International Journal of Research and Review
www.ijrrjournal.com E-ISSN: 2349-9788; P-ISSN: 2454-2237

Case Study

Case Study on Fournier Gangrene on Long-Term Use of Tablet Prednisolone

Lakavath Dhana Lakshmi[1], Todupunuri Shivani[1], Dr. Mudda Amarnath[2], Mr.Umasankar Viriti[1]

[1]Department of Pharmacy Practice, MNR College of Pharmacy, Fasalwadi, Sangareddy, Telangana.
[2]Professor and H.O.D., Department of General Surgery, MNR Medical College and Hospital, Telangana.

Corresponding Author: Lakavath Dhana Lakshmi

ABSTRACT

Fournier's Gangrene is a rare, life-threatening infection that can rapidly progress to fatal condition if not treated promptly seen in both genders (mostly men) and children. The incidence rate in US is 1.6 in 100000 and in India is 1726 cases per year 50-80% of mortality rate. Here, we report a case of a 55years old male patient admitted in surgery department with complaints of swelling and pain in perianal region, leakage of pus since 1 day, untreated Hansen's disease since 2 years and Diabetes. The patient was found to be on T. Prednisolone for joint pains since 2 years.
Patient counselling focussing on safe steroid use, importance of regular glycemic control and role of hygienity in disease control can reduce the severity of the patient who is diagnosed with Fournier's gangrene. Clinical pharmacist can play a major role in this regard.

Keywords: *Fournier gangrene (FG), Hansen's disease and T. Prednisolone.*

INTRODUCTION

Fournier's gangrene (FG) is a type of necrotizing fasciitis of the perineal, genital and perianal region that has a rapidly progressive and potentially fatal course [(1)] and includes other necrotizing soft tissue infections. The inflammation and edema from the polymicrobial infection lead to an obliterative endarteritis of the subcutaneous arteries. [(2)]

FG was first described by Baurienne in 1764, [(3)] it is credited to the French venereologist, Jean Alfred Fournier, who provided a detailed description of the disease in 1883 as a fulminant gangrene of the penis and scrotum. [(4)] Many terms have been used to describe the clinical condition including 'idiopathic gangrene of the scrotum', 'periurethral phlegmon', 'streptococcal scrotal gangrene', 'phagedema' and 'synergistic necrotizing cellulites.' [(5)]

Aetiology:

The exact aetiology is not clear however, the Predisposing factors are diabetes, steroids, insect bite, trauma, alcohol consumption and infective condition.
Recent research has shown that less than of FG cases are now considered idiopathic. [(6)]

- Colorectal sources (30-50% of cases).
- Urogenital sources (20-40% of cases).
- Cutaneous infections (20% of cases) and local trauma are frequently identified as the cause of FG. [(7)]
- Pathogens include polymicrobial infections with mixed aerobes and anaerobes (54%), E. coli (46%) and streptococcus (36.8%).

Epidemiology:

About 1 per 62,500 males are affected a year. Males are affected about 40 times more often than females. The incidence of Fournier gangrene was found to be 1.6 cases per 100,000 males, in the United States. Males who are 50 to 79 years old were mostly affected i.e., 3.3 per 100,000. FG has a predilection for those over the age of 50 with a male to female ratio of 10 to 1 [(8)]

Symptoms:

- Fever, sudden pain, swelling in the scrotum, purulence or wound discharge, crepitation, fluctuance, pallor and fever greater than 38°C, [(9)] Crepitus. [(10)]
- The affected area is often swollen, dusky and covered by macerated skin and presents with a characteristic feculent odour, which is attributed to the role of anaerobes in the infection. [(9)]
- Patients also may have pronounced systemic signs, usually out of proportion to the local extent of the disease.
- Patients can rapidly deteriorate as sepsis and multiorgan failure, the most common cause of death in these cases. [(11)]

Diagnosis:

The physical examination includes fluctuance, crepitus, localized tenderness and wounds of the genitalia and perineum but misunderstand in older patients.

The common laboratory findings are nonspecific and may show anemia, leukocytosis, thrombocytopenia, electrolyte abnormalities, hyperglycemia, elevated serum creatinine level, urea, lactate dehydrogenase, alkaline phosphatase, azotemia and hypoalbuminemia. [(13)]

- Conventional radiography can be used to detect the presence of soft tissue air in the area overlying the scrotum and perineum before clinical crepitus is detected.
- Ultrasound (US) findings in FG include a thickened, edematous scrotal wall containing hyperechoic foci that demonstrate reverberation artifacts, causing 'dirty' shadowing which represents gas within the scrotal wall. [(14)]
- Computed tomography (CT) plays an important role includes asymmetric fascial thickening, fluid collections, abscess formation, fat stranding around involved structures and subcutaneous emphysema. [(14,15)]
- Magnetic resonance imaging (MRI) offers an important diagnostic adjunct in the management of FG as it is more useful than conventional radiography.

