

AN INTEGRATED APPROACH IN TREATING NECROTISING FASCITIS - A CASE STUDY

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ABSTRACT

Background: Necrotizing Fasciitis is a rapidly progressive soft tissue infection that is almost fatal without prompt treatment. It is spreading inflammation of the skin, deep fascia and soft tissues with extensive destruction, toxaemia. This review highlights about the basic approach to the diagnosis and treatment of Necrotizing fasciitis.**Aim & Objective:** Management of Necrotizing Fasciitis with surgical debridement followed by wound bed preparation and later followed by skin grafting. **Material and Method:** A 65 old year female patient having wound over the left foot involving superficial and deep fascia was planned for debridement which is the first line of treatment with appropriate broad-spectrum antibiotics. *Trifala kwath awgahan* and *jalaaukaawcharan* was done for wound bed preparation for few days and later on skin grafting was done for reducing the wound surface area.**Result:** Necrotizing Fasciitis was successfully treated with modern medicinal support, ayurvedic medicine and para-surgical procedures. **Conclusion:** Necrotizing fasciitis is an emergency condition and should be managed without any delay. Diagnosis should be done properly with proper surgical management and post-operative wound care.**KEYWORDS:** necrotizing fasciitis, necrotizing soft-tissue infections, NSTIs, Surgical debridement, Skin grafting.

INTRODUCTION

Necrotising fasciitis is spreading inflammation of the skin, deep fascia and soft tissues with extensive destruction, toxaemia commonly due to *Streptococcus pyogenes* infection, but often due to mixed infection like anaerobes, coliforms, and gram- negative organisms. For the infection to occur, the pathogen is to be inoculated into the subcutaneous tissue, which may occur through any break in the epithelial or the mucosal surface. This may happen during trauma, IV drug use, insulin administration (via injection), skin infections, ulcer, insect bites, visceral-cutaneous fistulas, surgical complications, percutaneous catheter insertion, abscesses, and can even have idiopathic causes. It is common in old age, smoking, diabetes, immunosuppressed, malnourished, obesity, steroid therapy and HIV patients. Trauma is common precipitating factor – 80%. It can occur in limbs, lower abdomen, groin, perineum. There is acute inflammatory response, oedema, extensive necrosis and cutaneous microvasculature thrombosis. The early or late systemic toxicity depends on the strain of bacteria and the toxins produced. Clinical characteristics of necrotizing fasciitis are classified into 3 stages viz. Stage 1- Fever, erythema,

odema, warm skin, tenderness, Stage 2- Blisters and bullae formation, Stage 3-Hypoaesthesia, crepitus, tissue necrosis, haemorrhagic bullae. The other clinical include sudden swelling and pain in the part with oedema, discolouration, necrotic areas, ulcerations, foul smelled discharge, features of toxaemia with high grade fever and chills, hypotension. Oliguria often with acute renal failure due to acute tubular necrosis, jaundice, rapid spread in short period (in few hours), features of SIRS, MODS with drowsy, ill patient. Condition may worsen if not treated properly.^[1] Once the symptoms are observed, the progression of the infection is measured in hours, where early diagnosis and treatment become crucial. Hence, Early diagnosis should be obtained in the first 4 hours of admission; and evaluate the laboratory results thoroughly. This is helpful in the determination of the diagnosis and the severity of the condition. Following the diagnosis, the patients are to be managed with aggressive fluid resuscitation, antibiotic treatment, and emergency surgical debridement.

