

CERVICAL NECROTISING FASCIITIS: A SERIOUS COMPLICATION OF ODONTOGENIC INFECTION

Mohsin Khan¹, Deepak Kumar², Gagan Khare³, Kunwar Satish⁴

Senior Lecturer¹, Professor & Head², Professor³, Reader⁴

1,3,4- Department of Oral and Maxillofacial Surgery, Teerthanker Mahaveer Dental College and Research Centre, Moradabad
2- Department of Oral and Maxillofacial Surgery, Babu Banarasi Das Dental College and Hospital, Lucknow

Abstract

Cervical necrotizing fasciitis is an unusual infection characterized by necrosis of the subcutaneous tissue and fascial layers. Risk factors for the development of necrotizing fasciitis include diabetes mellitus, chronic renal disease, peripheral vascular disease, malnutrition, advanced age, obesity, alcohol abuse, intravenous drug use, surgery, and ischemic ulcers. This report presents a case of necrotizing fasciitis in the cervical area caused by odontogenic infection in a 32-year-old male patient. Cervical necrotizing fasciitis is rare, and even when establishing the diagnosis and having it timely treated, the patient can suffer irreversible damage or even death. Clinical manifestations in the head and neck usually have an acute onset characterized by severe pain, swelling, redness, erythema, presence of necrotic tissue, and in severe cases obstruction of the upper airways. Therefore, the presentation of this clinical case can serve as guidance to dentists as a precaution to maintain an aseptic chain and be aware of the clinical condition of patients and the systemic conditions that may increase the risk of infections.

Keywords: Necrotizing fasciitis, Odontogenic infection, Microthrombosis.

Introduction

Necrotizing fasciitis (NF) is a potentially fatal infection generally characterized by a rapidly progressive process of necrosis of the subcutaneous tissues and muscle fascial layers. The most likely cause of the disease is a vascular obliteration with microthrombosis around the locus of infection, accompanied by acute inflammation of the subcutaneous tissue and swelling of the underlying tissues; with the progression there is no intravascular coagulation in place and the infected tissue becomes necrotic. Moreover, it is believed that the lack of specific antigens of group A streptococcus is a predisposing factor for the development of this disease.

The primary sites of these infections in the head and neck are teeth, tonsils, or traumatic wounds.^{1, 2} To establish the diagnosis, areas of necrotic tissue surrounding the underlying fabric and the fascial spaces should be clinically observed.³

Clinical manifestations usually have acute onset and are characterized by intense pain, swelling, redness, erythema, the presence of necrotic tissue, presence of palpable crepitus due to subcutaneous gas, grey, foul-smelling "dishwater" exudate, and in severe cases obstruction of the upper airways. In this article we present a case of necrotizing fasciitis.⁴

Case Presentation

A 32-year-old male attended at the emergency ward at TMDCRC, Moradabad with complaining of severe pain in the cervical area. During the detailed case history the patient reported pain in the left lower back tooth region 2 weeks back. The extraoral physical examination revealed extensive necrotic tissue in the cervical area, fetid odor, hyperemia, and edema (Figure 1).

Respiratory rate and blood pressure changes, however, were normal. Culture was performed with antibiotic susceptibility of the affected region. Biochemical tests



Figure 1: Necrotizing Fasciitis

revealed a blood count showing leukocytosis (22,000 mm³) and a slightly increased glycemic index (144 mg/dL). Clinical diagnosis of necrotizing fasciitis was established. Preoperative antibiotic therapy was administered with Augmentin 1.2 gm bd and metrogyl 100ml iv infusion tds. Radiological investigations done (ioppr) & orthopantogram showing radiolucencies in the apical region of the molars as shown in the (Figure 2).

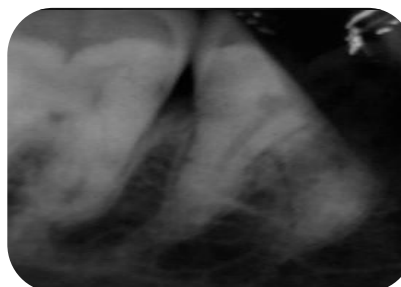


Figure 2: Periapical Radiolucency

The patient was submitted to surgical removal of the offending tooth and the necrotic tissue, debridement of the surrounding tissues, installation of a Pen Rose

irrigation drain (physiologic solution 0.9%), and of Meropenem 500 mg for 10 days (Figure 3).



Figure 3: Extracted third molar site

After seven days, dehiscence of the wound edges was observed, a new surgical debridement was carried out, and occlusive dressing with silver alginate was applied and exchanged every 48 hours for 21 days



Figure 4: Post operative healing

After 30 days, the patient was discharged, though complete repair of the surgical wound was not observed, as that only happened seven weeks after the operation by secondary intention (Figure 4).

Discussion

The most frequent initiating factor reported, for necrotizing fasciitis, in the head and neck region is a primary odontogenic infection or post extraction infection.⁵ Tonsillar infections, salivary gland infections, otogenic and dermatologic infections are other rare causes. Patients often have underlying systemic disease such as diabetes mellitus, alcoholism, malnutrition, or chronic renal failure.⁶ In early stages, necrotizing fasciitis can be misdiagnosed as a soft tissue infection such as cellulitis or erysipelas with a benign superficial appearance. The relative mild external clinical signs can mask the severe underlying necrosis. This may lead to delay in necessary aggressive surgical intervention, which can be life threatening.

