

## Fournier's Gangrene: About a Case

Mohamed Yaya Cissé<sup>1\*</sup>, Mohamed Nizar Errabi<sup>1</sup>, Mamadou Diallo<sup>1</sup>, Hicham Krimou<sup>1</sup>, Mohammed Attar<sup>1</sup>, Mohamed Lemein Taleb Maouloud<sup>1</sup>, Fatoumata Binta Kébé<sup>1</sup>, Mohamed Laroussi<sup>1</sup>, Samir Hasbi<sup>1</sup>, Mohammed Saïd Belhamidi<sup>1</sup>, Mohammed Menfaa<sup>1</sup>, Fouad Sakit<sup>1</sup>, Abdelkrim Choho<sup>1</sup>, Abdessamad Kaoukabi<sup>1</sup>, Mohamed Amine Ennouhi<sup>1</sup>

<sup>1</sup>Department of Visceral and Plastic Surgery, Moulay Ismail Military Hospital, Meknes, Morocco

DOI: [10.36347/sjmcr.2023.v11i09.011](https://doi.org/10.36347/sjmcr.2023.v11i09.011)

| Received: 23.07.2023 | Accepted: 30.08.2023 | Published: 06.09.2023

\*Corresponding author: Mohamed Yaya Cissé

Department of Visceral and Plastic Surgery, Moulay Ismail Military Hospital, Meknes, Morocco

### Abstract

### Case Report

Fournier's gangrene is a rare and serious form of necrotising fasciitis. It has a high morbidity and mortality rate, requiring rapid and energetic multidisciplinary medical and surgical management. Initial treatment is based on resuscitation combined with surgical debridement. Secondly, the major problem remains healing and the after-effects that patients retain. Several therapeutic modalities are currently available to improve and accelerate healing. The prognosis and healing time depend essentially on the quality of the treatment but also on the extent of the necrosis. The other elements that condition the prognosis being the patient's terrain and the origin of the gangrene. We report a case of Fournier's gangrene in a 59-year-old diabetic patient who had benefited from medical and surgical treatment and had a favourable outcome.

**Keywords:** Fournier's gangrene, necrotising fasciitis, prognosis.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Fournier's gangrene is a severe necrotising bacterial dermo-hypodermatitis of the perineal region first described by Baurienne in 1764, but it was Fournier who gave the disease its name when, in 1883, he described five cases of gangrene of the scrotum in young men [1]. It is a peri-anal, perineal and genital necrotising fasciitis resulting from a polybial infection whose source may be genitourinary, colorectal, cutaneous or idiopathic, and which is potentially lethal. It is secondary to a locoregional cause in 95% of cases [2]. It is an absolute emergency in which rapid diagnosis and treatment determine mortality and morbidity. We report a case of Fournier's gangrene in a 59-year-old patient with diabetes. Our aim is to use this case to illustrate the clinical aspect, the diagnostic approach and the therapeutic outcome of Fournier's gangrene in our setting.

## OBSERVATIONS

Mr M. EL. H, 54 years old, married and father of 04 children, followed for diabetes, received for pain plus perineal and scrotal swelling. It all started with painful perineal swelling, redness and local heat. On clinical examination, the patient was conscious, cooperative, in good general condition, haemodynamically and respiratorily stable (blood

pressure 13/8 cmHg, heart rate 72 beats/minute, respiratory rate 18 cycles/minute), GCS 15/15, no oedema of the lower limbs, conjunctivae and integument normo coloured with a fever of 39°C. Examination of the perineum revealed a large fistulous, necrotic left perianal collection with a foul odour and a distended, hyperemic and very painful scrotum (Figure 1).



Figure 1: Patient on arrival at HMMI-Meknès emergency department

The biology showed an inflammatory and infectious syndrome (hyperleukocytosis of 21,000/mm<sup>3</sup>, haemoglobin 13.6 g/dl, Plq 338, lymphopenia 0.89 and C-reactive protein CRP >320mg/l; blood glucose 2.83g/l; renal function tests (urea 0.84g/l; creatinine 14.69mg/l); the rest of the tests (liver and blood ionogram) were normal. The diagnosis of Fournier's gangrene in a diabetic setting was accepted. He was put on medical treatment based on rocephin (02g per day), metronidazol (three times 500mg per day), analgesics and regular insulin was started. The patient was admitted to the operating theatre for surgical trimming. He was placed in the pruned position under spinal anaesthesia, which was converted to general anaesthesia. Surgical trimming consisted of stripping all necrotic tissue from the perineum, from the bursa down to the healthy skin (Figure 2).



