

Fournier's Gangrene: Our Clinical Experience and Outcomes

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Abstract

Objective: We aimed to present our results and experience related to patients followed with Fournier's gangrene.

Methods: Patient data were retrospectively obtained from patient records. Data from 10 patients attending Ordu University Education-Research Hospital Urology clinic with diagnosis of Fournier's gangrene from April 2017 to April 2021 were used. Cases developing after surgery, with compression wounds, and related to radiotherapy were excluded. Information like patient history, demographic features, comorbid diseases, physical examination findings and treatment outcomes were recorded.

Results: The study included outcomes for 10 patients. Mean age was identified as 71.50±9.09 (51-78) years. All of our patients were male, with no female patient among our cases. Mean body weight of patients was 80.40±1.81 (78-83) kg. When patients are assessed in terms of substance use, 60% of patients smoked and 10% drank alcohol. The mean total number of medications used due to comorbid diseases was 1.8 (0-6). The mean ASA score for patients was 2.20±0.42. In terms of initial location, 6 patients had lesions in the scrotum (60%), 1 on the penis (10%) and 3 in the perineal region (30%). The mean duration until surgery was 8.71±4.95 (3-17) days, with mean number of surgeries after diagnosis 1.67±0.81 (1-3), and mean dressing duration 22.14±5.30 (15-30) days (Table 1). Pathology results for one patient identified squamous cell cancer (10%).

Conclusion: In spite of all developments, Fournier's gangrene is still an emergency situation associated with high levels of morbidity and mortality. In clinics experienced with this disease, it may be treated close to perfectly with high success rates and low complication rates. We believe the most important points for treatment are early diagnosis, effective

Key words: Fournier's gangrene, debridement, experience

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INTRODUCTION

Fournier's gangrene is a progressive necrotizing fasciitis tableau frequently involving the external genital organs and perineal region, that may spread to the abdomen, lower extremities, and chest, with high morbidity and mortality. This severe infectious disease comprises less than 1% of all anorectal sepsis cases (1,2). The disease was named for Jean-Alfred Fournier; however, it was first described in 1764 by Bauriène (3). Fournier first described it in the scrotum and used the term 'fulminating gangrene' of the penis and scrotum. The cause is not fully known. Most cases receive diagnosis when gangrene occurs. A study identified genitourinary causes in 24% of cases, anorectal causes in 24% and intraabdominal causes in 10%, but could not identify any underlying cause in 38% of cases (4). Whatever the cause, most cases have an infection focus identified beginning in the scrotal or anorectal region.

The most important feature of the disease is that it is a toxic tableau that may rapidly progress resulting in mortality. For this reason, rapid diagnosis and treatment carries vital importance (3). From the moment of diagnosis, hospitalization with intense support and treatment is required. In treatment, antibiotic use encompassing polymicrobial agents, debridement of necrotic tissue and wound care are critically important. This disease should be seen as an emergency and actions taken accordingly (5). Sufficient experience and knowledge of this topic has a very important place in treatment and preventing complications in this disease. Inexperienced clinics and individuals may lead to severe progression in this disease.

The aim of this study is to share our clinical experience of Fournier's gangrene and present our results.

METHODS

Study Design and Patients

Patient data were retrospectively obtained from patient records. Data from 10 patients attending Ordu University Education-Research Hospital Urology clinic with diagnosis of Fournier's gangrene from April 2017 to April 2021 were used. Cases developing after surgery, with compression wounds, and related to radiotherapy were excluded. Information like patient history, demographic features, comorbid diseases, physical examination findings and treatment outcomes were recorded.

Clinical Assessment

All patients were assessed with history and physical examination. Cases with progressive wounds with necrotic character observed in the scrotal or perineal region were assessed as Fournier's gangrene. All patients were admitted to hospital as emergency cases. The infectious diseases clinic was consulted. After the necessary preparations, patients were taken for emergency surgery. If necessary, cases were taken for surgery to perform more than one debridement. Wound care was performed twice per day. During this time, wound care was performed with oxygenated water, physiologic serum and rifocin. Postoperative success was accepted as control of the disease and cosmetically acceptable appearance.

Surgical Technique

Patients were informed in detail about treatment choices, outcomes and the need for repeated surgery. Care was taken to be sure that they understood the

process as they could not fully imagine the appearance that will develop postoperatively. According to our experience, at least one patient relative should be included in this process. Written consent was obtained from all patients. Surgical procedures were performed under anesthesia.

