

Original Research Article

Necrotizing Fasciitis of Male Genitalia: A Series of Fifty-Four Consecutive Patients.

EL.Khafifi M.H., Mohammed K.S. Alaorfi W.E.Y, Osman A.R.*

Hawari Center for Urology and Otolaryngology, Urology Department, Benghazi, Libya

** Corresponding author: Muftah H. EL.Khafifi. Department of Urology, Faculty of Medicine, Benghazi University- Benghazi, Libya. E-mail:abdokhaf2007@gmail.com. Mobile number: 00218-927264758.*

ABSTRACT:

BACKGROUND: Fournier's gangrene (FG) is a fulminant aggressive necrotizing fasciitis affecting the external genitalia, perineum and anterior abdominal wall with significant mortality rate. The aim of the present study was to describe the associated risk factors, presentation, diagnosis, management and outcome of this condition in Benghazi, Libya.

PATIENTS& METHODS: Over a period of twenty years (from January 1997 to October 2016) a series of 54 consecutive patients who were admitted to Urology Department, Hawari Center for Urology and Otolaryngology, Benghazi-Libya were evaluated retrospectively to assess the risk factors, etiology, management and outcome of this fatal disease.

RESULTS: It was found that 37 (68.5%) of patients were diabetics and 24 patients (44.4%) had perianal abscess as predisposing factor. Mortality rate was 14.8% (8 patients). All cases diagnosed on clinical basis. The patients operated promptly by extensive debridement. Reconstructive surgery done by flap or graft in plastic department to close the skin defect in most of our patients (41 patients, 75.9%).

CONCLUSION: The main co-morbidity and predisposing factors of FG are diabetes mellitus and perianal abscess respectively. Prompt aggressive debridement is the only management to save the patient's life.

KEYWORDS: Fournier's gangrene, necrotizing fasciitis, debridement, mortality.

INTRODUCTION

Fournier's gangrene (described in 1764 by Baurienne and then in 1883 by Fournier) is a necrotizing fasciitis of the genitalia, perineum and even abdominal wall, primarily affecting males and the more rarely vulva in women [1,2,3,4], causing necrosis and subsequent gangrene of infected tissues. Culture of infected tissue usually reveals a combination of aerobic and anaerobic organisms, which are believed to grow in a synergistic fashion [5,6,7]. Conditions that predispose

to the development of FG include diabetes, local trauma and abscess of the genitalia and perineum [8]. A previously well patient may become systemically unwell over a very short time course (hours).The gangrene advances rapidly, hence its alternative name of spontaneous fulminant gangrene of the genitalia. The diagnosis is a clinical one, and is based on awareness of the condition and a low index of suspicion [9, 10, 11, and 12]. This condition is a urological emergency, which need prompt extensive debridement besides intravenous fluids and intravenous antibiotics

EL.Khafifi M.H., Mohammed K.S. Alaorfi W.E.Y, Osman A.R.Necrotizing Fasciitis of Male Genitalia: A Series of Fifty-Four Consecutive Patients.

Citation DOI: [10.21502/limuj.017.02.2017](https://doi.org/10.21502/limuj.017.02.2017)

LIMUJ, Volume 2, PP 134 -139, 2017



LIMUJ is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

[2,8,9,13]. A suprapubic catheter and colostomy are usually required [10,11,14]. Area of skin loss is reconstructed by graft or flap. Mortality is in the order of 20-30% [7,8,15].

PATIENTS & METHODS

This is a retrospective study including 54 patients who presented to urology department over the period from January 1997 to October 2016. All patients were diagnosed on clinical basis and admitted to the hospital immediately. They were evaluated and supported hemodynamically by intravenous fluids, intravenous antibiotics and underwent operation (debridement). The outcome of management is assessed by the recovery of the patients, improvement of general condition, closure of the skin defect either by graft, flap or secondary suture. The data were collected from the patient's records using predesigned data flow sheet. Descriptive statistics were performed in the study using Microsoft Excel 2013 and the results are presented as frequencies and percentage or mean.

RESULTS

A total of 54 patients with FG were evaluated. Their age ranges between 25 years and 80 years with a mean age of 51.79 years (Table 1).

Table 1: Age groups of patients diagnosed with FG in Hawari Center, Benghazi, Libya.