**Figure 2: Patient after stripping (necrosectomy) on day 1 in the operating theatre. HMMI-Meknes Visceral Surgery Department**

Careful washing with hydrogen peroxide diluted with 0.9% saline, then compresses soaked in hydrogen peroxide and Betadine placed in the cubicles and covering the entire wound, followed by a compression dressing. A specialist opinion from endocrinology and nephrology was requested the day after his admission, followed by a new biological check-up at the request of the opinions:

- Endocrinology for his diabetes: Blood glucose 2.55g/l; Glycated haemoglobin 7.9% for which insulin treatment was renewed.
- Nephrology for suspected renal failure on admission, which fortunately was functional.

- A new biological check-up showed regression of the inflammatory and infectious work-up: (hyperleukocytosis at 16.96/mm<sup>3</sup>, no lymphopenia and C-reactive protein CRP >236mg/l), haemoglobin at 12.2 g/dl, Plq at 369; reduction in blood glucose to 2.55g/l; the work-ups (renal and hepatic) had normalised.

Dressing sessions using hydrogen peroxide diluted with 0.9% saline, then compresses soaked in hydrogen peroxide and Betadine covering the entire wound, followed by a pressure dressing, were instituted on a daily basis (Figures 3, 4 and 5).



**Figure 3: Patient on 3rd day of hospitalisation after stripping. HMMI-Meknes Department of Visceral Surgery**



**Figure 4: Patient on day 5 of hospitalisation after stripping. HMMI-Meknes Department of Visceral Surgery**



**Figure 5: Patient on 10th day of hospitalisation after stripping. HMMI-Meknes Department of Visceral Surgery**

After twenty-five days (25) of care, the patient was transferred to the plastic surgery department for a possible skin graft. The patient was admitted back to the operating theatre for a skin graft and was placed in the waist-up position under spinal anaesthetic. After locating the site to be harvested, we performed a medial fasciocutaneous flap of the right thigh followed by placement of a drain (Figures 6 and 7).



**Figure 6: Patient on the 27th day of hospitalisation in the operating theatre after identification of the site to be harvested. HMMI-Meknes Plastic Surgery Department**



**Figure 7: Patient after skin grafting of the medial fasciocutaneous flap of the right thigh. HMMI-Meknes Plastic Surgery Department**

A check ten (10) days after the plasty showed satisfaction with the progress (figure 8).



**Figure 8: Check-up after ten (10) days of skin grafting. HMMI-Meknes Plastic Surgery Department**

## DISCUSSION

Fournier's gangrene is a rapidly progressive necrotising fasciitis of the perineum and external genitalia resulting in extensive soft tissue necrosis [3]. It is the most serious complication of suppurations of the peri-anal region, regardless of the primary infection. Fournier's gangrene is often described as a disease of adults. The age of patients reported in Tang's review of the literature was 51.8 years [4]. In Ugwumba's series, the mean age was 48.3 years (range: 28 to 66 years) [5] and 42 years (range: 20 to 65 years) in Borki's series [6]. Other authors found an average age of less than 40 years: Dekou, in his study, noted an average of 39.4 years (extremes: 20 and 67 years) with 64.29% of patients under 50 years of age [7]. Rimtebaye found an average age of 38.33 years with extremes of 22 and 70 years and explained that the young age in his series was due to the predominance of urological causes (urogenital portal of entry), probably related to sexual vagrancy [8]. Several authors have noted a male predominance, with men being ten times more affected than women [3, 9]. The over-representation of men can be explained by the different anatomical conditions in women, which can be summed up by better drainage of the perineal region in women through vaginal secretions and rich vascularisation of the genital tract, which also

favours oxygenation of the region and theoretically acts as a brake on the development of anaerobic germs [9].