Early diagnosis remains imperative, as the rate of fascial necrosis has been noted as high as 2–3 cm per hour. [(12)]

Scales used to assess the severity of FG:

Using a weighted point system of multiple laboratory markers, the Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score is often used to stratify patients into low, moderate or high risk for necrotizing soft infection. [(17)] A LRINEC score of more than 6 should raise the suspicion of necrotizing fasciitis among patients with severe soft tissue infections, and a score greater than 8 is strongly predictive of FG.

Prognostic index known, as the Fournier's Gangrene Severity Index (FGSI), was created by Laor and colleagues to determine the severity and prognosis of FG in patients. [(16)] By quantifying the severity of infection using common vital signs (temperature, heart rate, respiratory rate) and laboratory data (serum sodium, serum potassium, serum creatinine, serum bicarbonate, hematocrit and white blood cell count), the FGSI score helps prognosticate progression and predict the mortality. The degree of deviation from normal is graded from 0 to 4, and individual values are summed to obtain the FGSI score. A score greater than 9 is suggested to have a 75% probability of death, and index score up to 9 is associated with a 78% probability of survival.

Management:

- The management of FG is underscored by three main principles-rapid and aggressive surgical debridement of necrotized tissue, hemodynamic support

with urgent resuscitation with fluids, and broad-spectrum parental antibiotics. [(16)]

- Broad-spectrum antibiotic coverage: based on culture reports antibiotics are given as to kill the microbes.
- Radical surgical debridement: In addition to broad-spectrum parental antibiotics, early and aggressive surgical debridement has been shown to improve survival in patients presenting with FG as patients often undergo more than one debridement during their hospitalization. [(16,18)]
- Topical therapy: After initial radical debridement, open wounds are generally managed with sterile dressings or negative-pressure wound therapy with Povidone iodine dressing and honey can be used.
- Vacuum-assisted closure therapy: This accelerates the formation of granulation tissue by removing bacterial contamination, end products, exudates and debris compared with traditional dressing [(19)]
- Hyperbaric oxygen therapy: The physiological effects are believed to be enhancing leukocyte ability to kill aerobic bacteria, stimulation of collagen formation and increased levels of superoxide dismutase resulting in better tissue survival.
- Fecal and urinary diversion: Colostomy has been used for fecal diversion when severe perineal involvement (Indications for colostomy include anal sphincter involvement, fecal incontinence and continued fecal contamination of the wound's margin). Although colostomy can be beneficial with regard to wound healing by avoiding fecal contamination. It should be performed only in selected cases because it increases morbidity.
- Reconstructive surgery: Reconstruction in patients who have undergone genital skin loss due to necrotizing fasciitis is simple and efficient coverage. Additional goals are good cosmesis and the preservation of penile function, including erection, ejaculation and micturition.

CASE STUDY

A 55 years old male patient was admitted in MNR Medical College and Hospital, Sangareddy, Telangana, India with chief complaints of swelling and pain in perianal region since 4days, rupture and pus leakage since yesterday, chills since 1 day.

History of present illness:

Patient was asymptomatic 3 months back but after coming to hospital diagnosed with diabetes yesterday and untreated Hansen's disease with type-2 reactions and symptoms involved fever, swelling and pain in perianal region, rupture and pus leakage.

Past medical history:

Patient had history of joint pains and itching since 3years.

Past medication history:

Patient was on medications T. Prednisolone (wysolone) 5mg BD since 3years.

Personal history:

Patient was an occasionally alcoholic, smoker since childhood and with no known allergies.

Physical examination:

Vitals:

DATE	1st	2nd	3rd	1week	2 week	3week	25thday	1month
Blood pressure (mmHg)	90/40	100/60	100/60	110/60	110/60	110/60	130/80	120/80
Pulse rate	78	78	80	82	82	78-82	78	78

Laboratory investigations:

Blood sugar (mg %)	1st interval	2nd interval	3rd interval	4th interval
Blood sugar fasting(70-110)	190	91	-	-
Blood sugar post lunch(90-140)	143	119	-	-
Blood sugar random(80-120)	-	90	150	89

HbA1c test: 5.1%
Serum uric acid: 10mg/dl (3.5-7mg/dl)
X-ray: Normal
Serum direct bilirubin(1mg/dl):
1st interval- 0.6
2nd interval- 0.9

Complete blood picture:

Investigations	1st interval	2nd interval	3rd interval	4th interval	5th interval
Haemoglobin(11-16g/dl)	13.4	9.5	9	10	10
White blood cells(4000-11000cells/cumm)	20300	12000	12300	10000	9600
Neutrophils(40-75%)	84	81	80	70	64
Lymphocytes (20-45%)	12	15	16	21	30

