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# RARE CASES OF NECROTISING FASCIITIS OF PERINEUM

General Surgery

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## ABSTRACT

**Background:** Necrotizing fasciitis is a rapidly progressing skin infection characterized by necrosis of the fascia and subcutaneous tissue, accompanied by severe systemic toxicity. The objective of this systematic review was to identify clinical features and investigations that will aid early diagnosis. **Methods:** Case series of two subjects with information on symptoms and signs at initial presentation, investigations and clinical outcome of necrotizing fasciitis of perineal regin were included. **Results:** Case series of two patients were selected in our study. Diabetes mellitus was a comorbidity in patients. The top three early presenting clinical features were: swelling, pain and erythema. These being non-specific features, initial misdiagnosis was common and occurred in one of patient. Clinical features that helped early diagnosis were: pain out of proportion to the physical findings; failure to improve despite broad-spectrum antibiotics; presence of bullae in the skin; and gas in the soft tissue on plain X-ray (although this occurred in only one patient). **Conclusion:** NF is a rare but life- threatening condition that requires prompt diagnosis and surgical debridement and treatment with broad spectrum antibiotics. Patients with NF can recover after a multi disciplinary treatment involving plastic surgery and reconstructive surgery.

## KEYWORDS

Debridement, Necrotising fasciitis

## INTRODUCTION

In 1952, Wilson coined the term necrotising fasciitis (NF) to describe a rapidly progressive inflammation and necrosis of subcutaneous tissue and fascia. Until then, the disease had been described under various nomenclatures, such as haemolytic gangrene, acute streptococcal gangrene, gangrenous erysipelas, necrotising erysipelas, suppurative fasciitis and hospital gangrene [1–3]. NF is a destructive invasive infection of skin, subcutaneous tissue and deep fascia [4]. Advanced age, trauma, diabetes, immunosuppression and chronic systemic diseases (hypertension, atherosclerosis and renal failure) are considered as predisposing factors. NF has multiple causes and multiple bacteria are often involved [5–8]. Case-fatality rates for NF may exceed 30% and have remained high despite advances in the care of these patients. Optimal management depends on prompt diagnosis with identification of the causative organisms and appropriate therapy in association with surgical debridement [9]. Treatment includes early surgical debridement, parenteral antibiotics and nutritional support. Given the atypical presentation of this disease, there is a delay in diagnosis and appropriate treat ment. NF is easily and very often confused with other soft tissue infections and this can also contribute to increased morbidity and mortality rates [10–12].

### Case 1

A 54-year-old male presented to emergency department with complaints of severe pain and foul-smelling discharge in perineal region associated with fever and was unable to lie in supine position and walk for 4 days. Physical examination revealed an acutely ill man with a temperature of 39.4 C. Local examination revealed butterfly shaped wound in perianal region of approximately 10*8*2 cm dimensions involving anal sphincter causing anal incontinence with necrotic wound and pus mixed with bloody discharge. Laboratory findings were: W.B.C.18000 cells/cumm ; Hb7.3gm/dl, platelet count 2.9 lakhs, blood urea 3404, Creatinine 1.18, Na 135, K 4.4, HbA1c 5.6%, HIV/HCV/HBSAG –Nonreactive. The patient was started on Cefosulbactum, Amikacin, Metrogyl, Piptaz, Gentamycin and Ofloxacin Ornidazole. With above mentioned findings, patient was admitted and multiple debridements were performed until the wound became smaller and healthy granulation tissue developed; W.B.C. decreased to 7640. He was then planned for skin grafting, 12 days after admission diagnosis of Perianal abscess. Eventually patient's complaint of anal incontinence resolved. No Bacterial growth found on wet mount examination of the pus. The patient was treated postoperatively with skin grafting without complications. He was discharged one week postoperatively and when seen one week later, had no complaints.

**Fig 01 Necrotising Fasciitis Ischiorectal Fossa**

**Fig 02 Healing Wound Of Necrotising Fasciitis**

**Fig 03 Skin Grafting Over Ischiorectal Region**

**Case 2**

A 58-year-old male patient presented to our emergency department with a four day history of scrotal swelling, a three-day history of high-grade fever. The patient gave history of scrotal swelling and felt discharge from scrotal region. The affected area was swollen, dusky and covered by macerated skin and presented with a characteristic foul odor. He had a respiratory rate of 30 breaths/minute, a pulse of 132 beats/minute, blood pressure of 118/54mmHg and a temperature of 39.5 degrees Celsius. Chest auscultation revealed bilateral equal air entry. The abdomen was firm, distended and non-tender with audible gut sounds. He was drowsy with a Glasgow coma scale (GCS) score of 12/15. Local examination revealed scrotal swelling, foul smelling small necrotic patch on his scrotal region with mild purulent discharge. The patch was tender and swollen and there was associated erythema extending to the entire perineal region. Suspecting a case of necrotizing fasciitis, the patient was rushed to the operating room for rapid and aggressive surgical debridement of necrotized tissue, hemodynamic support with urgent resuscitation with fluids, and broad-spectrum antibiotics. During local debridement, necrotic foul-smelling pus was found throughout the scrotal sac. It was also involving the inguinal region on right side. A right inguinal incision was done and pus was drained. A relook debridement procedure was performed next day later to remove further necrotic tissue, irrigate the involved areas and remove remaining pus. A final debridement of the perineal wound was carried out seven days later with a washout of spaces with peroxide. The patient was administered meropenem, vancomycin, and clindamycin during the procedure and afterward in the SICU as well to address ongoing sepsis. For pain control was administered tramadol for the first two days then switched to aceclofenac. The patient remained in the SICU for fourteen days and after successful reduction of creatinine to near baseline values, the patient was discharged after a total hospital stay of twenty three days.