Our case involved a 54-year-old man. Gangrene occurs in a particular context, often involving a form of immunodepression of varying degrees. Diabetes mellitus is considered to be the most common predisposing factor, and its presence is reported in 21.4% to 44.6% of patients with Fournier's gangrene, as hyperglycaemia interferes with cellular immunity [4, 5, 10]. Other risk factors include alcoholism, morbid obesity, malnutrition, chronic renal failure, cirrhosis, advanced age, cancers, haemopathies, HIV infection, arterial disease, arterial hypertension, immunosuppressive treatments, pelvic vascular pathologies, and so on. [4,11]. In the series by Borki [6], over 70% of patients had none of the predisposing factors. Our patient had unbalanced diabetes mellitus. Clinically, Fournier's gangrene presents in 2 phases: a phase of invasion and a phase of extensive cutaneous necrosis, but with respect for hyper-vascularised areas. The invasion phase is generally revealed by an increase in scrotal volume, perineal or genital pain and fever. In the necrotic phase, clinical signs alone are sufficient; snowy crepitus is pathognomonic but present in 50 to 60% of cases [12,13]. In our case, our patient was admitted in the necrotic phase. From a biological point of view, our patient presented with hyperleukocytosis. This finding is identical to those made by several authors [6, 7, 14].

Fournier's gangrene typically results from a synergistic infection by several bacteria. The presence of crepitus, with or without a foul odour, suggests the presence of anaerobic bacteria. However, the majority of cases involve a combination of aerobic and anaerobic bacteria [3,15]. Treatment consists of 3 components: a medical component based on resuscitation and antibiotic therapy; an initial surgical component based on surgical debridement, flattening of collections and purulent fuses, and excision of all necrotic and devitalised tissues. This excision must be as extensive as possible. This is the 3rd stage, the healing stage and skin recovery. This healing is based on several therapeutic modalities: directed healing, hyperbaric oxygen therapy, vaco-therapy flaps and covering procedures [16, 17]. Other authors suggest that colostomy should be used to prevent contamination of the wound by faeces, thus facilitating local care and healing [10, 18, 19]. Colostomy was not performed in our patient as it is more appropriate in gangrene extending to the posterior perineum. In the case of our patient, we obtained complete healing after 2 months of treatment and after stabilising the diabetes mellitus incriminated as a predisposing factor. The prognosis and healing time depend essentially on the quality of the management but also on the extent of the necrosis. The other elements that condition prognosis are the patient's terrain and the origin of the gangrene [20].

## CONCLUSION

Perineo-scrotal gangrene is a serious disease. Despite energetic multidisciplinary therapeutic management, it is still the cause of a high mortality rate. Early and regularly repeated surgical excisions under general anaesthesia and management in a surgical intensive care unit with triple antibiotic therapy are essential to avoid and treat the general complications of gangrene, such as sepsis and visceral failure, which in our opinion are the most serious factors.

