



International Journal of Medical Research & Health Sciences

www.ijmrhs.com

Volume 4 Issue 1

Coden: IJMRHS

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ISSN: 2319-5886

Received: 14th Sep 2014

Revised: 25th Oct 2014

Accepted: 2nd Dec 2014

Research article

IMPACT OF AGGRESSIVE SURGICAL INTERVENTION IN Fournier's GANGRENE AND ITS CORRELATION TO THE OUTCOME IN PATIENTS AT A RURAL HOSPITAL

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ABSTRACT

Background: Fournier's gangrene is rare and rapidly spreading aggressive and progressive infection of the perineum in which fascial necrosis is more extensive than the visible gangrene. Early surgical debridement prompt antibiotic administration, are essential for a better prognosis. Delay in diagnosis or treatment increase the mortality rate. This could be because of the multi factorial and poly microbial association of the disease. **Aim:** We attempt to describe the importance of early radical debridement and its effect on the outcome of the disease. **Methodology:** We conducted an analytical study on 26 patients of Fournier gangrene admitted in the rural hospital from July 2011 to July 2014. On admission, their Fournier gangrene severity index was calculated. The broad spectrum antibiotics were started and radical debridement was done in all patients on the same day within 6 hours of admission. Daily dressing was done till the wound showed healthy granulation tissue. The scrotal skin was mobilized and suturing was done. **Result:** In our studies there was no mortality. This indicates that early aggressive resuscitation to correct the dehydration and early radical debridement improves the outcome in this rare and fatal disease.

Keywords: Fournier gangrene severity index, Radical debridement, Mortality.

INTRODUCTION

Fournier's gangrene involves the deep and superficial fascia of the perineum¹. Fascial necrosis is more extensive than the visible gangrene. Early radical debridement, prompt antibiotic administration with nutritional support is essential for better prognosis².

A French venerologist Jean Alfred Fournier in 1883 first described Fournier's gangrene³. He used the term "Fulminant gangrene"⁴. The infection starts in the anorectal, genitourinary, cutaneous areas suddenly without any cause. Diabetes, suppressed immunity are predisposing factors. Yanar et al showed that mortality rates are relatively higher in patients with diabetes mellitus, delayed admission to hospital and

in patients with sepsis at first admission⁵. The study was conducted on 26 patients of Fournier's gangrene admitted in our hospital. Delay in diagnosis or treatment increase the mortality rate. Most studies emphasized on the general management of the disease. This could be because of the multi factorial and poly microbial association of the disease. In most of studies the mortality rate was high. There was no protocol for management for this fatal rare disease. Our study tries to emphasize on the specific protocol. Time of surgical intervention is important in the management. In our study of 26 patients the surgical intervention was done within 6 hours of admission. This reduced mortality in our patients.

Aim: We attempt to describe the importance of early radical debridement and its effect on the outcome of the disease.

MATERIAL AND METHODS

The study was conducted after the institutional ethical committee approval in the surgical department of the PIMS Loni from July 2011 to July 2014.

Inclusion criteria: The patients presented in the surgical O.P.D. with the severe inflammation of the perianal region, genitals, perineal regions extending to the anterior abdominal wall were diagnosed clinically by us as Fournier's gangrene was included in our study. The written consent of all the patients were taken. All the patients were male from age group 30 years to 80 years. All the patients were admitted in the ICU. Table 1 shows the symptoms of the patients. Exclusion criteria: Malignancy of penis and perineal region with infection was excluded from the study.

Table 1: Symptoms of the patients (total =26)

History and symptoms	N
History of trauma	5
Sudden onset without any cause	21
History of pain	26
Swelling at the perianal region and genitals	10
Swelling at the genitals, perineal and perineum region extending to the anterior abdominal wall	16
History of temperature	15
History of diabetes	5

All routine Pathological and Biochemical tests were done at the time of admission and repeated alternate day to know the progress. Based on the investigations and signs, the Fournier's gangrene severity index was calculated on the day of admission and alternate day with the help of Fournier's Gangrene Severity Index Parameters (Table 2).

