



Original article

Management of gangrene of the external genitalia at the National Reference University Hospital of N'Djamena

Prise en charge des gangrènes des organes génitaux externes au CHU de référence nationale de N'Djamena

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Résumé

Introduction : La gangrène des organes génitaux externes (GOGE) est une fasciite nécrosante des organes génitaux externes et du périnée liée à une thrombose des petits vaisseaux sous-cutanés qui aboutit à une gangrène de la peau. Le but de l'étude est de décrire les aspects épidémiologiques, cliniques, thérapeutiques et les résultats d'une série de 64 cas de (GOGE) et d'en identifier les facteurs de risque.

Matériels et méthode : Nous avons réalisé une étude rétrospective portant sur les cas de GOGE pris en charge au service d'urologie du CHU de référence nationale de N'Djaména de janvier 2016 à décembre 2021. Les variables étudiées étaient cliniques, paracliniques, thérapeutiques et évolutives.

Résultats : Au total 64 patients répondaient à nos critères d'inclusion. L'âge moyen des patients était de 43 ans. Les facteurs de risque identifiés étaient : le diabète (35,9%), le tabagisme (20,3%), l'alcoolisme (17,2%), l'HTA (7,8%) et le VIH (4,7%). La sténose urétrale était la principale étiologie (54,7%). Il y avait

une hyponatrémie (7,8%), hypokaliémie (9,2%). Les germes identifiés à l'examen cytot bactériologique du pus étaient : E.coli (39,1%), staphylocoque (23,4%), Pseudomonas (17,2 %). Les mesures de réanimation et la nécrosectomie étaient systématiques. La colostomie était réalisée dans (17,2%), la suture secondaire (85,5%). La durée moyenne d'hospitalisation était de 31 jours. La mortalité (10,9%).

Conclusion : La GOGE est fréquente avec un pronostic vital engagé. Elle complique les sténoses urétrales et favorisée par le terrain d'immunodépression. La prise en charge est multidisciplinaire.

Mots-clés : Fasciite nécrosante. Diabète. HTA. Sténose urétrale. Nécrosectomie.

Abstract

Introduction: Gangrene of the external genitalia (GGE) is a necrotizing fasciitis of the external genitalia and perineum linked to thrombosis of small subcutaneous vessels, resulting in gangrene of the skin. The aim of this study is to describe the epidemiological, clinical,

and therapeutic aspects and outcomes of a series of 64 cases of GGE and to identify risk factors.

Methodology: We conducted a retrospective study of GOGGE cases treated at the urology department of the national reference university hospital in N'Djamena from January 2016 to December 2021. The variables studied were clinical, paraclinical, therapeutic and evolutionary.

Results: A total of 64 patients met our inclusion criteria. The mean age of the patients was 43 years. The identified risk factors were: diabetes (35.9%), smoking (20.3%), alcoholism (17.2%), hypertension (7.8%), and HIV (4.7%). Urethral stricture was the main etiology (54.7%). Hyponatremia (7.8%) and hypokalemia (9.2%) were also present. The pathogens identified by cytobacteriological examination of the pus were: *E. coli* (39.1%), *Staphylococcus* (23.4%), *Pseudomonas* (17.2%). Resuscitation measures and necrosectomy were systematic. Colostomy was performed in 17.2% of cases, with secondary suturing in 85.5%. The average length of hospital stay was 31 days. The mortality rate was 10.9%.

Conclusion: Gastrointestinal edema (GIE) is common and life-threatening. It complicates urethral strictures and is exacerbated by immunosuppression. Management is multidisciplinary.

Keywords: Necrotizing fasciitis. Diabetes. Hypertension. Urethral stricture. Necrosectomy.