## REFERENCES

1. Fournier, J.A. (1883). Gangrene foudroyante of the penis. *Med Prat.* 4, 589-97.
2. Ioannovich, J., Kepenekidis, A., Stamatopoulos, K., & Matar, N. (1998, February). Use of gracilis musculocutaneous flap in tissue loss caused by Fournier's gangrene. *Annales de Chirurgie Plastique et Esthétique* (Vol. 43, No. 1, pp. 58-63).
3. Eke, N. (2000). Fournier's gangrene: a review of 1726 cases. *British journal of Surgery*, 87(6), 718-728.
4. Tang, L. M., Su, Y. J., & Lai, Y. C. (2015). The evaluation of microbiology and prognosis of Fournier's gangrene in past five years. *Springerplus*, 4, 1-4.
5. Ugwumba, F. O., Nnabugwu, I. I., & Ozoemena, O. F. N. (2012). Fournier's gangrene-analysis of management and outcome in south-eastern Nigeria surgery. *South African Journal of Surgery*, 50(1), 16-19.
6. Borki, K., Ait Ali, A., Choho, A., Daali, M., Alkandry, S., & André, J. L. (2002). La gangrène périnéo-scrotale: à propos de 60 cas. *E-mémoires Acad Natl Chir*, 1(4), 49-54.
7. Dekou, A., Konan, P. G., Gowe, E., Vodi, C., Kouame, B., Fofana, A., ... & Manzan, K. (2011). Gangrene of male external genitalia: surgical treatment and plastic reconstruction. *Basic and Clinical Andrology*, 21, 247-253.
8. Rimtebaye, K., Niang, L., Ndoye, M., Traore, I., Vadandi, V., Gueye, S.M., Noar, T. (2014). Fournier gangrene: epidemiological, clinical, diagnostic and therapeutic aspects in the urology department of N'djamena. *URO'ANDRO*, 1(2), 91-98.
9. Sarkis, P., Farran, F., Khoury, R., Kamel, G., Nemr, E., Biajini, J., & Merheje, S. (2009). Gangrène de Fournier: revue de la littérature récente. *Progrès en urologie*, 19(2), 75-84.
10. Taken, K., Oncu, M. R., Ergun, M., Eryilmaz, R., Demir, C. Y., Demir, M., & Gunes, M. (2016). Fournier's gangrene: Causes, presentation and survival of sixty-five patients. *Pakistan Journal of Medical Sciences*, 32(3), 746.
11. Norton, K. S., Johnson, L. W., Perry, T., Perry, K. H., Sehon, J. K., & Zibari, G. B. (2002). Management of Fournier's gangrene: an eleven year retrospective analysis of early recognition, diagnosis, and treatment. *The American Surgeon*, 68(8), 709-713.

12. Khalfi, K. (2009). Snowy crepitation of the perineum. *Métabolismes Hormones Diabète et Nutrition*, 13(5), 203.
13. Rakototiana, A.F., Hunald, F.A., Razafimahatratra, R., Rakoto-Ratsimba, H.N., Rantomalala, H.Y.H. (2011). Profil épidémio-clinique et thérapeutique de la gangrène de Fournier rencontrée en situation précaire. *Revue Tropicale de Chirurgie*, 5, 4-6.
14. Benjelloun, E. B., Souiki, T., Yakla, N., Ousadden, A., Mazaz, K., Louchi, A., ... & Taleb, K. A. (2013). Fournier's gangrene: our experience with 50 patients and analysis of factors affecting mortality. *World journal of emergency surgery*, 8, 1-5.
15. Tuncel, A., Aydin, O., Tekdogan, U., Nalcacioglu, V., Capar, Y., & Atan, A. (2006). Fournier's gangrene: three years of experience with 20 patients and validity of the Fournier's gangrene severity index score. *European urology*, 50(4), 838-843.
16. Lipsker, A., Le Roux, F., Saint, F., & Pignot, G. (2014). Gangrène de Fournier: prise en charge chirurgicale. *Progrès En Urologie-FMC*, 24(3), F80-F85.
17. Sroczynski, M., Sebastian, M., Rudnicki, J., Sebastian, A., Agrawal, A.K. (2013). Une approche complexe du traitement de la gangrène de Fournier. *Adv Clin Exp Med.*, 22(1), 131-5.
18. Ettalbi, S., Benchamkha, Y., Boukind, S., Droussi, H., Ouahbi, S., Soussou, M., ... & Finech, B. (2013, August). La gangrène périnéoscrotale: profil épidémiologique et aspects thérapeutiques. À propos de 45 cas. In *Annales de chirurgie plastique esthétique* (Vol. 58, No. 4, pp. 310-320). Elsevier Masson.
19. El Mejjad, A., Belmahi, A., Choukri, A., Kafih, M., Aghzadi, R., & Zerouali, O. N. (2002, July). Perineo-scrotal gangrene: apropos of 31 cases. In *Annales D'urologie* (Vol. 36, No. 4, pp. 277-285).
20. Koukouras, D., Kallidonis, P., Panagopoulos, C., Al-Aown, A., Athanasopoulos, A., Rigopoulos, C., ... & Liatsikos, E. (2011). Fournier's gangrene, a urologic and surgical emergency: presentation of a multi-institutional experience with 45 cases. *Urologia internationalis*, 86(2), 167-172.