DENTAL ABSCESS UNLEASHING AS NECROTIZING FASCIITIS IN AN ELDERLY PATIENT: A CASE REPORT

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ABSTRACT

An elderly patient with a medical history of Type 2 diabetes and hypertension, a complex clinical presentation of dental abscess leading to necrotizing fasciitis, thorough examinations, pertinent laboratory findings, radiological results, multidisciplinary evaluations, a definitive diagnosis, and a meticulously designed treatment plan is the subject of this extensive case report, which offers an in-depth analysis of a unique clinical case. The report emphasizes the case's importance in terms of its instructive value and the practical implications it provides for therapeutic practice. With the help of the multidisciplinary team and extensive assessments, a complete treatment plan comprising surgical procedures, medication, and therapeutic modalities was developed. This case study highlights the value of interdisciplinary cooperation and highlights significant insights discovered in managing medical cases.

Keywords: Necrotizing fasciitis, Dental abscess, Type 2 diabetes, Hypertension.

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INTRODUCTION

A dental abscess is a localized collection of pus in the alveolar bone near the tooth's root. [1] It is polymicrobial, containing both facultative anaerobes, such as Streptococcus anginosus and Streptococcus viridians, and strict anaerobes, particularly anaerobic cocci, Fusobacterium and Prevotella species. [2] It is frequently the result of dental cavities, deep fillings, trauma, or unsuccessful root canal treatment. The most common indications and symptoms of Dental abscess are pain, redness, swelling, tumor, and loss of function, all of which occur near the affected tooth. The treatment of choice would be surgical drainage and antibiotics. [3] If not treated promptly, it can further lead to complications such as cavernous sinus thrombosis, airway obstruction, brain abscess, septicemia, shock, and rarely necrotizing fasciitis. Necrotizing fasciitis is a potentially fatal bacterial skin infection characterized by subcutaneous tissue and underlying fascia necrosis. Also, there is a rapid spread of infection; the treatment requires surgical debridement of non-viable tissue and administration of broad-spectrum antibiotics. It is said to be least common and aggressive in the head and neck region, especially the face, this report shows a dental abscess complicating into necrotizing fasciitis. [4]

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CASE PRESENTATION

A 60-year-old female patient with a history of Diabetes Mellitus type 2 and hypertension from Afghanistan arrived at the emergency room in Peshawar complaining primarily of tooth pain, right facial swelling, and occipital pain for one month after the patient had dental crowning treatment progressing to breathing difficulties, peri-orbital edema, facial edema, left-sided jaw angle deviation, and immobile eyelids on her right side. In the emergency room, she was irritable, drowsy, mentally altered, and severely acidotic, with elevated blood sugar levels (553 mg/dl) and a Glasgow coma scale score of 13/15.

The patient underwent a comprehensive evaluation by a multidisciplinary team of medical professionals. Following a pulmonologist's initial assessment (Table No. 1), recommended head and neck CT. In addition to potassium chloride (25ml two ampules OD) and NISF normal saline (1000ml IV infusion), the patient's previous treatment regimen of Meronem (1g TDS), ATEM Nebulizer Solution 0.025% (6 hourly 2ml), Ventolin Respirator solution (6 hourly 20ml), paracetamol (1g/100ml OD), Lantus (20 units OD), and Humulin (IV infusion adjusted

according to RBS) was maintained. Evaluation by the ENT Surgeon reported implanted lower teeth, unsatisfactory oral hygiene, intact bluish right buccal mucosa, pus collection in the right upper molar and pre-molar cavities, limited mouth opening, and soft to firm palpable consistency were among the noteworthy findings. Visualization of the larynx was difficult, and the right side showed signs of periorbital edema. Additionally, he recommended adding sodium chloride nasal drops (2 drops Q.I.D) and ofloxacin eyedrops (3 drops BD) along with stringent oral cleanliness and hydration. The primary physician added dextrose saline 0.5% (70 ml/hour), NISF (70 ml/hour), Vancomycin (1 g TDS) following serum levels of 13.2 ug/ml, Resource Diabetes (3 spoons in 150 ml water TDS), and continued with Ofloxacin eye drops, Sodium Chloride nasal drops, Meronem, and Potassium Chloride the following morning after the ABGs had improved. The sublingual and submental areas had a hard consistency, suggesting that the lower teeth could be the source of the infection, according to the maxillofacial Surgeon. Necrotizing fasciitis was suspected after a diagnostic process comprising repeated pricks on the affected side; however, no bleeding was seen, supporting the tentative diagnosis of necrotizing fasciitis. Therefore, acetylsalicylic acid was added to the treatment regimen, Polyfax plus (topical Q.I.D) was prescribed, and staying warm was advised. Debridement of the damaged lower teeth was recommended as a surgical option. The plastic surgeon noted swelling on the right forehead that extended to the right submandibular area, ecchymotic patches from the right temporal to the right submandibular areas, and noticeable black patches that suggested epidermolysis further advising CT angiography (CTA) or Doppler ultrasonography. No flow was visible in the distal branches of the external carotid artery. The patient was started on Enoxaparin Sodium 6000 units (50mg BD) and the patient's family was counseled accordingly about the patient's condition and treatment plan. The patient underwent a variety of lab tests during her stay, some of which are listed below.