Age groups (years)	Number of Patients	%
21-32	5	9.25%
33-44	12	22.2%
45-56	16	29.6%
57-68	8	14.8%
69-80	13	24.07%
Total	54	100%

The average presentation time was 4.9 days with about 40% of the patients presented after 5 days duration of the complaint (Table 2).

Table 2: Presentation time of patients diagnosed with FG in Hawari Center, Benghazi, Libya.

Course (days up to admission)	No of patients	Percentage
2-3	20	37.03%
4-5	21	38.8%
6-7	8	14.8%

8-9	3	5.55%
10-11	2	3.70%
Total	54	100%

An identifiable cause is found in 35 (65%) of patients. The necrotizing process commonly originates from an infection in the anorectum, the urogenital tract, or the skin of the genitalia (Table 3).

Table 3: Etiology of FG, Hawari Center, Benghazi, Libya.

Etiology	No of patients	Percentage
Peri-anal abscess	24	44.44
Urethral stricture and instrumentation	6	11.11
Scrotal skin trauma	7	12.9
Unknown cause	17	31.48
Total	54	100

The predisposing co-morbidities found in our study are presented in table 4.

Table 4: Predisposing co-morbidities of FG, Hawari Center, Benghazi, Libya.

Predisposing co-morbidities	No of patients	Percentage
Diabetes mellitus	37	68.5
Morbid obesity	7	12.96
Ischemic heart disease	7	12.9
Chronic alcoholism	2	3.7
Immune suppression from steroid administration.	1	1.87
Total	54	100

Clinically all our patients presented with the classical symptoms and signs of FG including prodromal symptoms of fever and lethargy, and intense pain and tenderness in the genitalia that is usually associated with swelling, edema and erythema of the overlying skin. There were also subcutaneous crepitations and obvious gangrene of a portion of the genitalia with purulent drainage from wounds. Fifteen (27.7%) patients presented with septic shock.

Leukocytosis was present in 18 (33%) patients and anemia with hemoglobin less of than 10 gm/dl in 30 (55.5%) patients. Elevated serum creatinine (more than 1.5 mg/dl) was found in 13 (24%) patients. More than half of patients had blood sugar more than 171 mg/dl

Citation DOI: [10.21502/limuj.17.02.2017](https://doi.org/10.21502/limuj.17.02.2017)

LIMUJ, Volume 2, PP 134-139, 2017



LIMUJ is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

and about third of patients had blood sugar less than 120 mg/dl.

Culture was taken from the wounds and all yields polymicrobial nature.

All patients underwent extensive debridement within 4 to 6 hours of admission. Suprapubic cystostomy was inserted during the operation in 39 (72%) patients. Repeated debridement was necessary to remove residual necrotic tissue in 25 out of 46 (54%) patients. Colostomy was done in 12 (22%) patients who had extensive perianal and ischioanal involvement. Mortality rate was 14.8 % as 8 out of the 54 patients died. All the remaining patients underwent frequent daily dressing (at least once per day) with unprocessed honey. In five patients (9.2%) the skin defect was small and closed with secondary suture. The remaining 41 patients (75.9%) were transferred to plastic department where reconstructive surgery was done by free grafting or flaps.

DISCUSSION

Our study showed that FG is uncommon but not rare with a reported incidence of 1/7,500, and accounting for 1%–2% of urologic hospital admissions [9,16,17].

Our department annual activity is around 1825 admissions, so this disease comprises about one case every 608 admissions.

In a review of the topic Paty and coworkers calculated that approximately 500 cases have been reported in the literature since Fournier's 1883 report, yielding a prevalence of one case in 7500 persons. Using MEDLINE and its abstracted journals, other researchers have reported approximately 600 cases of Fournier gangrene in the world literature since 1996.