Introduction

External genital gangrene (EGG) is a necrotizing fasciitis of the external genitalia and perineum linked to thrombosis of small subcutaneous vessels, resulting in gangrene of the skin [1]. It is rare in Europe but still very common in Africa, where the largest clinical series originate due to consultation delays [2]. The true incidence is unknown. It predominantly affects men of all ages, and only exceptionally women [3]. The diagnosis is clinical. Reported predisposing factors include malnutrition, extremes of age, morbid obesity, severe immunosuppression, diabetes, and

chronic alcoholism. It constitutes a major medical, surgical, and urological emergency because it is life-threatening, with a mortality rate of 20 to 80% [1]. Management is multidisciplinary and relies on medical resuscitation, broad-spectrum parenteral antibiotic therapy, and surgical debridement removing necrotic tissue [3]. Plastic surgery is necessary in cases of extensive tissue necrosis. The aim of this study is to report the epidemiological, clinical, therapeutic, and prognostic aspects of a series of 64 cases of GOGGE and to identify its risk factors.

Methodology

This was a retrospective study compiling the records of patients admitted for GOGGE to the urology department of the CHU-RN from January 2016 to December 2021. Included in this study were patients referred from the emergency departments and other structures and those received directly at the urology outpatient consultation, taken care of and followed up for GOGGE in the urology department. The variables studied were: sociodemographic (patients of all ages and sexes), clinical (location and extent of lesions, time to consultation), paraclinical (pus samples, cytobacteriological examinations, antibiogram, complete blood count (anemia when the hemoglobin level is less than 12g/dl, hyperleukocytosis (white blood cells greater than 10,000/mm³), hypokalemia (less than 3.5 mmol /l, hyponatremia (less than 135 mmol /l)), HIV serology, prognostic factors, etiological factors. Risk factors. Therapeutic aspects (medical: medical resuscitation, antibiotic therapy; surgical: repeated debridements, urinary diversions, colostomy, secondary sutures, skin grafting). Evolutionary aspects (favorable: complete healing, absence of lower urinary tract symptoms and urinary tract infection; unfavorable: persistent suppuration, urinary tract infection, death; long-term impact on fertility); length of hospital stay; mortality. Microsoft Word 2013 and SPSS 26.0 software were used to process and analyze the data.

Results

A total of 64 patients met our criteria. The mean age of the patients was 43 ± 17.91 years, with a range of 18 to 80 years. The 20-29 age group represented 26.6% (Fig. 1). The mean time to consultation was 20 days (range 1 to 90 days). The identified risk factors were diabetes (35.9%), smoking (20.3%), alcoholism (17.2%), hypertension (7.8%), and HIV (4.7%) (Table I). The lesion was located exclusively in the scrotum (26.6%) and perineoscrotal region (74.4%) (Fig. 2). Lesions extended to the abdomen in 6.3% of cases and to the pelvic limbs in 1.6%. Urethral stricture was the main etiological factor in 54.7% of cases; no etiology was found in 21.8% (Table II). Leukocytosis was noted in 73.4% of cases. Anemia (hemoglobin level

less than 12 g/dL) was noted in 59.4%. Electrolyte imbalances (hyponatremia in 7.8% of cases and hypokalemia in 9.2% of cases) were also observed. The organisms identified in the cytobacteriological examination of the pus were: *Escherichia coli* (39.1%) (n=25), *Staphylococcus* (23.4%) (n=15), and *Pseudomonas* (17.2%) (n=9) (Table III). All patients received antibiotic therapy, resuscitation measures, anticoagulants, and necrosectomy. (Fig. 3). Blood transfusions were performed in 15 patients. Colostomy was performed in 11 patients (17.2%) and diverting cystotomy in 42.2%. Secondary suturing was performed in 85.5% and skin grafting in 1.6% (Fig. 4). The cosmetic outcome was satisfactory in 81%. The average length of hospital stay was 31 days, and the mortality rate was 10.9%.

