



Case Report

Management of necrotizing fasciitis of neck – Our experience

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ABSTRACT

Introduction: Necrotizing fasciitis is a severe bacterial infection characterized by progressive necrosis of the fascia and subcutaneous tissue. Even though it rarely involves the cervical region, this condition carries high mortality rate. So, it requires prompt diagnosis and urgent treatment with extensive debridement and adequate antibiotics.

Case Report: 50yrs old man presented with a rapidly progressing ulcer on left side of face and neck with extensive gangrenous changes of the surrounding skin. He was a known case of diabetes mellitus and was on irregular medication. Underwent extensive debridement within 12 hours of presentation and managed with antibiotics and Vacuum assisted dressing. Strict diabetic control achieved with the help of insulin.

Conclusion: Satisfactory outcome can be achieved by early diagnosis, aggressive surgery along with adequate antibiotic therapy and strict diabetic control. Vacuum assisted closure helps in early recovery.

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1. Introduction

Necrotising fasciitis (NF) is a severe inflammation of the muscle sheath that leads to necrosis of the subcutaneous tissue and adjacent fascia.¹ Immunocompromised patients are at an increased risk of developing necrotising fasciitis. The first reported case of this infection affecting the perineum was by Baurienne in 1764. The name necrotising fasciitis was given by Wilson in 1952.²

2. Case Report

50 years old man presented to emergency with ulcer on left side of face and neck. It started as left molar toothache and fever, along with left side cheek swelling. Following that he developed a small pinpoint ulcer on left cheek which rapidly progressed in three days to involve the left side of face and neck. He was a known case of diabetes mellitus on irregular medication and a chronic smoker with 15 pack years of cigarette.

On examination – A single large ulcerative lesion measuring 5x5 cm on left side of face and neck extending superiorly 0.5cm below the level of tragus to upper border of thyroid cartilage inferiorly and medially 3cm lateral to midline to angle of mandible laterally. Purulent discharge was present. (figure -1). Ulcer was tender with local rise of temperature. Oral hygiene was poor and he had multiple dental carries also.

Blood sugar was checked using glucometer which showed 585mg/dl. He was started on insulin infusion with adequate hydration. Basic blood investigations show Hb-10gm/dl, WBC count-22,450/mm, S.creatinine-1.8mg/dl, S.sodium-132mmol/l. His HbA1c was 14.4%. C-reactive protein (CRP) not assessed. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) Score was 8 even without adding CRP.

He underwent emergency debridement and left lower second molar tooth extraction done under GA within 4 hrs of presentation and started on broad spectrum antibiotics including anaerobic coverage. Samples were sent for microbiologic examination which showed E.coli and Klebsiella spp.

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Strict glycaemic control was obtained and on post-operative day 2 onwards vacuum assisted closure (VAC) dressing was applied for 10 days. On removal of VAC dressing rich amount of healthy granulation tissue was noticed. (figure -2). After one week the wound was closed using split thickness skin graft



Fig. 1: Ulcer at the time of presentation



Fig. 2: Post VAC dressing

3. Discussion

The term necrotizing fasciitis (NF) describes a group of relatively uncommon, but life-threatening infections of the skin, soft tissues, and muscles, which tend to progress rapidly through the fascia planes. Necrotizing fasciitis is a worldwide infection with greater prevalence, especially in the pre-antibiotic era. It has been calculated that 13 cases of necrotizing fasciitis per million of populations are hospitalized every year, and 20-30% of these patients die from the disease. The mortality rate could be up to 100% if not diagnosed and treated early. NF commonly occurs in male and has a male to female ratio of 3:1. It affects the extremities more often than other parts of the body. Cervical necrotizing fasciitis is uncommon contributing only 2.1% of the total.³

Based on the causative organisms, NF is categorized into four types.

Type I NF: (polymicrobial) causes 80% of NF seen in practice. Resulting from a mixture of anaerobic, aerobic and facultatively anaerobic bacteria. Type I NF particularly affects the immunocompromised 14 or those with underlying abdominal pathology.

Type II NF: causing fewer than 20% of cases, usually monomicrobial and due to Gram-positive organisms, the commonest type II NF is caused by group A beta-haemolytic streptococcus alone or occasionally with *Staphylococcus aureus*.¹⁴

Type III NF: Gram-negative monomicrobial NF, including marine-related organisms. The most common Gram-negative causes of NF remain *Vibrio* spp, such as *V.damselae* and *V.vulnificus*

Type IV NF: Fungal invasion most commonly follows traumatic wounds or burns

Although occurring in all age groups, NF is slightly commoner in those >50 years of age. General risk factors include diabetes mellitus, peripheral vascular disease, intravenous drug use, alcoholism, immunosuppression, obesity and old age.¹

The main site of infection is superficial fascia, then the infection spread through the fascial planes without the involvement of skin, this is known as a horizontal spread. The horizontal spread starts with an initial trivial injury where the bacteria invade the superficial fascia, proliferate and produce hyaluronidase enzymes. These enzymes cause degradation and necrosis of the fascial layers, which provides a more favourable niche for bacterial growth, and uncontrolled spread of the infection. That is why patients become sicker without significant local manifestations. As the disease progresses, there will be vertical spread of infection, which leads to the involvement of skin, subcutaneous tissue, deeper fascia and muscles.³

The clinical diagnosis is based on the history of symptoms and signs of the disease at the patient's presentation. Similarly, the affected part of the body and history of risk factors/comorbidity will help in determining the likely type of necrotizing fasciitis clinically. In an early presentation, patients present with pain, fever, erythema, local warmth, skin sclerosis and oedema. In the fulminant form of the disease, there will be features of severe septic shock and multiple organ dysfunction syndromes along with soft tissue necrosis. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score is a predictive tool for the diagnosis of necrotizing fasciitis using laboratory parameters which use variables like C-Reactive Protein (CRP), White blood cell count, Haemoglobin, Serum Sodium, Serum Creatinine and Serum Glucose.⁴

The successful treatment of necrotizing fasciitis involves both medical and surgical interventions. The medical treatment comprises of supportive and parenteral antibiotic

therapy. Broad-spectrum antibiotics should be started early to cover for Gram-positive, Gram-negative aerobes and anaerobic organisms. The surgical treatment is the aggressive surgical debridement which is the most important aspect in the management of necrotizing fasciitis. The main aim of debridement is to remove all the necrotic tissue (necrosectomy) and infected fascia (fasciectomy). Adequate postoperative wound management is necessary for a good outcome. VAC systems are nowadays more commonly used for post-debridement wound dressing. Negative Pressure Therapy (NPT) using VAC promotes appearance of granulation tissue by a reduction of oedema and exudates, decreased bacterial colonization, improved vascular and lymphatic circulation. Thus, leads to reduction of size of the wound.⁵

4. Conclusion

Necrotising fasciitis (NF) is a severe inflammation of the muscle sheath that leads to necrosis of the subcutaneous tissue and adjacent fascia. Satisfactory outcome can be achieved by early diagnosis, aggressive surgery along with adequate antibiotic therapy and strict diabetic control. Vacuum assisted closure will help in early recovery.

5. Conflict of Interest

The authors declare no potential conflict of interests.

6. Source of Funding

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