Although originally described as idiopathic gangrene of the genitalia, FG has an identifiable cause in approximately 95% of cases [18,19,20]. We identify a clear cause in 68% of patients. As about 45% of our patients had perianal abscesses we think that anorectal conditions is the most important cause to develop FG and it becomes more complicated in diabetics where immunity is compromised. The necrotizing process commonly originates from an infection in the anorectum, the urogenital tract, or the skin of the genitalia. Causes reported by other studies included infection in the perianal glands, manifesting because of colorectal injury or as a complication of colorectal

malignancy, colonic diverticulitis, or appendicitis [8, 10, 11, 12, and 17]. In addition, urethral injury, iatrogenic injury secondary to urethral stricture manipulation, or lower urinary tract infection are also reported. In the literature co-morbid diseases that compromise the immune system have been implicated as necessary predisposing factors for the development of FG [7,8,11,17,21]. The following are common predisposing co-morbidities: diabetes mellitus, morbid obesity, cirrhosis, vascular disease of the pelvis and malignancies. High-risk behaviors (e.g., alcoholism, intravenous drug abuser) are also implicated as promoters of FG. Immune suppression from systemic disease [23, 24] or steroid administration is also implicated. We found diabetes as the most prevalent co-morbidity and no case of HIV infection reported and there is one patient among the fifty four patients who was on long-term steroids for rheumatoid arthritis.

All our patients presented with the classic features of necrotizing fasciitis. Thirteen out of 54 patients were shocked at presentation and most of them were diabetics and presented late to the hospital. In some studies there were pitfalls in the clinical diagnosis of Fournier gangrene which delay presentation [6, 25]. Some of these pitfalls were encountered in three of our patients which led to delay of the presentation due to incomplete examination of genitalia; because of body habits in two patients one with morbid obesity and other with recent cerebrovascular accident; or lack of proper communication in one psychiatric neglected patient.

We did all the lab investigations, which are recommended in such cases to assess the severity and co-morbidity. Some authors advise for ultrasound of the genitalia [26] and even CT scan to see the subcutaneous gases [27, 28] but in our hospital besides the clinical findings we infrequently order plain X-ray to the pelvis to detect the presence of gas and this was very sufficient (Figure 1).

Citation DOI: [10.21502/limuj.17.02.2017](https://doi.org/10.21502/limuj.17.02.2017)

LIMUJ, Volume 2, PP 134-139, 2017



LIMUJ is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)



Figure 1: Plain film of pelvis shows multiple small gas bubbles (mottled gas shadows) over the involved right hemiscrotum.

Prompt extensive debridement is the only management in addition to the supportive measures [2,8,9,12]. As FG is considered a real surgical emergency; all cases were extensively debrided, and most of them had suprapubic cystostomy. Although in the literature they mentioned that urethral catheter is enough, we have seen patients who had cystostomy doing better with fewer incidences of UTI. Given the potential fulminant nature of this necrotizing process, repeated operative debridement procedures were necessary to ensure complete eradication of the infection. With the better outcome of patient who had colostomy we recommend for this diversion to all patients who had extensive perineal and ischiorectal involvement.

Post operatively we used the unprocessed honey for dressing which is recommended by some authors [17, 29] and we found it very effective for development of granulation tissue and acts as hyperosmolar barrier against the bacteria. Hyperbaric oxygen is not available in our hospital and with reviewing of literature the role of hyperbaric oxygen therapy needs to be clarified with a prospective controlled trial [30].

Most of our cases were transferred to plastic surgery department for reconstructive surgery although five cases were closed by secondary suture later on in urology department without the need for grafting as the skin defect was small. The prognosis following reconstruction is usually good.

The mortality rate in our series is 14.8%. Most of them died due to septic shock and one due to thrombo-embolism. The mortality in FG is usually related to the delay in presentation, poorly controlled

diabetic patients with ischemic heart disease. Fournier disease that originates from diseases of the anorectum produces poorer outcomes compared with other causes [20]. In the 600 cases of Fournier gangrene discovered during our MEDLINE search dating back to 1996, 100 deaths occurred (16.5%). In the series that included more than 20 patients, the mortality rate ranged from 4-54%, with most studies reporting mortality rates of 20-30%.

CONCLUSION

Fournier's gangrene is a life-threatening condition mostly affecting poorly controlled diabetic middle aged men who had perianal abscess. It necessitates prompt aggressive debridement. We found that urinary and fecal diversion is required to hasten the healing and improve patient general condition. We also recommend the use honey for the daily dressing. The plastic surgeon has the duty to close and reconstruct the large skin defect over the external genitalia, perineum and abdominal wall resulted from the repeated debridement by the urologist .

