

A Clinico-Pathological Study Of Fournier's Gangrene (Necrotizing Fasciitis): Review of 13 Cases

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Abstract

Background: Fournier's gangrene is a life threatening infective necrotizing fasciitis of the perineal region and lower abdomen. The disease is more common in immunocompromised patients. If surgery is delayed, the disease results in shock and multiorgan failure.

Aim: To study the clinico pathological profile of patients of Fournier's gangrene.

Setting and Design: A prospective study conducted over period of six years in a tertiary care institute.

Results: In our study of 13 cases, all the patients were males with age range of 20-95 years. In 8 patients, there was a history of immunosuppression (5 cases of diabetes mellitus and history of surgery in 3 cases) while in 5 patients we could not identify any underlying cause. Surgical debridement was done in all the cases, 5 cases developed acute renal failure which was managed while one patient died.

Conclusion: Fournier's gangrene is an abrupt, rapidly progressive, gangrenous infection of the external genitalia and perineum and a real urologic emergency. Prompt diagnosis and early surgical intervention is required for a better outcome of these patients.

INTRODUCTION

Fournier's gangrene is a fulminant synergistic necrotizing fasciitis of the scrotum, penis, perineum and, at times, the lower abdomen, first described by French venereologist Jean A. Fournier in 1883¹. The infection can also be seen in the women; often beginning in the vulva¹. This is more commonly seen in middle aged having immunosuppressive disorder like diabetes mellitus, malignancy and chronic alcoholism². Despite aggressive treatment, it has high mortality rate³.

MATERIAL AND METHODS

The study was conducted in the Department of Pathology and Surgery over a period of six years. Thirteen cases of Fournier's gangrene were retrieved.

Clinical files and histology slides were available in all the cases. H&E slides were examined. Special stain (Gram's stain) was done in these cases.

OBSERVATIONS

The age of the patients ranged from 20 to 95 years with majority of patients in 50-60 years of age. All the patients were males. There was history of diabetes mellitus in 5 cases, history of surgery in 3 cases while 5 cases had no such predisposing factors. In 3 patients less than half of the scrotum was involved while in 10 patients more than half of the scrotum was involved. Two patients showed extension of the disease in perineal and abdominal wall. On histological examination, there was ulceration of the epidermis. The dermis and subcutaneous tissue showed oedema, necrosis, bacterial colonies, acute inflammatory cell infiltrate in all the cases while thrombotic capillaries were observed in 3 cases. On culture, 3 cases showed pseudomonas aeruginosa, 4 cases E.coli, and mixed flora in 2 cases while it was sterile in 5 cases (TABLE 1).

Figure 1

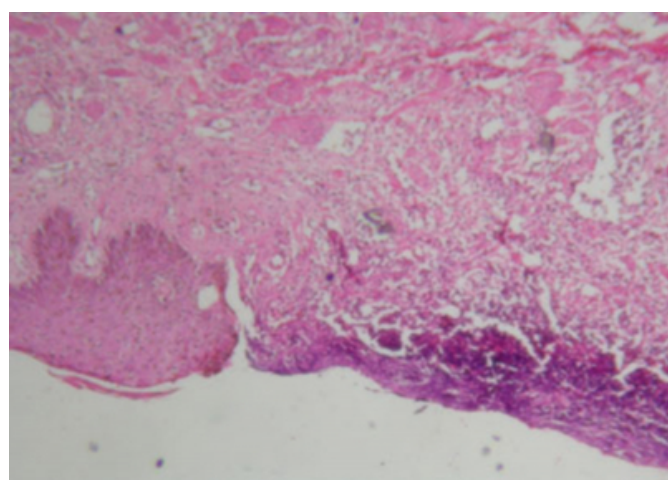
Table 1: Clinico-pathological data of 13 patients