During surgery, aggressive excision (debridement) should be performed. Surgeons should be sure that white/necrotic tissue is fully resected until live, bleeding tissue is reached. It may be beneficial to preserve tissue with survival possibilities for later processes. At this point, no closed area should be left, it is important to open all cavities. During this process, it is necessary to avoid devascularization of normal tissues so as not to create new necrotic areas. Deep fascia should be opened to assess muscle status. Sterile dressings should be used without closing the wound. In our practice, wound care is performed with physiologic serum, oxygenated water and rifocin two times per day. We think keeping the wound moist eases wound healing and reduces pain.

If necrotic tissue is observed, debridement and fasciotomy should be repeated at 24-48-hour intervals until clinical healing. Performing this procedure should never be avoided in suspect situations. Removal of the testis should be on the agenda, if necessary, especially for people without fertility concerns. Problems may be experienced related to testis being inserted under the skin due to lack of scrotum, especially with severe debridement.

When the disease is under control, the patient should be discharged after necessary information for secondary closure. However, when patients require close monitoring at home, they are given numbers

where they can reach us if necessary. Generally, 3 months are left before closure of the defect due to the debrided tissue (reconstruction). In necessary cases, a plastic surgeon is consulted.

Statistical analysis

Statistical assessment calculated mean values and standard deviation as this study was descriptive research. Parameters with normal distribution are given as mean \pm SD, while parameters without normal distribution are given as median \pm interquartile range (IQR). Analysis of data used the SPSS 20.0 program.

RESULTS

The study included outcomes for 10 patients. Mean age was identified as 71.50 ± 9.09 (51-78) years. All of our patients were male, with no female patient among our cases. Mean body weight of patients was 80.40 ± 1.81 (78-83) kg.

When patients are assessed in terms of substance use, 60% of patients smoked and 10% drank alcohol. The mean total number of medications used due to comorbid diseases was 1.8 (0-6). The mean ASA score for patients was 2.20 ± 0.42 . In terms of initial location, 6 patients had lesions in the scrotum (60%), 1 on the penis (10%) and 3 in the perineal region (30%). Pathology was not observed on rectal examination of any patient.

When laboratory parameters are investigated, WBC count 15.84 ± 3.90 (9.2-21.3) mm³, Hgb 11.34 ± 2.08 (9-15) g/dl, PLT $280.20 \pm 4.81.55$ (158-360) 10³ / μ I, NLR 11.59 ± 9.30 (1.61-23.46), and CRP 24.38 ± 13.49 mg/L (8.5-2438) were identified (mean \pm SD). The mean duration until surgery was 8.71 ± 4.95 (3-17) days, with mean number of surgeries after diagnosis 1.67 ± 0.81 (1-3), and mean

dressing duration 22.14 ± 5.30 (15-30) days (Table 1). Pathology results for one patient identified squamous cell cancer (10%). Comorbid diseases for our patients are shown in Table 2.

Table-1: Demographic Characteristics of the Patient

Patient Characteristics	
Age(years)	71.50±9.09 (51-78) ^a
Body weight (kg)	80.40±1.81 (78-83) ^a
Time to surgery (day)	8.71±4.95 (3-17)
Follow-up time (month)	13.19±9.11 (2-36)
Success n (%)	10 (100)
Patient satisfaction n (%)	9 (90)

a= mean ± SD, b= median ± IQR

Table 2. Co-morbidities in Patient

	Frequency	Percent (%)
Diabetes Mellitus	6	60
Lung Disease	3	30
Hypertension	4	40
Heart Disease	3	30
Use of Anticoagulants	2	80
Neurological Disease	2	20

DISCUSSION

Fournier's gangrene is accepted as an emergency disease due to rapid spread and threat to life. Rapid and effective local and systemic treatment carry vital importance. The aim of this study was to share our experience related to patients followed and treated in our clinic for Fournier's gangrene and to present our results. The most important finding identified in this study is that close to perfect outcomes can be obtained as a result of follow-up and treatment for these patients in experienced centers. Additionally, most patients attend hospital in the very late stage.

As seen in our study, the disease frequently affects the male gender; however, it may be rarely observed in women and children. The disease commonly

begins with fever, shivering, fatigue and local complaints, and rapidly worsens (6). Diagnosis may be easily missed in the patient group with difficulty expressing themselves. Delay of diagnosis makes progression to malignant tableau like bad odor, necrosis and crepitation easier at the lesion site. The process may progress with tachycardia, high fever, hypotension, disrupted general status and death (7). For this reason, care should be taken as this disease may be easily missed in patients who are addicts, live alone, have advanced age or cognitive problems. This situation should be remembered for patients attending with septic tableau, especially. In our observations, we identified that this disease is frequently missed and progresses more severely in elderly or addicted patients who cannot express themselves. Additionally, this patient group may be hospitalized more and be exposed more to the destructive effects of this disease. This disease may be easily ignored by people and branches without sufficient experience related to this disease especially. A patient attending our clinic recently received diagnosis at the end of 36 days. This patient was followed by an external center for urinary tract infection diagnosis and the lesion in the perineal area was not noticed during hospitalization. When he attended our clinic, perineal Fournier's gangrene was very complicated, and it took weeks for the patient to recover.