ACKNOWLEDGMENTS

The authors thanks Mr. Ahmad Blabloo,(IT and communications skills) for his great help during the preparation of the manuscript. Also we thank Mr. Saleh Alwerfalli (head of department of statistics of Hawari center of urology and ENT Benghazi-Libya, for his help during reviewing the patient's records.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

- [1] Klç A, Aksoy Y, Klç A. Fournier's gangrene: etiology, treatment, and complications. *Annals of plastic surgery.* 2001;47(5):523-7.
- [2] Quatan N, Kirby RS. Improving outcomes in Fournier's gangrene. *BJU international.* 2004;93(6):691-2.
- [3] Roberts DB, Hester LL. Progressive synergistic bacterial gangrene arising from abscesses of the vulva and Bartholin's gland duct. *American journal of obstetrics and gynecology.* 1972;114(3):285-91.
- [4] Addison WA, LIVENGOOD III CH, Hill GB, Sutton GP, Fortier KJ. Necrotizing fasciitis of vulvar origin

Citation DOI: [10.21502/limuj.17.02.2017](https://doi.org/10.21502/limuj.17.02.2017)

LIMUJ, Volume 2, PP 134-139, 2017



LIMUJ is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

- in diabetic patients. *Obstetrics & Gynecology*. 1984;63(4):473-9.
- [5] Meleney FL. A differential diagnosis between certain types of infectious gangrene of the skin. *Surg Gynecol Obstet*. 193;56(847):11.
- [6] Miller JD. The importance of early diagnosis and surgical treatment of necrotizing fasciitis. *Surgery, gynecology & obstetrics*. 1983 Sep;157(3):197-200.
- [7] Cohen MS. Fournier's gangrene. *Am Urol Assoc Update Ser*. 1986;5:1-6.
- [8] Carroll PR, Cattolica EV, Turzan CW, McAninch JW. Necrotizing soft-tissue infections of the perineum and genitalia: etiology and early reconstruction. *Western Journal of Medicine*. 1986;144(2):174.
- [9] Bahlmann JC, Fourie IJ, Arndt TC. Fournier's gangrene: necrotising fasciitis of the male genitalia. *BJU International*. 1983;55(1):85-8.
- [10] Paty R, Smith AD. Gangrene and Fournier's gangrene. *The Urologic clinics of North America*. 1992;19(1):149-62.
- [11] Benizri E, Fabiani P, Migliori G, Chevallier D, Peyrottes A, Raucoules M, Amiel J, Mouiel J, Toubol J. Gangrene of the perineum. *Urology*. 1996;47(6):935-9.
- [12] Edino ST, Yakubu AA, Obidiaso A. Fournier's Gangrene in a Tertiary Health Facility in Nigeria. *African Journal of Urology*. 2005;11(1):1-5.
- [13] Smith GL, Bunker CB, Dinneen MD. Fournier's gangrene. *British journal of urology*. 1998;81:347-55.
- [14] Yaghan RJ, Al-Jaberi TM, Bani-Hani I. Fournier's gangrene. *Diseases of the colon & rectum*. 2000;43(9):1300-8.
- [15] Clayton MD, Fowler Jr JE, Sharifi RO, Pearl RK. Causes, presentation and survival of fifty-seven patients with necrotizing fasciitis of the male genitalia. *Surgery, gynecology & obstetrics*. 1990;170(1):49-55.
- [16] Bejanga BL. Fournier's gangrene. *Br J Urol*. 1979;51:312-6.
- [17] Hejase MJ, Simonin JE, Bihle R, Coogan CL. Genital Fournier's gangrene: experience with 38 patients. *Urology*. 1996;47(5):734-9.
- [18] Berg A, Armitage JO, Burns CP. Fournier's gangrene complicating aggressive therapy for hematologic malignancy. *Cancer*. 1986;57(12):2291-4.
- [19] Jamieson NV, Everett WG, Bullock KN. Delayed recognition of an intersphincteric abscess as the underlying cause of Fournier's scrotal gangrene. *Annals of the Royal College of Surgeons of England*. 1984;66(6):434.
- [20] Kearney GP, Carling PC. Fournier's gangrene: an approach to its management. *The Journal of urology*. 1983;130(4):695-8.
- [21] Yeniyoğlu CO, Suelözgen T, Arslan M, Ayder AR. Fournier's gangrene: experience with 25 patients and use of Fournier's gangrene severity index score. *Urology*. 2004;64(2):218-22.
- [22] Mouraviev VB, Pautler SE, Hayman WP. Fournier's gangrene following penile self-injection with cocaine. *Scandinavian journal of urology and nephrology*. 2002;36(4):317-8.
- [23] Martinelli G, Alessandrino EP, Bernasconi P, Caldera D, Colombo A, Malcovati L, Gaviglio MR, Vignoli GP, Borroni G, Bernasconi C. Case report Fournier's gangrene: a clinical presentation of necrotizing fasciitis after bone marrow transplantation. *Bone marrow transplantation*. 1998;22:1023-6.
- [24] Faber HJ, Girbes AR, Daenen S. Fournier's gangrene as first presentation of promyelocytic leukemia. *Leukemia research*. 1998;22(5):473-6.
- [25] Stamenkovic I, Lew PD. Early recognition of potentially fatal necrotizing fasciitis: the use of frozen-section biopsy. *New England Journal of Medicine*. 1984;310(26):1689-93.
- [26] Kane CJ, Nash P, McAninch JW. Ultrasonographic appearance of necrotizing gangrene: aid in early diagnosis. *Urology*. 1996;48(1):142-4.
- [27] Sherman J, Solliday M, Paraiso E, Becker J, Mydlo JH. Early CT findings of Fournier's gangrene in a healthy male. *Clinical imaging*. 1998;22(6):425-7.
- [28] Rajan DK, Scharer KA. Radiology of Fournier's gangrene. *AJR. American journal of roentgenology*. 1998;170(1):163-8.
- [29] Tahmaz L, Erdemir F, Kibar Y, Cosar A, Yalcı́n O. Fournier's gangrene: Report of thirty-three cases and a review of the literature. *International journal of urology*. 2006;13(7):960-7.
- [30] Hollabaugh Jr RS, Dmochowski RR, Hickerson WL, Cox CE. Fournier's gangrene: therapeutic impact of hyperbaric oxygen. *Plastic and reconstructive Surgery*. 1998;101(1):94-100.