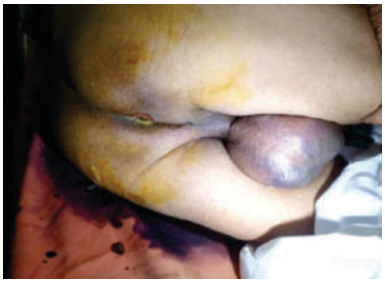

**Image1: NF Involving Scrotum And Perineum**.

**Image2: After Surgical Debridement.**

**DISCUSSION**

Necrotizing fasciitis is a lethal soft tissue infection characterised by rapidly progressive inflammation and necrosis of the subcutaneous fascial tissues. The adjacent skin and muscle are relatively spared until late in the course of the disease. Treatment with surgical debridement must be instigated without delay or the patient inevitably succumbs to sepsis and multi-organ failure[5].

Joseph Jones described necrotizing soft tissue infection in soldiers during the American civil war in 1871 and reported a mortality rate of 46%. In 1883, Jean Alfred Fournier also described similar NF of the perineum in 5 male patients. In 1952, NF was described for the first time to include both gas-forming and non-gas-forming necrotizing infection.[6] NSTI can be classified according to the anatomic location involved or the depth of infection as necrotizing adiposities, fasciitis, or myositis. The most common site of infection was the extremities (57.8%) followed by the abdomen and perineum.[7]

Diagnostic methods like US, CT, MRI, and infrared spectroscopy are helpful in detecting suspicious cases.[8]Carroll PR, et al: in their study stated that "Half of the patients in the present series had extension of a primary perirectal infection. The process penetrates the genitourinary diaphragm and microscopic interstices in Colles' fascia to extend to the genitalia.[9] Other foci of infection include the skin and periurethral glands,[10-12] which represented 29% and 14%, respectively." Similarly in our case-1, patient developed primary lesion in peri-anal region which eventually extend and increases in size and has findings consistent with their study.In the case series presented by Whitehead SM, et al," the most common organisms included bacteroides sp, E coli, anaerobic cocci and aerobic streptococci. Importantly, the infections were predominantly polymicrobial and anaerobic flora were cultured in eleven patients. The high percentage of anaerobes discovered in this study (79%) and in others suggests that reports of aerobic organisms alone may be due to improper anaerobic collection or culture techniques.[13-15] Although clostridia are reportedly a frequent pathogen, six of was discovered in the present series. Ten Gram's stain reports were available for review and a "few pleomorphic Gram-positive rods" were noted in only one, suggesting that the absence of clostridia was not due to faulty culture techniques." Unfortunately, due to contamination of wound with fecal content, culture growth and sensitivity showed mixed flora after 48 hours and was inconclusive in our cases. The usual multidrug regimens include high-dose penicillin, high-dose clindamycin, and a fluoroquinolone or an aminoglycoside. Vancomycin or linezolid should be considered until methicillin-resistant Staphylococcus aureus infection has been excluded.[16-18] This should be accompanied with supportive measures such as fluid replacement, blood pressure support, especially analgesia, nutritional support and intensive care involvement. Hyberbaric oxygen therapy has also been used as an adjunct to other treatments. There is no agreement as to the usefulness of hyberbaric oxygen therapy in the treatment of NF.[19-21]Typically, NPWT is the most commonly applied method, which is advantageous in wound healing with physiological effects [22]

Aggressive surgical treatment is advocated for the highly suspected cases. A definite diagnosis can be made based on the intraoperative manifestation that invasive infection is observed to spread along the deep fascia. Surgical debridement is conducted to remove the necrotic tissue and make adequate drainage. Typically, the debridement boundary should reach the normal fascia, rather than the normal skin. The following repeated surgical interventions are necessary in the case of infection progression or abundant necrotic tissue.[23]

Urinary catheterization is preferred to cystostomy so as to avoid urinary contamination. Suprapubic cystostomy is required when there is gross urinary extravasation or peri-urethral inflammation.[21] Colostomy should be done only in selected cases as it is not a procedure free of complications.

Diverse ways can be selected for wound closure, including secondary healing or suture, faps and skin grafts. But a primary concern is focused on the closure of scrotal defect, given the long-term function of testicle and spermatogenesis. Skin graft is denounced for contraction and abrasion, regardless of its simple procedure and fewer complications. At the same time, the flap derived from the disruption of scrotal thermoregulation with thick flap or thigh testicular transposition is also a source of concern.[24]

Our aim is to summarize the treatment experience, and make improvement for further treatment management of NF.

**CONCLUSION**

NF is a rare but life- threatening condition that requires prompt diagnosis and surgical debridement and treatment with broad spectrum antibiotics. Patients with NF can recover after a multi disciplinary treatment involving plastic surgery and reconstructive surgery.

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