

Gangrene of the External Genitalia: Vital and Functional Prognosis in the Urology Department of the Cocody University Hospital from 2010 to 2022

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Abstract

Introduction: The aim of our study was to identify the factors that determine the vital and functional prognosis of patients with gangrene of the external genitalia. **Patients and Methods:** Our study is retrospective and descriptive. It concerned all patients treated for GOG in the Urology Department of the Cocody University Hospital over a period of 13 years. **Results:** Among the 3244 patients consulted for a surgical pathology, 73 (2.25%) had a GOG. The mean age of patients was 48.81 years, with extremes of 19 and 74 years. The majority of patients were male. The main reasons for consultation were scrotal swelling (41.1%) and perineal pain. More than half (53.1%) consulted between 8 and 15 days. Gangrene mainly affected the scrotum, perineum, and in some cases, the penis and pelvis. Diabetes was the most common risk factor (50.68%), followed by alcoholism (23.29%) and acute kidney injury (15.07%). Urological causes were the most common, with more than half of the cases (61.64%). All patients underwent surgical debridement. Triple broad-spectrum antibiotic therapy combining a 3rd generation cephalosporin, an Imidazole and an Aminoglycoside was initiated in the majority of cases (93.15%). Nearly half of the patients were treated the day after their admission. The cure rate was 89.04%, with a mortality rate of 6.85%. Major erectile dysfunction and dysuria were found in 35.61% and 34.25% of patients, respectively. **Conclusion:** Early therapeutic management, well-codified treatment and a multidisciplinary care pathway could improve patients' prognostic factors. Our study suggests that patients surviving after gangrene of the external genitalia show a marked and continuous impairment in their overall urological and sexual quality of life.

Keywords

Gangrene, Prognosis, Genitals

1. Introduction

Gangrene of the external genitalia (GOGE) is a necrotizing fascist of the external genitalia, perineum and perianal region related to thrombosis of the small subcutaneous vessels [1]-[3].

Its occurrence is favored by regional locomotive causes such as urinary tract infections, urethral strictures, and perianal infections [4].

This condition is exacerbated by risk factors including chronic alcoholism, immunosuppression and diabetes [5]-[8].

It is a serious pathology, with a rapid and unpredictable progression to necrosis and can be life-threatening [5]-[10].

This study was therefore initiated with the aim of highlighting the factors determining the vital and functional prognosis of patients with gangrene of the external genitalia.

2. Patients and Method

Our study is retrospective and descriptive. It concerned all patients treated for GOGE in the Urology Department of the Cocody University Hospital over a period of 13 years. Data were collected from hospitalization records, patient records, and operative reports, achieved in the patients' hospitalization files.

3. Results

3.1. Epidemiology

Among the 3244 patients consulted for a surgical pathology, 73 (2.25%) had a GOGE.

The mean age of patients was 48.81 years, with extremes of 19 and 74 years.

All patients were male. The most affected occupations were traders, followed in farmers, as illustrated in **Figure 1**.

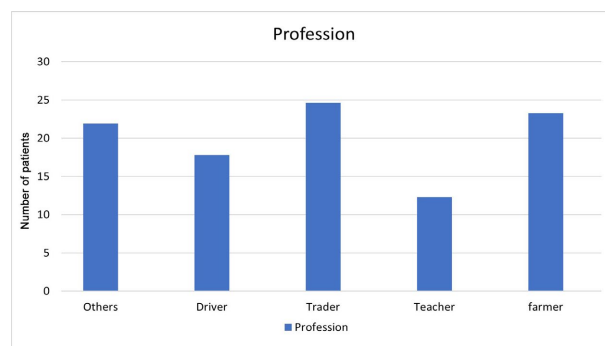


Figure 1. Distribution by occupation.

3.2. Clinical

The main reasons for consultation were scrotal swelling (41.1%) and perineal pain (24.66%) (**Figure 2**).

More than half (53.1%) consulted between 8 and 15 days. Details of consultation times are shown in **Table 1**.

Gangrene mainly affected the scrotum, perineum and in some cases, the penis and pelvis as shown in **Table 2**.

