some times end up in Fournier gangrene.

We have retrospectively reviewed the outcome of the patients with Fournier gangrene following iatrogenic urethral trauma. To our knowledge this is the first series of this kind.

MATERIALS AND METHODS

Record of 17 patients with Fournier gangrene following iatrogenic urethral trauma was reviewed retrospectively during the last seven years at our Department. Etiological factors, time of presentation and extent of gangrene were assessed. Patients were managed with broad spectrum antibiotics, extensive debridement, suprapubic urinary diversion and antiseptic dressings with sodium hypochlorite. Initial hospital stay, ultimate management and time required for rehabilitation was also evaluated.

RESULTS

Mean age of the patients was 43.5 years (range 29-66 years). Etiological factors were traumatic catheterization, traumatic bougienage, and urological endoscopy (Fig-1). Mean time interval between urethral injury and presentation in the hospital was 7.14 days (range 1-30 days). Extent of the involvement of Fournier gangrene was variable (Fig-2).

Most of the patients presented with dribbling of urine. Seven patients had associated fever. Details of causative organisms are given in (Fig-3). All patients required urinary diversion by suprapubic route. Multiple sessions of debridement were carried out under general or spinal anesthesia. Number of debridement sessions ranged from 1 to 7 (mean 3.07). Mean initial hospital stay of patients was 21.3 days. Rehabilitation of the patients took a long time. Mean time of rehabilitation of urethra and skin cover was 16.5 weeks (range 8.5-38.6 weeks). Details of urethral and skin rehabilitation are given in Table 1 & 2.

DISCUSSION

Urethral injury following urethral catheterization by untrained staff is not uncommon in our setup. Inflation of balloon in urethra leads to urethral injury in most of the cases. In our series nine patients developed Fournier gangrene following this type of injury. Conventional bougienage is still being practiced by old fashioned urologists and surgeons in peripheral hospitals which can prove disastrous. It has hardly any place in modern urology. Urethral dilatation with rubber catheter rather than metallic bougies has proved safer. Urological endoscopy by untrained urology residents may also result in injury to urethra leading to devastating complications. Injury may result from forceful introduction of instrument or overzealous attempts to cut urethral stricture.

Ever since Fournier gangrene was first described by Jean Alfred Fournier in 1883 the epidemiology and clinical features of the disease have changed. Now it is defined as infective necrotizing fascitis of the perineal, genital, or periurethral region[4]. In modern setup it is not truly idiopathic. Etiology may be identified in approximately 95% of cases[5]. Infection is usually polymicrobial. Bacterial enzymes activate intravascular clotting and vascular thrombosis which lead to dermal gangrene. Synergistic action of these bacteria can lead to extensive tissue destruction[6].

Diagnosis of Fournier gangrene is made primarily on clinical grounds. However radiological evaluation can be helpful in doubtful cases. Plain film and ultrasound may reveal air in the soft tissues. C.T can more clearly depict the extent of soft tissue gas along with fascial thickening and fat stranding [7].

Management of this life threatening condition has always been a challenge. Principles of management are aggressive hemodynamic stabilization, parenteral broad spectrum antibiotics, urinary diversion and urgent surgical debridement. Extensive debridement of devitalized tissue remains the mainstay of management [1,4]. Many patients require multiple sessions till all dead and infected tissue is excised. Mean number of debridement sessions in our study was 3.07. Post operatively local application of sodium hypochlorite or hydrogen per oxide is effective. Application of unprocessed honey has also been found effective. It can digest dead and necrotic tissue and accelerate healing [8]. Hyperbaric oxygen therapy if available, may prove beneficial [9]. We did not have the facility of hyperbaric oxygen. Testes are rarely infected in Fournier gangrene because of their abundant blood supply. Incidence of patients requiring orchidectomy for non viable testes is upto 21% [3,8]. In our series two (11.7%) patients underwent bilateral orchidectomy and one of them required penectomy as well. Seven patients required transposition of testes in thigh pouches after debridement.

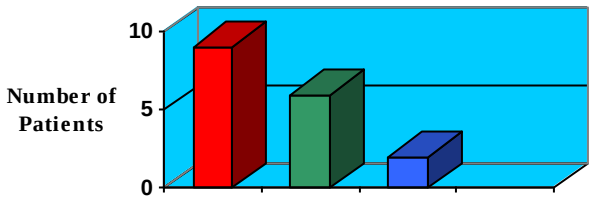

Fig. 1: Mode of Urethral Injury

- Traumatic catheterization
- Traumatic bougienage
- Urological Endoscopy

Some centers have recommended use of Fournier gangrene severity index (FGSI) which includes clinical and biochemical parameters. It has proved to be useful prognostic indicator [3,10]. In earlier studies very high mortality rates have been reported [11]. Cause of death is sepsis and multi organ failure. With better understanding of disease and aggressive management, mortality has come down significantly [12]. In spite of late presentation there was no mortality in our series. It was probably due to aggressive surgical debridement. Moreover, Fournier Gangrene of urogenital origin is generally associated with lesser morbidity and mortality than Fournier Gangrene of anorectal origin [13].

In our Country, patients usually present late when gangrene has already caused extensive

destruction (Fig.2). Late presentation has also been reported in some other Asian studies as well [3,6]. Reasons behind late presentation are inaccessibility to medical care in rural areas, illiteracy, poverty and fear of surgery.

Iatrogenic urethral trauma can sometimes lead to life threatening Fournier gangrene. Patients usually report late in our setup. Diagnosis is usually clinical. The mainstay of the management is radical debridement along with repeated dressings, broad spectrum antibiotics and urinary diversion. In spite of multi modality treatment patients require multiple hospitalizations and surgical procedures. Total rehabilitation may take more than a year.

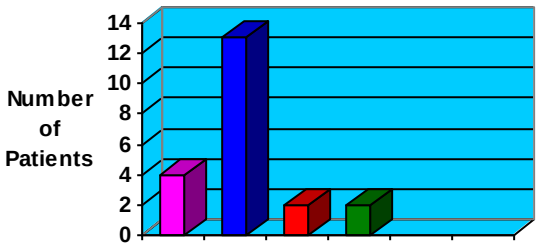

Fig. 2: Extent of involvement

- Penis
- Scrotum
- Perineum
- Abdominal wall

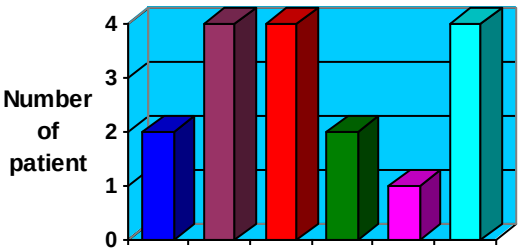

Fig.3: Causative Organisms

- Streptococcus
- E Coli
- E Coli & Proteus
- Streptococcus & E Coli
- Streptococcus & Bacteroids
- No growth

Table-1
Urethral Rehabilitation

Optical urethrotomy	11(64.7%)
Urethroplasty	04(23.5%)
No further treatment	01(05.88%)
Perineal Urethrostomy	01(05.88%)

Table-2
Skin Rehabilitation

Healed by secondary intention	09 (52.9%)
Secondary suturing	03 (17.6%)
Skin grafting	05 (29.4%)

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