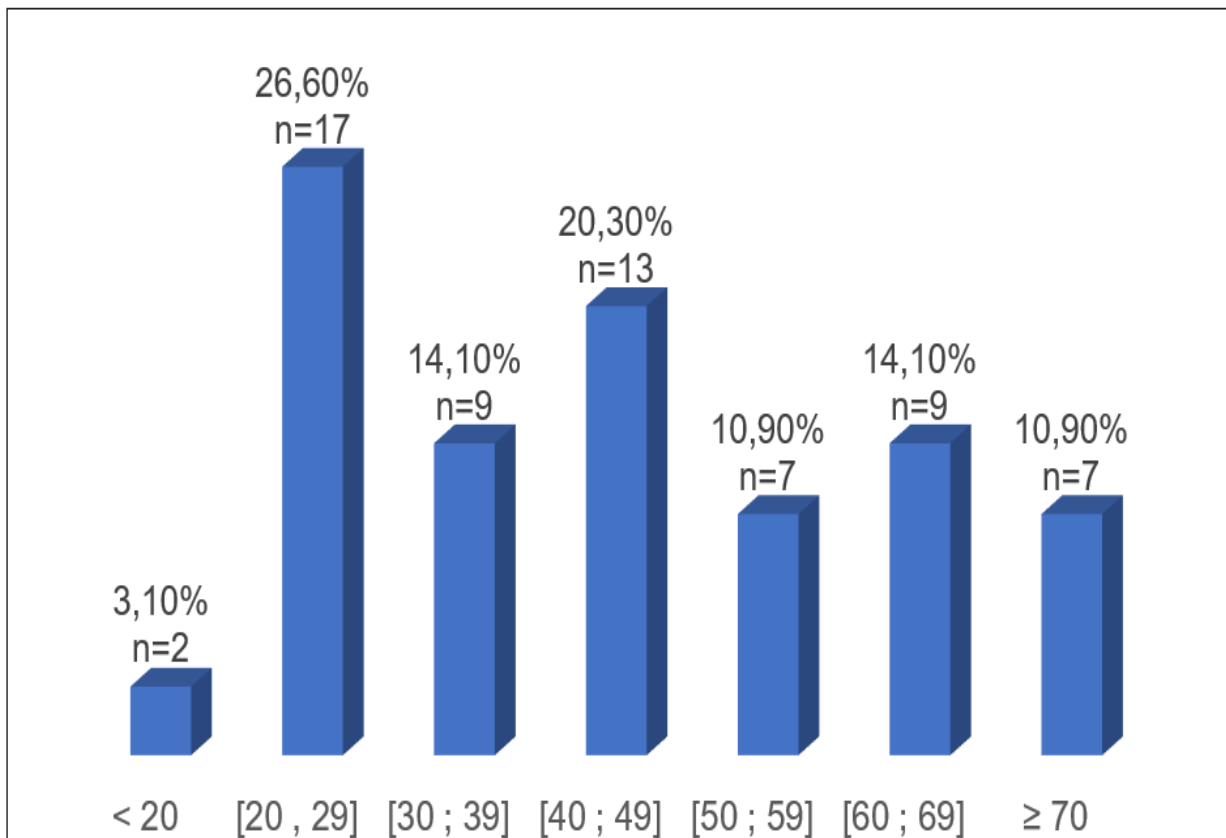


Figure 1 : Distribution of patients according to age groups.



Figure 2: Perineal-scrotal necrosis associated with edema (source: urology department CHU-RN).



Figure 3: Debridement of lesions (source: urology department CHU-RN).



Figure 4: Image of skin graft and secondary suture (source: urology department CHU-RN).

Table I: Distribution of patients according to risk factors

Risk factors	n	%
Diabetes	23	35.9
HTA	8	12.5
Tuberculosis	3	4.7
HIV	6	9.4
Alcoholism	11	17.2
Smoking	13	20.3
Total	64	100

Table II: Distribution according to etiology

Etiologies	n	%
Urogenital	35	54.7
Dermocutaneous	3	4.7
Proctological	12	18.8
Idiopathic	14	21.8
Total	64	100

Table III: Distribution of germs identified in patients' pus

Germs	n	%
E. coli	25	39.1
Staphylococcus	15	23.4
Proteus mirabilis	1	1.6
Candida albicans	1	1.6
Proteus Vulgaris	2	3.1
Pseudomonas	9	17.2
Sterile cultures	11	79.7
Total	64	100

Discussion

Gangrene of the external genitalia is a rapidly progressive necrotizing fasciitis. It affects men of all ages [3]. Dje , Rimtebaye , and Fall reported mean ages of 45.4, 38, 33, and 50 years, respectively [2, 4, 5]. This wide variability in mean age across these different series demonstrates that the disease can occur at any age. The predominance of young people is also reported by Mekemé in 59.6% of cases [6]. The incidence of the disease in this young population is thought to be linked to exposure to sexually transmitted infections, given that urethral stricture was the main etiological factor in our study.