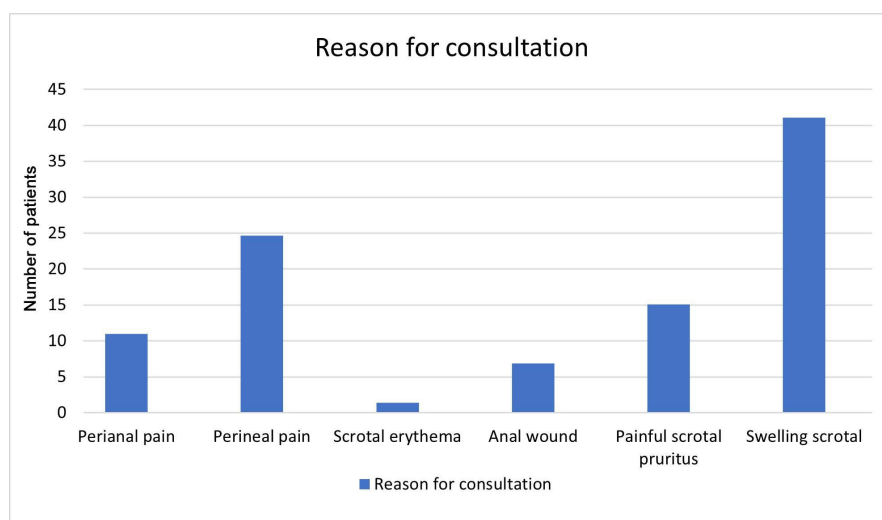


Figure 2. Distribution by reason for consultation.

Table 1. Distribution by consultation time.

Time Limit for Consultation	Number (n)	Percentages (%)
The first 7 days	25	34.25
Between 8 and 15 days	39	53.42
After 15 days	9	12.33
Total	73	100.00

Table 2. Distribution by site of lesions.

Seats	Number (n)	Percentages (%)
Not Successful	4	5.48
Penis	1	1.37
Penis + Scrotum	10	13.70
Penis + Perineum + Scrotum + Pelvis	3	4.11
Perineum	9	12.33
Perineum + Scrotum	24	32.88
Scrotum	22	30.14
Total	73	100.00

3.3. Risk Factors and Etiologies

Diabetes was the most common risk factor (50.68%), followed by alcoholism (23.29%) and acute kidney injury (15.07%) (Table 3).

Urological causes were the most common, with more than half of the cases (61.64%) (Figure 3).

Table 3. Distribution by risk factors.

Risk Factors	Staff (n)	Percentages (%)
HIV (Human Immunodeficiency Virus)	2	2.74
Diabetes	37	50.68
Obesity	1	1.37
AKI (Acute Kidney Injury)	11	15.07
Malnutrition	1	1.37
Alcoholism	17	23.29
Drug	1	1.37
Poor Hygiene	8	10.96
Tobacco	15	20.55

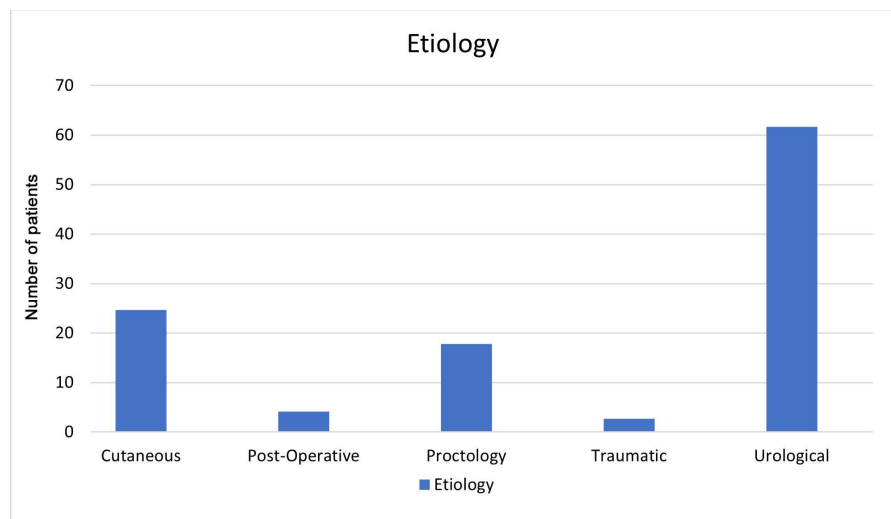


Figure 3. Distribution by etiologies.