In Ayurveda Sushruta has mentioned *Shashthiupakrama*^[2] for wound management. He has mentioned Visravana (Blood-letting) by means of

Raktamokshana in *Vranashopha*, *Kushtha*, *Visarpa*, *Pidaka*, *Arsha*, *Vidraddhi* etc^[3] and advised *Jalaukavacharan* in chronic and contaminated wounds. *Jalaukavacharan* is used to reduce local inflammation in the tissue i.e. Antiphlogistic.^[4] *Jalauka* improves micro-circulation and reduces blood coagulation.^[5] *Jalauka* sucks blood by self-regulatory mechanism. Local effect on wound by *jalauka* takes place due to several active substances emitted into it during sucking. *Jalauka* enhances granulation tissue formation hence we had selected this patient for above treatment.^[6] Here we represent the case of necrotizing fasciitis involving the left lower limb which was managed by surgical Debridement, antibiotics, post-operatively *trifala kwath awgahan*, *jalaukawcharan* and later on with skin grafting.

CASE REPORT

A 65 year old female patient brought by relative to casualty on dated 20/09/2021. She got admitted complaining of swelling and redness at left lower limb with foot, multiple wounds and blisters since 2 days which was increasing gradually upwards, foul smell and discharge from the wound site, itching all over the left lower limb at wound site. Patient didn't have history of any previous illness like Hypertension, Pulmonary Koch's, and Bronchial asthma. Patient had a medium built with vitals BP 130/90mmhg, pulse 86/min, temperature 101°F, SPO2 98% at Room air. Informed written consent was taken from the patient. General clinical examination was carried out. There was history of systemic fever daily since 3 days. No lymphadenopathy was noticed. No Hepato-Spleenomegaly was found per abdominally. She did not have any other relevant medical, family and past history. On examination, it was found that there were wounds of approximate size 10*6 cm and 8*4 cm on lateral and dorsal aspect of left foot. Odema over left lower limb below knee laterally, with discharge and foul smell. Tenderness was present with peripheral saturation normal of left foot. Her complete blood picture revealed hemoglobin 7.3 gm%, WBC 9,600 cells/cu.mm Differential count Neutrophils 62% Lymphocytes 28% Eosinophils 4% Monocytes 6% Basophils 00 Platelet count 2.3 l/cu.mm, ESR 32 mm/h urea 35 mg/dl, serum creatinine 0.7 mg/dl, sodium 139 meq/dl, potassium 4 mEq/dl Chloride 102 mEq/dl. Other diagnostic tests viz. 2D ECHO was normal, ECG was normal, Chest X-ray, normal, RBS 80 mg/dl, HBsAg test was Non-reactive, US abdomen revealed anechoic focus noted in the mid pole of the left kidney measuring 1.5x1.4 cm. Impression: simple renal cortical cyst observed 24 hours urine protein results. The total volume of urine 1.2. 24 hours of urine protein 27.6 mg/24 hours.

Haemoglobin correction was done by giving two PRC on the same day of admission. Broad spectrum antibiotic coverage started. After performing all necessary investigations and written informed consent from the patient and relatives patient was taken under spinal

anesthesia. By taking all aseptic precautions, painting, drapping and isolation of parts done. Incision taken throughout the edges and all necrosed tissues excised. Scooping done. Wound area cleaned with betadine and H2O2 solution. Normal saline wash given. Haemostasis achieved and sterile dressing with betadine solution done. Debridement done. Post operatively broad-spectrum antibiotic regime with Inj.Piptaz.4.5 gm TDS and other supportive medications given. Daily *trifala kwath awgahan* with alternate day *jalaukawacharan* was done for about 1 month. After achieving definite healthy skin granulation patient was taken for split skin grafting.