Biochemical investigations:

Investigations	1st interval	2nd interval	3rd interval	4th interval	5th interval	6th interval	7th interval	8th interval	9th interval
Serum creatinine(0.6-1.4)	3.4	3.5	1.8	0.9	1.2	1	1	1	1
Blood urea(10-45)	62	89	102	35	46	32	22	28	28

ABG analysis:

Investigations	Observed value	Normal value
pH	7.4	-
PCO2	22.7	32-45
PO2	90	83-108
SO2	97	95-100

Sensitivity report:
E.coli grown in culture.
Treatment:

Brand names	**Generic names**	**Roué of administration**	**frequency**	**Dose**
Inj.T.T	Tetanus toxoid	IM	OD	0.5ml
Inj.taxim	Cefotaxime	IV	OD	1g
Inj. xylocaine	Lidocaine	IV	-	Test dose
Inj.Zofer	Ondansetron	IV	OD	2mg/ml
Inj.Piptaz	Piperacillin/tazobactam	IV	BD	4.5mg
Inj.Metrogyl	Metronidazole	IV	BD	100ml
Inj.Pan	Pantoprazole	IV	OD	40mg
Inj.PCM	Paracetamol	IV	BD	1gm
Inj.Tramadol	Tramadol	IV	OD	50mg/ml
T.Limcee	Vitamin C	Oral	OD	1 tablet
T.Chymoral forte	Chymotrypsin	Oral	TID	1 tablet
Protein X powder	Protein supplement	Oral	BD	1 spoon
T.Wysolone	Prednisolone	5mg	BD	5mg
T.Hisone	Hisone	5mg	OD	5mg10mg
T.Azithromycin	Azithromycin	Oral	OD	500mg
Inj.Dynapar	Diclofenac	Oral	OD	75mg/ml
T.Pan	Pantoprazole	Oral	OD	40mg
Inj.Neomol	Paracetamol	IV	SOS	1gm
T.Hifenac	diclofenac	oral	OD	100mg

Treatment description:

After admission, the patient was treated with antibiotics, undergone the debridement surgery and on NBM, fluids. He was administered antibiotics (Inj. Tetanus toxoid, Inj, Cefotaxime, Inj. Piperacillin/ Tazobactam, Inj. Metronidazole) to reduce the inflammation, Inj. Ondansetron to reduce vomiting, Inj. Tramadol to reduce pain and Inj. Lidocaine to attain numbing sensation is given on that day and next day.

For the next 2 weeks he was administered with antibiotics (Inj. Piperacillin/Tazobactam, Inj. Metronidazole, Inj. Azithromycin) to reduce the severity of infection, Inj. Pantoprazole to reduce gastric irritation; anti inflammatory

(Inj. Paracetamol, Inj. Tramadol) to reduce the inflammation. Supplements (Vitamin-C, Protein powder) to improve metabolic activities, corticosteroids (T. Prednisolone, Hisone) for pain relief followed by sitz bath, dressing with Betadine and Hydrogen peroxide twice daily.

On the next day, the patient had undergone the second suturing and administered with antibiotics (Inj. Piperacillin/Tazobactam, Inj. Metronidazole, Inj. Azithromycin) to reduce the severity of infection, Inj. Pantoprazole to reduce gastric irritation, anti inflammatory (Inj. Paracetamol, T. Diclofenac) to reduce the inflammation, supplements (Protein powder) to improve metabolic activities, corticosteroids (T. Prednisolone, Hisone) for pain relief followed by sitz bath, dressing with Betadine and Hydrogen peroxide twice daily .

For the next following 2 days the patient was administered with antibiotics (Inj. Piperacillin/ Tazobactam, Inj. Metronidazole, Inj. Azithromycin) to reduce the severity of infection Inj. Pantoprazole to reduce gastric irritation, anti inflammatory (Inj. Paracetamol, T. Diclofenac) to reduce the inflammation, supplements (protein powder) to improve metabolic activities, corticosteroids (T. Prednisolone) for pain relief and followed by sitz bath, dressing with Betadine and Hydrogen peroxide twice daily and Inj. Neomol to reduce fever because patient had high temperature of fever 108^0F.

For next 1 week, the patient was administered with antibiotics (Inj. Piperacillin/Tazobactam, Inj. Metronidazole, Inj. Azithromycin) to reduce the severity of infection, Inj. Pantoprazole to reduce gastric irritation, anti inflammatory (Inj. Paracetamol, T. Diclofenac) to reduce the inflammation, supplements(protein powder), supplements (protein powder) to improve metabolic activities, corticosteroids (T. Prednisolone) for pain relief and followed by sitz bath, dressing with Betadine and Hydrogen peroxide twice daily.