Regarding consultation delays, our results are similar to those reported by Dje in 2006, which was 18 days [4]. The delay in deciding to seek medical help could be explained by the taboo nature of the condition related to the genitals and by feelings of modesty. Furthermore, self-medication and the proximity of traditional healers, often consulted as a first line of treatment for illness practices widespread in our communities—could be contributing factors.

Regarding risk factors, diabetes is associated with GOGF in 20 to 70% of cases [6]. Our result is close to that of Owon'Abessolo , who obtained 28% [7]. The occurrence of gangrene, particularly in diabetics, is thought to be linked to microangiopathy, which causes local circulatory disorders that promote bacterial infection and tissue necrosis. Smoking and alcoholism were observed by Mekeme in 38.99% [8]. Chronic smoking is a risk factor for atherosclerosis. Chronic alcoholism leads to immune dysfunction and is associated with a poor prognosis, especially in patients who also have diabetes [8].

The extension of lesions to the abdomen and pelvic limbs is reported by several authors [5,7] due to the spread of infection through the anatomical spaces between the Scarpa and the aponeurosis of the large oblique of the anterior abdominal wall and the superficial perineal space.

Urogenital etiologies include urethral strictures, periurethral infections, urethral instrumentation, and

indwelling catheters. When no etiology is found, the diagnosis is classic Fournier's gangrene. Urogenital etiologies were predominant in our study. These results are close to those reported by Fall , who found 68.6% [5].

From a bacteriological point of view, Rimtebaye identifies streptococci, clostridium perfringens, anaerobic germs [2]. Borki reports the presence of E. coli, Streptococci, Proteus and Staphylococcus [9]. This diversity of microbial strains of cutaneous, urogenital and colorectal origin confirms the polymicrobial nature of this pathology.

Dekou and Fall adopt the same therapeutic strategy regarding broad-spectrum empirical antibiotic therapy [3,5]. These empirical antibiotics target Gram-negative bacilli, anaerobic bacteria, and Gram-positive cocci.

To prevent contamination of the lesion by fecal matter, Hubert recommends systematic colostomy [10]. This is necessary to prevent fecal contamination of the wound, facilitating comfort and healing [11]. Furthermore, it is immediately necessary in cases of anal incontinence secondary to sphincter destruction by the infectious process, rectal perforation, extensive gangrene, or in frail, immunocompromised patients [12]. Urinary drainage is performed in all patients. Our data are similar to those reported by Rimtebaye in Chad in 2014 [2]. Urinary drainage allows for quantification of diuresis during medical resuscitation, drying of perineal lesions, and protection of debrided areas.

The mortality rate reported in the literature varies between 12% and 45% [13,14]. This high rate is thought to be linked to the presence of poor prognostic factors such as advanced age, the presence of competing comorbidities, the extent of the lesions, and a long delay in consultation [13]. Our result is lower than that of Hodonou [14] which observed a mortality rate of 21.8%. This difference is thought to be related to the fact that the ISFG was ≤ 9 in 51 patients; this low score demonstrates a patient survival probability of between 78% and 96%. Furthermore, the predominance of a young population in our series

appears to be a protective factor. Multidisciplinary management contributed to the correction of hemodynamic and electrolyte imbalances. Finally, twice-daily sitz baths with potassium permanganate, initiated the day after necrosectomy, allowed for very rapid sterilization of the infectious focus.

Regarding the length of hospital stay, it is similar to that reported by Hunald F at 30 days [15]. However, it is short compared to the average length of hospital stay reported by Mbonicura, which is 93.6 days [16]. This difference is likely due to the fact that 95.3% of patients did not require skin grafting and had their dressings done on an outpatient basis if their clinical and local condition improved.

Conclusion

Gastrointestinal edema (GIE) is a condition affecting young adults. Identified risk factors include diabetes, smoking, alcoholism, and HIV. The primary cause is urethral stricture. Necrosectomy and correction of electrolyte imbalances can reduce mortality. Prevention through awareness campaigns helps address the risk factors and identifiable causes of this condition.

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Conflict of interest : None

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