Umeda *et al.*⁷ did a review of literature and found 125 cases whose age ranged from 12 to 82 years (mean 45.2 years). Male predominance was seen (male:female =

3:1). The origin of infection was periapical infection from mandibular molars. Fifty percent of the patients had associated diseases; diabetes mellitus being the most common, followed by alcohol abuse, drug abuse, HIV infection, heart disease, liver cirrhosis, renal insufficiency and schizophrenia. However, 34% had no systemic problems. Of the 125 patients, 19.2% reportedly died despite aggressive therapy. The relationship among various clinical factors and the prognosis was studied. The mortality rate of the patients with associated diseases was 24.3% which was much higher than that of those who did not have systemic disease (9.3%).⁸

Thus, a necrotizing soft tissue infection should be suspected whenever a small or clean wound is followed within 12–36 h by prominent systemic signs of sepsis. Crepitus and blistering are late features which indicate presence of gas in the tissues. CT is more sensitive than palpation in detecting gas in the tissues. The principles of management of necrotizing fasciitis are⁹

1. Begin high dose empirical broad spectrum antibiotic therapy.
 - IV Benzyl penicillin 2.4 g, 4 hourly + flucloxacillin 1 g, 6 hourly + metronidazole 500 mg, 8 hourly or
 - IV cefotaxim 2 gm, 8 hourly + metronidazole 500 mg, 8 hourly or clindamycin 900 mg, 8 hourly or
 - IV imipenem/cilastatin 500 mg, 6 hourly or add penicillin 20 million units (if gram negative cocci present).
2. At least two blood culture and sensitivity specimens should be taken 20 min apart as well as specimens from the wound at a point away from any open wound to rule out contamination.
3. A CT scan will be helpful in detecting gas in the tissues and blood serum C-reactive protein (CRP) will be raised (11.7–33.7 mg/dl) and leukocytosis present (11,800–38,700/mm³)
4. ICU care and constant monitoring of all vital parameters and nutritional support and care of the systemic diseases like diabetes mellitus.
5. Tracheostomy if necessary to maintain the airway.
6. Surgical debridement will be required minimum twice or more times. Excision of all necrotic tissue is done till normal appearing tissue appears which bleeds freely on incising. Extension of the infection is easily overlooked at the first procedure, so a second procedure is required after 24 h. Wound should be left open and insert penrose drains into deeper fascial planes.
7. Irrigation with NaCl 0.9% and 0.5% H₂O₂ is done as often as possible.
8. Hyperbaric oxygen therapy (1.5 h at 2.5 atm for 15 days) has been used as an adjunct in the

treatment of necrotizing fasciitis and can be used if available.

9. When the wound is seen to be granulating healthily, a skin graft can be placed over the site or an attempt at primary closure can be made.

It takes about 20–40 days for a patient to recover completely from this infection.

Necrotizing fasciitis of the head and neck is a rare disease, but dentists may encounter it because dental infection is the main cause of this disease. The reduction in mortality of this disease depends upon its early detection and adequate surgical treatment.

Conclusion

Cervical necrotizing fasciitis is a life threatening condition if left untreated at the early stages .as once it spread in mediastinum and in the cervical region its involves the respiratory track and obstruction of the airway leads to increase in morbidity rate. Early Surgical intervention and extraction of the offending tooth with debridement of the necrotic slough is recommended under proper intravenous drug regimen, with maintenance of the proper oral hygiene and vitals of the patient.

References

1. De Backer T, Bossuyt M, Schoenaers J. Management of necrotizing fasciitis in the neck. *J Craniomaxillofac Surg.* 1997;24:366–71.
2. Obiechina AE, Arotiba JT, Fasola AO. Necrotizing fasciitis of odontogenic origin in Ibadan, Nigeria. *Br J Oral Maxillofac Surg.* 2001;39:122–6.
3. Ricalde P, Engroff SL, Jansisyanont P, Ord RA. Paediatric necrotizing fasciitis complicating third molar extraction: Report of a case. *Br J Oral Maxillofac Surg.* 2004;33:411–4.
4. Whitesides L, Cotto-Cumba C, Myers RA. Cervical necrotizing fasciitis of odontogenic origin - A case report and review of 12 cases. *J Oral Maxillofac Surg.* 2000;58:144–51.
5. Lorenzini G, Picciotti M, Di Vece L. Fasciitis of odontogenic origin involving the temporal region - A case report. *J Craniomaxillofac Surg.* 2010. pp. 1–4. Available from: <http://www.jcmfs.com>.
6. McMahon J, Lowe T, Koppel DA. Necrotising soft tissue infection of the head and neck: Case report and literature review. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2003;95:30–7.
7. Umeda M, Minamikawa T, Komatsubara H, Shibuya Y, Yokoo S, Komori T. Necrotizing fasciitis caused by dental infection: A retrospective analysis of 9 cases and a review of literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2003;95:283–90.
8. Topazian RG, Goldberg MH, Hupp JR. *Oral and Maxillofacial Infections.* 4th ed. Philadelphia: WB Saunders Company; 2002. pp. 294–312.
9. Marioni G, Rinaldi R, Ottaviano G, Marchese-Ragona R, Savastano M, Staffieri A. Cervical necrotizing fasciitis – A novel clinical presentation of Burkholderia Ceparia infection. *J Infect.* 2006 53:e 219–22. Available from: <http://www.elsevierhealth.com/journals/jinf>.

Corresponding Author

Dr. Mohsin Khan
Senior Lecturer
Department of Oral and Maxillofacial Surgery
TMDCRC, Moradabad
Email:docmohsinkhan786@gmail.com

How to cite this article: Khan M, Kumar D, Khare G, Satish K. Cervical Necrotising Fasciitis: A Serious Complication of Odontogenic Infection. *TMU J Dent* 2017;4(3):115-117.