For next following 3week the patient had administered with antibiotics (Inj. Metronidazole, Inj. Azithromycin) to reduce the severity of infection ,anti inflammatory (T. Diclofenac) to reduce the inflammation, supplements (protein powder) to improve metabolic activities, corticosteroids (T. Prednisolone) for pain relief and followed by sitz bath, dressing with Betadine and Hydrogen peroxide at regular intervals. The patient was normal and the body vitals and investigations were found to be normal, the sutures are uncovered so the patient was called for follow up for once a week.

After successful control of the systemic illness optimization of wound condition, further reconstruction for the genital and perineum could be considered for better functionalities and improving quality of life of the patient.

DISCUSSION

Fournier's gangrene is a rare, life threatening disease. In this case, the patient was on T. Prednisolone indicated for joint pains, diabetic and found with Hansen's type 2 reaction. He underwent surgical debridement therapy with second suturing in hospital and necessary therapy is provided with antibiotics, antacids, anti-inflammatory drugs and sitz bath with regular dressing. The effective patient counselling was given to patient regarding the Hansen's disease, diabetes control and required dietary modifications.

CONCLUSION

Long term use of Prednisolone, untreated Hansen's disease and raised blood sugar levels are the major contributing factors in this patient. Patient counselling focusing on safe steroid use, importance of regular glycemic control, role of hygienity in disease control can reduce the severity of the patient who is diagnosed with Fournier's gangrene. Clinical pharmacist can play a major role in this regard.

ACKNOWLEDGEMENT

I thank to Dr. Mudda Amarnath, H.O.D., Department of General Surgery and Mr. Umasankar Viriti, Associate professor, Department of Pharmacy practice of MNR College of pharmacy for his helping in preparing the manuscript for submission.

Conflict of interest: There is no disclaimer or Conflict of interest.

REFERENCES

1. Vick R., Carson C. (1999) Fournier's disease. UrolClin North Am 26: 841–849.
2. Korkut M., Icoz G., Dayangac M., Akgun E., Yeniay L., Erdogan O., et al. (2003) Outcome analysis in patients with Fournier's gangrene. Report of 45 cases. Dis Colon Rectum 46: 649–652.
3. Nathan B. (1998) Fournier's gangrene: a historical vignette. Can J Surg 41: 72.
4. Fournier J. (1883) Gangrene foudroyante de la verge. SemaineMedicale 3: 345–348
5. Meleney F. (1924) Hemolytic streptococcus gangrene. Arch Surg 9: 317–364.
6. Smith G., Bunker C., Dinneen M. (1998) Fournier's gangrene. Br J Urol 81: 347–355
7. Eke N. (2000) Fournier's gangrene: a review of 1726 cases. Br J Surg 87: 718–728.
8. Alonso R., Garcia P., Lopez N., Calvo O., Rodrigo A., Iglesias R., et al. (2000) Fournier's gangrene: anatomo-clinical features in adults and children. Therapy update. ActasUrolEsp 24: 294–306.
9. Yeniyol C., Suelozgen T., Arslan M., Ayder A. (2004) Fournier's gangrene: experience with 25 patients and use of Fournier's gangrene severity index score. Urology 64: 218–222.
10. Paty R., Smith A. (1992) Gangrene and Fournier's gangrene. UrolClin North Am19: 149–162.
11. Sutherland M., Meyer A. (1994). Necrotizing soft tissue infections. SurgClin North Am 74: 591–607.
12. Uppot R., Levy H., Patel P. (2003) Case 54: Fournier gangrene. Radiology 226: 115–11
13. Shyam D., Rapsang A. (2013) Fournier's gangrene. Surgeon 11: 222–232.
14. Levenson R., Singh A., Novelline R. (2008) Fournier gangrene: role of imaging. RadioGraphics 28: 519–528.
15. Rajan D., Scharer K. (1998) Radiology of Fournier's gangrene. AJR Am J Roentgenol 170: 163–168.
16. Loar E., Palmer L., Tolia B., Reid R., Winter H. (1995) Outcome prediction in patients with Fournier's gangrene. J Urol 154: 89–92.
17. Wong C., Khin L., Heng K., Tan K., Low C. (2004) The LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score: a tool for distinguishing necrotizing fasciitis from other soft tissue infections. Crit Care Med 32: 1535–1541.
18. Corman J., Moody J., Aronson W. (1999) Fournier's gangrene in a modern surgical setting: improved survival with aggressive management. BJU Int 84: 85–88.
19. Ozkan O., Koksal N., Altinli E., Celik A., Uzun M., Cikman O., et al. (2014). Fournier's gangrene current approaches. Int Wound J: 10.1111/iwj.12357

How to cite this article: Lakshmi LD, Shivani T, Amarnath M et.al. Case study on Fournier gangrene on long-term use of tablet prednisolone. International Journal of Research and Review. 2018; 5(11):180-185.

******