3.4. Treatment

All patients underwent surgical debridement. In addition, the bladder was drained by surgical cystostomy in 6 cases. A shunt colostomy was performed in 5 cases when perineal lesions were extensive.

A triple broad-spectrum antibiotic therapy combining a 3rd generation cephalosporin, an Imidazole and an Aminoglycoside was initiated in the majority of cases. (93.15%).

Nearly half of the patients were treated the day after their admission.

3.5. Outcome

The cure rate was 89.04%, with a mortality rate of 6.85%. Major erectile dysfunction and dysuria were found in 35.61% and 34.25% of patients, respectively.

Factors negatively influencing the prognosis included a delay in management of more than 3 days and the locoregional extent of gangrene. The consequences are physical and psychological. There is a reduced physical capacity in 8.22% of patients, discomfort when sitting in 41.09%, and chronic anxiety in 17.80%.

Symptoms of the lower urinary tract predominated during the emptying phase, with 34.25% of cases of dysuria.

4. Discussion

4.1. Epidemiological

4.1.1. Age

The mean age of our patients was 48.81 years \pm 13.75 years, with extremes ranging from 19 to 74 years. The age group of 35 - 50 years predominates with 34.25%.

Our results are similar to those of Diallo [11] and Dicko [12] in Mali, who found an average age of 50 and 52 years, respectively, with extremes of 17 and 73 years, respectively; and 22 and 95 years old.

Diallo *et al.* [13] in their study done in Guinea reported an average age of 45 years with extremes of 20 and 70 years. This is comparable to our result. Fall *et al.* [14] in Dakar reported a mean age of 50 years with extremes of 20 and 93 years. This confirms that gangrene of the external genitalia is a pathology of young adults. However, in the literature, rare forms in the elderly and newborns have been observed.

4.1.2. Sex

In our study, all the cases observed were male, as long as Ruiz-Tovar *et al.* and Diallo *et al.*, who had the female participation [8] [15]. In addition, female disease, although rare, remains possible. This could be explained by the fact that cases of GOG in women are treated in the gynecology department. However, men are ten times more affected than women; This difference can be explained by better drainage of the perineal region in women through vaginal secretions.

4.2. On the Clinical Level

4.2.1. Reason for Consultation

Scrotal swelling was the most frequent reason for consultation, with 41.10%. Our results are higher than those of Borki *et al.* [16], who reported 26.1%.

4.2.2. Consultation Period

The majority of our patients (53.42%) had consulted between the 8th and 15th day after the onset of the disease. This delay in diagnosis thus increases the prognosis of life. Our results were identical to those of Ruiz-Tovar *et al.* (25.55%) [8], who had consulted between 8 and 30 days, the 12.33% had consulted after 15 days. This delay in consultation was due to ignorance of the disease, self-medication or treat-

ment for another pathology.

4.2.3. Site of the Lesions

Lesions of the perineum and scrotum predominated in our study, representing 32.88%; on the other hand, Kokaina [17] found scrotal lesions predominant at 57.1%.

4.2.4. Etiologies

Urological etiologies (urethral narrowing, urethritis) predominated in our study, representing 61.64%; this observation is also made by Diallo [11], who finds a predominant urogenital etiology with 29.9%.

4.2.5. Time for Management

In our series, the average time taken to take care of the patient was 3 days, Dicko [12] in Mali has almost doubled to 7 days. This could be explained by the underestimation of the disease by the patients themselves and the financial difficulties presented by some patients. Boyer and Vargas [18] in France, in their study of 195 patients hospitalized for GOGÉ, demonstrated that prolonged waiting time in the emergency department of more than 8 hours is associated with mortality, whereas early surgery would be beneficial. This denotes that GOGÉ is a medical-surgical emergency.

4.3. Management

4.3.1. Antibiotic Therapy

Antibiotic therapy was initiated upon admission to our study. This antibiotic therapy was administered parenterally, probabilistic, broad-spectrum and normally active on anaerobic germs, Gram-positive Cocci and Gram-negative bacilli. It combined a third-generation cephalosporin, an aminoglycoside and an imidazole in 93.15%. This is because the evolution of gangrene leads to a picture of sepsis.