S. No	Age/ Sex	Extend of involvement	Predisposing factor	TLC/mm ³ / DLC	REB/Urea/ Creatinine (mg%)	Thrombocyte capillaries	Culture sensitivity	Surgical treatment	Remarks
1	21/M	More than half	Nil	8400/ 74,21,3,2	90/45/1.1	—	Sterile	Debridement	Recovered
2	61/M	More than half scrotum	Nil	18,000/ 92,8	84/130/3.7	+	Pseudomonas E coli	Debridement	Developed renal failure Recovered
3	62/M	More than half Scrotum	Nil	6300/ 70,27,01,2	93/20/1.0	—	E coli	Debridement	Recovered
4	45/M	More than half Scrotum	Operated for hydrocele, Alcohol	17,000/ 88,12	100/140/3.5	—	Pseudomonas Enterobacter	Debridement	Developed renal failure Recovered
5	55/M	More than half Scrotum	Type II DM, Operated for piles	8200/ 62,36,1,1	208/160/0.0	+	Sterile	Debridement	Developed renal failure Died
6	70/M	More than half Scrotum	Nil	12,400 85,12,2,1	104/44/1.2	—	Pseudomonas	Debridement	Recovered
7	60/M	More than half Scrotum	DM	92,00 85,12,0,3	89/24/ 8	—	Sterile	Debridement	Recovered
8	50/M	More than half scrotum with extension to perineum	HIV+	12,400 84,12,1,3	96/50/1.3	—	E coli	Debridement+ transverse colostomy	Recovered
9	95/M	More than half Scrotum	Operated for sigmoid hernia	12,800 87,10,2,1	90/97/2.0	—	Sterile	Debridement	Developed renal failure Recovered
10	58/M	More than half Scrotum	Type II DM	13,200 70,28,1,1	327/60/1.6	—	Streptococcus	Debridement	Developed renal failure Recovered
11	79/M	More than half Scrotum	DM	8000/ 80,18,00,0 2	200/44/1.4	+	Sterile	Debridement	Recovered
12	52/M	More than half scrotum	Type II DM	13,600 80,18,00,0 1	385/21/0.8	—	E coli	Debridement	Recovered
13	20/M	More than half scrotum	Nil	6,200 80, 38,01,01	112/20/0.8	—	Proteus	Debridement	recovered

Surgical debridement was done in all the cases. One case required transverse colostomy with restoration of bowel continuity at a later stage. Five patients developed acute renal failure which was managed, while one patient died.

Figure 2

Figure 1: Photomicrograph showing presence of ulcerated epidermis. The dermis shows presence of thrombosed blood vessel and bacterial colonies (H&E, X200)



DISCUSSION

Fournier's gangrene is a rapidly progressive bacterial infection of perianal, perineal and genital areas leading to

obliterative endarteritis resulting in gangrene^{4,5,6}.

The disease is classified as Type 1 when caused by a mixed anaerobic flora and other bacteria, and Type 2 when caused by Group A Streptococcus alone or in association with Staphylococcus aureus⁷. Predisposing factors include –chronic and malignant diseases, psoriasis, surgery, and opened or closed trauma, among others^{8,9,10}.

The cause of Fournier's gangrene can usually be traced to one of the following: (1) trauma to the groin area that allows organisms to enter subcutaneous tissues, (2) extension from urinary tract infection eg, one involving the periurethral glands or (3) extension from an infection of the perineal space or intestinal tract, with dissection along the fascial plane as far cephalad as the axilla or as far caudad as the thighs¹¹.

Clinical features are intense pain, severe edema, fast progress and poor antibiotic therapy feed back. The differential diagnosis includes cellulitis at initial stage. Both the conditions are painful and have same predisposing factors⁴. The confirmation is mainly by histopathological examination of excised surgical material. The key feature in distinguishing necrotizing fasciitis from cellulitis is the location of the inflammation. In the former, the inflammation involves the subcutaneous fat, fascia, and muscle in addition to the dermis. Bacteriological tests from the wound exudates, blister fluid, excised tissue and aspirate material are essential for appropriate microbiologic diagnosis¹². In our study, the culture was sterile in 5 cases. This could be attributed to inadequate antibiotic therapy received from outside before coming to our hospital or fastidious anaerobic organisms.

Radiologic examination may also be helpful for the establishment of early diagnosis, aiding in differential diagnosis and providing early surgical intervention^{13,14,15}. Approximately half of these patients develop septicemic shock leading to thrombocytopenia, disseminated intravascular coagulation and/or multiple organ failure¹⁶.

The treatment options include radical surgical debridement of the entire necrotic tissue, frequent wound dressings with hypertonic saline, hyperbaric oxygen therapy, broad spectrum parenteral antibiotic therapy, and general and aggressive patient support measures^{12, 17,18}.

The prognosis of necrotizing fasciitis depends on age, comorbidities and severity of the septic syndrome. For patients

under the age of 35, the mortality rate is significantly lower (0%) when compared to mortality in patients over 70 years of age (65%). Mortality may reach 100 % in surgically non treated patients₁₀.

In conclusion, Fournier's gangrene is an abrupt, rapidly progressive, gangrenous infection of the external genitalia and perineum and a real urologic emergency. Prompt diagnosis and early surgical intervention is required for a better outcome of these patients.

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