Table 2: Fournier's Gangrene Severity Index Parameters ⁶

Physiological Variables	High Abnormal Values				Normal	Low Abnormal Values			
	+4	+3	+2	+1		+1	+2	+3	+4
Temperature (°c)	>41	39-40.9		38.5-39	36-38.4	34-35.9	32-33.9	30-31.9	<29.9
Heart Rate (beats/minute)	>180	140-179	110-139		70-109		55-69	40-54	<39
Respiratory Rate (/min)	>50	35-49		25-34	12-24	10-11	6-9		<5
Serum Sodium (mmol/L)	>180	160-179	266-159	350-354	130-149		120-129	111-119	<110
Serum Potassium (mmol/L)	>7	6-6.9		5.5-5.9	3.5-5.4	3-3.4	2.5-2.9		<3.5
Serum Creatinine (mg/100/ml*2 for acute renal failure)	>3.5	2-3.4	1.5-1.9		0.6-1.4		<0.6		
Hematocrit	>60		50-59.9	46-49.9	30-45.9		20-29.9		<20
WBC (Total/mm*1000)	>40		20-39.9	15-19.9	3-14.9		1-2.9		<1
Serum Bicarbonate (Venous, mmol/L)	>52	41-51.9		32-40.9	22-31.9		18-21.9	15-17.9	<15

Fournier's gangrene severity index helps to predict the prognosis in the patients of Fournier's gangrene. As shown in the table 2 Fournier's gangrene severity index has 9 parameters, the degree of deviation from normal is graded from 0 to 4. The individual values are summed to obtain the Fournier's gangrene severity index of the patient. The score greater than 9

showed a 75% probability of mortality. The score of 9 or less showed a 78 % probability of survival⁶.

Aggressive resuscitation was done in all the patients. The Ringer lactate was started as the intravenous fluid and further fluids were given as per the blood report, central venous pressure recording and urine output. Injection Augmentin 1.2 gm intravenously

was started and repeated 12 hourly. Injection Metronidazole 500 mg was started and repeated 8 hourly. The physician's anticipation was taken for the treatment of diabetes. All the patients kept nil by mouth. The urinary catheter was inserted for estimation of urine output. All the patients were posted for emergency operation. 21 patients were taken within 2 hours of the admission and 5 were taken within 6 hours of admission. 20 patients received spinal anesthesia, 4 received general anesthesia and 2 received local anesthesia. Radical debridement was done in all patients. All dead tissue was removed along with some part of healthy tissue and the skin (Fig: 2). The removed tissues were sent for histopathology.

The daily dressing was done from the 2nd postoperative day. The wound was washed with hydrogen peroxide and saline. The Chloromycetin powder was applied to the wound and covered with sterile dressing. The dead tissue was removed daily during dressing. These patients were shifted to the wards. The 5 patients those were diabetic needed 7 days to settle clinically. They were shifted to the wards after 7 days. The metronidazole 500mg. was given intravenously 8 hourly for 7 days. The injectable Amoxiclav was given for 5 days then shifted to the oral antibiotics depending on culture sensitivity report. The above treatment continued till the wound had shown the healthy granulation tissue without infection. All the patients were subjected to the elective operation. The skin surrounding the wound was mobilized and suturing was done with non-absorbable suture material (Fig: 3). Sutures were removed on 13th postoperative day. The 5 diabetic patients had shown wound infection after suturing. In these patients after treating wound infection the resuturing was done, sutures were removed on the 7th postoperative day and patients were discharged. All the patients received high protein diet, Vitamin C and hematinics. All these measures helped the patient to improve his metabolic variation and gave the good outcome. All the patients were called for review after 7 days. Out of 26 patients, 15 patients came for regular check up. They are free from the disease.

RESULTS

During the study period from July 2011 to July 2014 all the patients were male from 30 years to 80 years.

21 patients were non diabetic and 5 were diabetic. 5 diabetic patients had minor trauma leading to Fournier's gangrene.

