

Cervical Necrotizing Fasciitis: A Clinical Report of 4 Cases

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Abstract:

Purpose: This article reviews the demographics, presentation, cause, clinical findings, and treatment of 4 cases of cervical necrotizing fasciitis of odontogenic origin.

Patients And Methods: A retrospective chart review of 4 cases treated between 2012 and 2015 was done.

Results: Most cases resulted from an abscessed mandibular molar. The most common significant medical conditions in the patient's history were diabetes, hypertension, obesity, and substance abuse. All patients were treated surgically within 24 hours of admission. All patients recovered.

Conclusion: Early surgical intervention decreases morbidity and improves the clinical outcome.

Keywords: Necrotizing fasciitis, early surgical intervention, immunocompromised status

I. Introduction

Necrotizing fasciitis is an insidiously advancing, fulminating, devastating and rapidly progressing soft tissue infection characterized by widespread fascial necrosis; with a high morbidity and mortality rate¹. It is a polymicrobial or mixed aerobic-anaerobic infection. Patients with immunocompromised status like diabetes mellitus, cancer, alcoholism, vascular insufficiencies, organ transplants, HIV infection or neutropenia are prone to this type of infection.² Organisms spread from the subcutaneous tissues along the **superficial and deep fascial planes**, by the release of enzymes and toxins. This deep infection causes **vascular occlusion; ischemia and tissue necrosis**.³⁻⁵ **Superficial nerves** are damaged, producing the characteristic **localized anesthesia**. **Septicemia** ensues with systemic toxicity. Necrotizing fasciitis- commonly seen in the extremities, trunk and perineum.^{6,7}

II. Material And Methods

Of all the cases of orofacial infection admitted to the private hospital, Mumbai, India during the period between 2012 and 2015, four cases of cervical necrotizing fasciitis were recorded.

All clinical parameters like patient's **age, sex, medical status, etiology, bacteriology, region involved, systemic diseases, time taken to report to our hospital, antimicrobial treatment, hospital stay period, surgical treatment and complications** were systematically analyzed.

III. Case Report

Case- I

- Systemic condition-Known diabetic since 5 years
- Ludwig's angina leading to extensive fasciitis
- Offending tooth- 36, 37



Figure:1 Figure: 2 Figure:3



Figure: 4 Figure: 5

Case II

- Systemic condition-Uncontrolled Diabetes mellitus
- Long standing Submandibular space infection leading to fascitis in lateral cervical region
- Offending teeth- 46,47



Figure: 6 Figure: 7

Case III

- Systemic disease- Liver cirrhosis
- Submental and submandibular space infection leading to necrotising fascitis
- Offending tooth- 36



Figure: 8

Case IV

- Patient on steroid therapy since 6 months
- Ludwig's angina leading to massive cervical necrotising fascitis
- Offending tooth- 46, 47



Figure: 8 Figure: 9 Figure: 10

IV. Results

- There were 3 male and 1 female patients.
- In all these patients, the **offending teeth were lower molars.**
- All four patients had associated systemic disease- **diabetes mellitus, hypertension, obesity, liver cirrhosis or on steroid therapy.**
- All the patients gave a **positive history of dental pain of considerable duration.**
- The buccal and submandibular regions were the commonly involved regions of the face.
- In all patients, necrosis involved the neck
- On admission, all 4 patients presented with extensive facial swelling
- Patients presented with **erythema, warmth, tense, tender and fever.**
- All the patients were hospitalized.
- Treatment involved **incision and drainage and debridement.**
- Anti-microbial drugs were given to all patients, which included **Augmentin, cephalosporins, metronidazole and gentamycin, which was reevaluated after culture and sensitivity tests.**
- Streptococcus species was identified in all cultures
- The strains of bacteria cultured were **S. pyogenes, S. aureus and S. pneumonia.**
- Anaerobes were isolated in 2 patients (**Prevotella and Peptostreptococcus**).
- The wound was irrigated with 2% hydrogen peroxide and metronidazole solution.
- Dressings were changed every six hours with gauze soaked in gentamycin solution.
- Offending tooth were extracted once the general condition of the patient was deemed fit.
- In four patients, the wound healed by contracture.
- 3 patients recovered in an average of 15 days.
- Only in **case-IV the infection spreads to mediastinum which lead to pleural effusion and finally respiratory failure**
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V. Discussion

- Cervical necrotizing fasciitis is less common in head and neck, because of the rarity and **higher vascularity in the region.**¹
- The etiology in most of the case reports was **radicular abscess due to extensive caries, periodontal diseases and pericoronitis.**
- Various other causes of CNF include **trauma, tonsillar and pharyngeal abscess, cervical adenitis, salivary gland infections.**
- Predisposing factors for CNF are **diabetes, hypertension, obesity, malnutrition, peripheral vascular disease, severe liver disease, alcoholism and AIDS**
- Hyperglycemic state of the diabetic patient impairs the leukocyte function and thereby suppresses the host's immune system.
- These patients have **less circulating lymphocytes and T cells, compromised antibody response and polymorphonuclear cell function, thus being unable to respond to infection.**
- In most cases etiology is **polymicrobial** (Type I necrotizing fasciitis)⁹
- Type II is a streptococcal infection also called "**flesh eating infection**"⁸
- Type III is a **gas gangrene with myonecrosis.**⁹
- Characteristic features are **accumulation of gas in the tissues, odontogenic infection spreading below the neck and anterior chest and an orange-peel appearance of the skin involved, which may change to a dusky discoloration.**¹

- The probable reason for spread could be due to the **aggressiveness of the disease, delay in intervention and complex anatomy** of the region.
- The higher mortality rate is related to **preexisting systemic illness, late surgical intervention, septicemia within 24 hours, old age and mediastinal and thoracic extension of the infection.**¹
- Resuscitation is to be started immediately and empirical antibiotics commenced.⁹
- Aggressive surgery implies incisions to the deep fascia, that can reveal the presence of “**murky dishwasher fluid**” in the wound.⁹
- It is essential to remove all **non-viable tissue** including fascia, without concern for further reconstruction.
- Bleeding can be a problem if associated with intravascular coagulation, but in most cases **bleeding from small vessels is a sign of adequate resection.**¹⁰
- Continuity of the neck fascia with mediastinum and thoracic wall structures favors progression towards this anatomic areas.
- All infected spaces should be readily opened and drained.

VI. Conclusion

- Management of necrotizing fasciitis affecting cervical spaces continues to be a challenge and results depend a great deal on **surgical skills** and courage to insure an early aggressive debridement.
- **Clinical examination, correct empiric antibiotic selection and appropriate surgical intervention** are the cornerstones of proper management of deep cervical infections.
- Aggressive surgical approach certainly contributes to an early recovery.
- Non-recognition of the condition is by far the most damaging mistake
- Preserving non-viable structures for a future cosmetic result is responsible for continuous toxicity and infection progression beyond the healthy margins

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