ملخص باللغة العربية

التنكز (الموت الموضعي الذي يحل بالنسيج الحي) لإنسجه الأعضاء التناسلية الذكرية :سلسلة متتالية متكونة من أربعة وخمسون مريض .

مفتاح الخفي * ، خليفة سلطان، وائل العرفي، أمين عصمان
مستشفى الهواري للمسالك والأذن والأنف والحنجرة – قسم المسالك – بنغازي ليبيا
* المؤلف المراسل: مفتاح الخفي قسم الجراحة – كلية الطب البشري – جامعة بنغازي – بنغازي ليبيا. بريد الكتروني:
abdokhaf2007@gmail.com ، هاتف 00218-927264758

الملخص

أهداف الدراسة: تهدف هذه الدراسة لوصف عوامل الخطورة وطرق تشخيص وعلاج هذا المرض وكذلك المآلات لهذا المرض بعد العلاج.

طرائق البحث: خلال الفترة الممتدة من يناير 1997 إلى أكتوبر 2016 تم دراسة 54 حالة مرضية وكان متوسط اعمارهم 51 عاما (25-80) حيث تم تشخيصها وعلاجها بقسم جراحة المسالك البولية بمركز الهواري لجراحة المسالك البولية والأذن والأنف والحنجرة بمدينة بنغازي-ليبيا.

النتائج: اوضحت الدراسة أن 68.5% من المرضي مصابين بداء السكري و 44% من المرضي يعانون من خراج حول فتحة الشرج، وبلغت الوفيات 14% بين المصابين، حيث تم احالة المرضي إلي قسم جراحة التجميل لغرض تجميل فراغات الجلد الناتجة عن المرض وبلغ عددهم 41 مريضا.

الاستنتاج: تعتبر الإصابة بمرض الداء السكري وخراج فتحة الشرج من أهم العوامل المساعدة على الإصابة بتنكز الأعضاء التناسلية الذكرية ويعتبر التدخل الجراحي هو العلاج الوحيد الذي يمكن أن ينقذ حياة المصاب.

الكلمات المفتاحية: موات فورنييه، تنكز لفافة الأعضاء التناسلية الذكرية، الوفيات.