In 21 patients, no cause was detected. In the present study 13 patients showed the Fournier's gangrene severity index 16 on the day of admission that came to 10 on the 2nd postoperative day and came to the normal between 7 to 12 postoperative days. In 9 patients it was 10 and in 4 it was 9. In all patients the score started declining after surgical intervention. In 21 patients within one hour of the admission radical debridement was done. In 5 patients due to uncontrolled diabetes, surgery was done after 4 hours. All patients received injectable Amoxiclav on admission and shifted to the other antibiotic depending on pus culture report. (Table 3)

Table 3: Pus culture sensitivity

Organisms	Sensitivity	No of patients
<i>Staphylococcus aureus</i>	Amoxiclav, Chloramphenicol	13
<i>E.coli</i>	Gentamycin, Chloramphenicol	10
<i>Klebsiella</i>	Gentamycin.	2
<i>Diphtheroids</i>	Gentamycin, Amikacin.	1

Local use of Chloramphenicol powder helped the wound to heal early. From the 2nd postoperative day, 21 patients showed improvement clinically. Their blood reports came to normal.



Fig 1: Signs and symptoms of Fournier's gangrene

The minimum time taken for Fournier's gangrene severity index to come to normal was 15 days and maximum was 2 months after operation. The histopathological reports of all patients have shown the fascial necrosis, inflammatory cells and the normal tissue indicating the adequacy of the excision. The most prominent associated disease was diabetes.

The interval from the onset of clinical symptoms to the initial surgical intervention seems to be the most important prognostic factor with a significant impact on outcome. All were survived without any complications.



Fig 2: Emergency radical debridement



Fig 3: Mobilization of local skin of scrotum and suturing

DISCUSSION

In our study all the patients were from low socio-economical group and their hygiene was poor. This had given the infection of the genitals and perianal region. Due to the lack of cleanliness and poor resistance the infection spread rapidly. The time interval from the onset of the pain and swelling to the presentation to the hospital was from 5 days to 10 days. The early radical debridement and use of broad spectrum antibiotics changed the course of this fatal disease. All the 26 patients in our study were showing the aggressive spreading necrotizing fasciitis, of the deep and superficial fascia of the perineum resembling Fournier's gangrene⁷. Fascial necrosis was more than the visible gangrene⁸. Keeping this

fact in mind in our all patients, we excised the dead tissue along with some part of normal tissue so we called it as aggressive radical debridement to remove facial necrosis. The Fournier's gangrene was originally thought to be an idiopathic gangrene of the genitalia; however, a specific etiology is found in approximately 95% of cases⁹. Anorectal abscess, genitourinary infection, and traumatic injury are the most common causes¹⁰. Localized tenderness, soft-tissue crepitus, or occult wounds in the genitalia, perineum, and anorectal area should alert the examiner to the possibility of Fournier's gangrene. High mortality rate was noted in literature¹¹. In our study, we excised extensive tissues to remove the infection completely. (Fig: 2). Emergency operation was done in all the patients within 6 hours. Early aggressive radical debridement with nutritional support improves the outcome in this fatal rare disease as shown in our patients.

CONCLUSION

In the present study all the 26 patients had severe pain and tenderness in the genitalia. Pain and tenderness are hallmarks of this infection. Even though the patients were presented to the hospital late, early radical debridement with nutritional support gave the good outcome. We removed the infection by early radical debridement and supported by the broad spectrum antibiotic to prevent the spread of the infection and nutritional support to improve the immunity. The above management is good as all the patients survived and are free of disease. The early aggressive surgical intervention in Fournier's gangrene has a definite impact on the outcome. We recommend this method in which early radical surgery is the important predictor for the outcome in patients.

ACKNOWLEDGEMENT

We authors are grateful to the Management of Pravara Institute of Medical Sciences for support. We are thankful to our all colleagues for their support. We are grateful to all the patients who participated in the project.

Conflict of Interest: Nil

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