In fact, the presence of urogenital or anorectal infections that are not questioned is notable in many patient histories. Infection and gangrene have high risk in terms of rapid spread especially for patients with advanced age, diabetes mellitus, chronic diseases, immunosuppressive status, neurological diseases with general care problems, and substance

use. This also means increased morbidity and mortality (4,7,8,9,10). A study by Malik et al. reported that mortality was 17.8% in the patient group with intense diabetic disease especially (11). Mortality is severely increased in patients with uncontrolled diabetes. Mortality was not observed in our patients. As mentioned above, if this disease is not considered in differential diagnosis, diagnosis is frequently delayed, and this causes associated complications. In short, this disease has potentially destructive and mortal effects; and these effects are inversely correlated with early diagnosis and effective treatment. Diagnosis is very easy and specific (12,13). Diagnosis may be easily made due to pain, edema, increased temperature and tension in the perineal area and scrotum. Progression of the tableau rapidly disrupts circulation, and skin necrosis and bad odor develop (6,14). Additionally, crepitation is very important for identifying the presence of gas-producing bacteria. This is an important marker showing extension of the lesion into deep tissues or severity of the tableau (3).

Emergency approaches are important for this disease that may have very dramatic progression. Commonly hospitalization is required for systemic and surgical treatment. Inflammatory parameters like leukocytosis and CRP are frequently increased. In our results, WBC and CRP levels were identified to increase especially at time of first attendance. These values begin to fall with clinical amelioration. CRP monitoring especially provides very important information in terms of prognosis. CRP is the most important marker used for patient follow-up and prognosis. Additionally, radiological imaging like DUSG and CT may use used to identify subcutaneous

gas and spread of the disease in necessary situations. However, routine use is not recommended.

If urinary tract infection is considered the source, urinary diversion may be performed. This is a very beneficial procedure for special situations like incontinence and urethral involvement. Stopping contact with urine and keeping the environment dry contributes to rapid amelioration. However, we do not have adequate data about performing it as a routine practice.

During surgery, the surgeon should be certain that effective debridement is performed. In these patients, polymicrobial agents comprising aerobic and anaerobic bacteria are commonly observed. Sometimes the lesion appearance may be misleading. We recommend culture and tissue biopsies for polymicrobial agents. This is important in terms of selection of appropriate antibiotics and identification of possible underlying malignant events. In our patient group, squamous cell cancer was identified in one patient. As seen in our results, these patients frequently require more than one surgery. Testicular necrosis develops very rarely because the blood circulation and venous drainage of the testis is different from the skin. Thus, orchiectomy is not required in many cases and orchiectomy was not performed for any of our cases. In cases with advanced age and no concerns about fertility, if there is advanced degree of scrotal tissue loss and the testis needs to be inserted under the skin, orchiectomy may be performed after discussions with these patients. Problems like cosmetic problems and pain may make the patient uncomfortable in some cases with the testis preserved by insertion under the skin. We experienced serious problems in some patients and in

one case orchiectomy was necessary. In our study, all patients had the disease controlled with mean 22-day dressing duration. When the literature is examined, the hospitalization duration is nearly 25-30 days (8). Nearly 3 months should be left before closure of the defects left after debridement.

Limitation

This study has some limitations. The first of these is the retrospective nature of the study. Another is the limited patient numbers and not knowing the degree of comorbid diseases. This data should be added to the results for a center. There is a need for prospectively planned multicenter studies including more patients.

CONCLUSIONS

In spite of all developments, Fournier's gangrene is still an emergency situation associated with high levels of morbidity and mortality. As the disease may sometimes be asymptomatic, it should be remembered for addicted people who cannot express themselves. Preventive precautions should be taken especially for risky cases. In addition to early diagnosis, supportive and effective treatment has vital importance for prognosis of the disease.

As seen in our study results, the disease may be treated close to perfectly with high success rates and low complication rates in experienced clinics. We think the most important points for treatment are early diagnosis, effective repeated debridement and the use of broad-spectrum antibiotics. Additionally, we believe it is necessary to create centers with adequate experience about this topic.

Ethics Committee Approval: Ethics committee approval was received for this study from the Clinical

Research Ethics Committee of Ordu University (2020/05).

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