In the Borki *et al.* series, all patients were treated with the combination of: Penicillin 200,000 IU/kg/day + Metronidazole 1.5 g/day + Aminoglycoside [16] and for Morua *et al.* [19]. The most commonly used antibiotic regimen in their patients is: Ofloxacin 400 mg IV/12 h + Clindamycin 600 mg IV/6 h.

4.3.2. Surgery

The surgical management of patients in our series consisted of a complete excision of all necrotic skin surfaces in the penis, scrotum and perineum, removing all dead tissue, which was the case for other authors. This treatment was performed under general anesthesia.

This radical treatment has the advantage of slowing down the progression of gangrene and limiting surgical revisions. Other authors argue that debridement should be limited to tissue that has been clearly damaged by necrosis so that perineal skin cells can regenerate later without a secondary graft [20] [21].

To this end, all the patients in our series have benefited from the debridement technique with an acceptable aesthetic result in the medium term.

In addition, in our study, 5 patients had undergone a colostomy because they had fecal incontinence (which could contaminate the wounds, leading to gluteal bedsores).

A transurethral urinary catheterization was performed in 67 patients, and six cystostomies were performed for urethral stenosis.

4.4. Evolution

Mortality rates from gangrene of the external genitalia reported in the literature range from 5% to 45% [22]. The overall mortality rate in our series was 6.85%, which is in line with data from other studies, such as the one carried out by El Moussaoui *et al.* [23] in Morocco. The mortality rate ranged from 9% to 28%. This result can be explained by the age of the patients as well as the delay in surgical management, which was one day in 45.21% of patients, in addition to the broad-spectrum antibiotic therapy introduced at admission. Indeed, the age range that predominates in our study is between 35 and 50 years old.

In our study, we observe that the more extensive the gangrene, the lower the chances of recovery. The death rate increases with the time it takes to receive treatment. More deaths were observed in patients who were treated after 3 days.

To better assess the vital prognosis, we established a link between locoregional extension and the duration of hospitalization, the time taken to care and the evolution, diabetes and the duration of hospitalization.

We have noticed that:

- Diabetic patients, as well as those with gangrene that extended to the abdominal wall, spent two weeks to one month in hospitalization.
- The number of deaths was higher in patients treated within three days or more.

In view of these results, we can say that diabetes, regional locomotive extension and the delay in treatment of more than three days are factors of poor prognosis because they are life-threatening for the patient.

4.5. Quality of Life

The medium- and long-term evaluation of psychological and functional quality of life after the management of this dilapidated pathology remains little discussed in the literature [24].

In our study, the results show that some patients who develop gangrene of the external genitalia perceive the disease as an event that negatively affects the rest of their lives.

The consequences are physical and psychological. There is a reduced physical capacity in 8.22% of patients, discomfort when sitting in 41.09%, and chronic anxiety in 17.80%.

Symptoms of the lower urinary tract predominated during the emptying phase, with 34.25% of cases of dysuria.

Regarding the evaluation of erectile function, 26 patients had major erectile dysfunction; 15 patients had minor erectile dysfunction that nevertheless allowed

sexual intercourse.

In addition to erectile dysfunction, loss of confidence in the ability to establish and maintain sexual intercourse, the choice of sexual abstinence, particularly with regard to the aesthetic aspect related to persistent scars, persistent chronic pain and decreased libido, were mentioned in our patients.

5. Conclusions

Despite recent therapeutic advances and the literature dedicated to the management of gangrene of the external genitalia, this benign condition still has a high mortality rate. In addition, in surviving patients, aggressive initial surgical management seems to have a lasting impact on the functional prognosis of the genitals and urine. Early therapeutic management, well-codified treatment and a multi-disciplinary care pathway could improve patients' prognostic factors. Our study suggests that patients surviving after gangrene of the external genitalia show a marked and continuous impairment in their overall urological and sexual quality of life.

At a time when our contemporary societies are largely addressing the issue of quality of life and that of quality life, improving the long-term care of surviving patients appears to be a real therapeutic challenge for this rare pathology.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix



Gangrene of external genitalia