DISCUSSION

Necrotizing Fasciitis is a surgical emergency, as the infection of the soft tissue progresses rapidly. Primarily affected parts include the skin, subcutaneous fat, and superficial fascia which leads to the destruction of blood supply to the skin leading to necrosis.^[7] Pathogens causing the infection may include *Bacteroides*, *Clostridium*, *Pepto streptococcus*, *Enterobacteriaceae*, *Proteus*, *Pseudomonas*, and *Klebsiella*. NF can be classified into three types according to the causative organisms type I infections account for about 80% infections and is polymicrobial, type II infections are monomicrobial and caused by group A *Streptococcus*, and type III infections are caused by *Vibrio* or *Aeromonas* and occur in people who come in contact with contaminated food or water, and present with fulminant sepsis. Despite all the necessary improvements in surgical techniques and intensive care, the mortality rate remains high and ranges from 12% to 43% in reported studies. No definite diagnostic criteria are available for necrotizing fasciitis. The early stages of the disease can be challenging to diagnose for the physicians due to the lack of typical cutaneous features. Laboratory findings may lead to misdiagnosis as cellulitis or abscess. Disproportionate pain, extreme inflammation, ecchymosis are indicative symptoms of Necrotising fasciitis. Laboratory risk indicator for necrotizing fasciitis (LRINEC) score uses white blood cell count, hemoglobin, sodium, glucose, serum creatinine, and serum C-reactive protein to develop a scoring system for assessing the risk of NF. A score of ≥ 6 yields a positive predictive value of 92% for predicting the severity of skin and soft tissue infection.^[8] In the present study, the patient had developed wounds on the skin following itching at foot with nails before admission to the surgical department.

For this, a surgical debridement procedure was done as the primary management of Necrotising Fasciitis. It aims at removal of all the necrotic tissues, fascia to preserve the viable skin. A combination of surgical debridement, appropriate Broad-spectrum antibiotics, followed by wound bed preparation by *Trifala kwath awgahan* and *jalaukawcharan* alternate day and later on split skin grafting done to minimize damage of extensive skin loss. The skin graft was prepared from the left functional thigh

of the patient. The patient was also found to have, in addition to necrotizing fasciitis, a simple renal cortical cyst, which was detected upon radiology examination. A 24 hours urine protein test, which was performed to assess the damage to the kidney, revealed normal results.

CONCLUSION

Surgery is the gold standard treatment when NF is either suspected or diagnosed. Surgical exploration and debridement of the affected tissue should be performed

promptly. Initial tissue findings may include discoloration, gross edema or ecchymosis, and signs of necrosis. Specimens for Gram stain and culture should be obtained during surgical exploration. The study highlights the importance of immediate management of necrotizing fasciitis. The patient was maintained on an optimal antibiotic therapy before the procedure of skin grafting was performed to minimize loss.

PHOTOS



REFERENCES

1. Sriram Bhat M, SRB's Manual of Surgery, Jaypee Brothers Medical Publishers, 6th edition, 2019; chapter 4, page 63, 64.
2. Ambikadutta Shashtri; Sushrut Samhita of Sushrut with hindi commentary Ayurved th Tatwa Sandipika; Chaukhambha Sanskrit Sansthan, Varanasi; 1995; part 1; 9 edition; sutra sthana 21/40; chikitsa sthana 1/16.
3. Acharya Yadavji Trikamji; Sushrut Samhita of Sushrut with Nibandhasangraha Commentary; Chaukhambha Surabharti Prakashana, Varanasi; Reprint 2010; Chikitsa Sthana; chapter 1; pg. no. 03.
4. Prof K.R. Murthy; Illustrated Sushruta Samhita; Chaukhambha Orientalia Varanasi; Reprint Edition 2014; Sutrasthana; chapter 17/18.
5. Vivek Bhatt, Ajay Gupta, Vishal Verma. Effect of Jalaukavacharan in management of Dushta Vrana w.s.r to Non Healing Ulcer; IJTRA, 2016; 4(5): 39- 40.
6. Vivek Bhatt, Ajay Gupta, Vishal Verma. Effect of Jalaukavacharan in management of Dushta Vrana w.s.r to Non Healing Ulcer; IJTRA, 2016; 4(5): 40-43.
7. Narayan N, McCoubrey G. Necrotizing fasciitis: a plastic surgeon's perspective. Surgery (Oxford), 2019; 37(1): 33-7.
8. Sriram Bhat M, SRB's Manual of Surgery, Jaypee Brothers Medical Publishers, 6th edition, 2019, chapter 4, page 63, 64.