Table No 1: Baseline Workup of Patient on First Presentation.

Lab Test	Result	Normal Range
Hemoglobin	11.90g/dl	11 – 16g/dl
Red Blood Cell Count	4.24 ×10^12/L	4.5 – 5.5× 10^12/L
Total Leukocyte count	34.40 ×10^9/L	4 - 11×10^9/L
Platelets	964.00 ×10^9/L	140 – 450×10^9/L
Neutrophils	93 %	40 – 75%
C Reactive Protein	15.95 mg/dL	<0.5mg/dl
Pro thrombin Time	12.3 Seconds	11 Seconds
A.P.T. T	55.3 Seconds	30 Seconds
D. Dimer	1502 ng/ml	Up to 250ng/ml
Lactic Acid (Arterial)	35.6 mg/dl	4.5 – 14.5mg/dl
Troponin I	< 10.0 pg/ml	13.8 – 17.5 pg/ml
RBS	553 mg/dl	110 – 165mg/dl
Hba1c	15.1 %	4.9 -5.9%
Urine Albumin	+	Nil
Urine Ketones	++++	Nil
Malarial Parasite	No MP Seen	
Dengue	Negative	
Urine C/S	Fungal count, more than 105 organism/ml, with profuse growth of Candida specie obtained after overnight aerobic incubation at 37°C.	
Blood C/S	Culture yielded growth of Coagulase-negative Staphylococcus obtained after 48 hrs aerobic incubation at 37°C.	
LFTs	Within Normal Range	
Urea	80 mg/dL	10 - 40mg/dl
Creatinine	1.22 mg/dl	0.2 – 1.2mg/dl
eGFR	47.78 mL/ Min/1.73m^2	60 - 125mL/ Min/1.73m^2
Sodium	137.9 mmol/L	135 – 145mmol/L
Potassium	4.64 mmol/L	3.5 – 5.0mmol/L
Chloride	101.4 mmol/L	98 – 107 mmol/L
Bicarbonate	7.5 mmol/L	22 – 30 mmol/L
Ph	7.429	7.35 -7.45
PO2	119.6 mmHg	83 – 108 mmHg
PCO2	18.7 mmHg	40 – 46 mmHg

DISCUSSION

Necrotizing fasciitis is an uncommon yet severe soft tissue infection that encompasses the widespread and swift destruction of fascial planes, subcutaneous tis-

Figure 1: Necrotizing fasciitis in a 60-year-old lady.

sue, and muscles. It can present as a typical dental abscess. [5] The development of dental abscess-associated necrotizing fasciitis is influenced by several risks, such as poor dental care and immunocompromised states. Surgical exploration remains the gold standard. Increasing clinical suspicion is assisted by a score called "LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis)," which evaluates laboratory testing of leukocyte count, CRP, and Creatinine. [6]

In the absence of radiological findings, it is crucial not to wait for surgery when Cervical Necrotizing Fasciitis is believed to be very likely. Death is reported in delayed surgery beyond 90 hours. When complicated with mediastinitis, mortality rises to 41% from 7% - 21%. [7]

The cornerstone of management includes surgical debridement that seeks to remove necrotic tissues and control the spread of infection. Immediate broad-spectrum intravenous antibiotics are started. Tooth extraction or drainage of a fistula resulting from the dental abscess should be carried out before managing the source of infection. Adjunctive hyperbaric oxygen therapy for increased tissue oxygenation can also be used. If not treated or improperly managed, dental abscesses may progress into necrotizing fasciitis. [8] Teamwork between surgical, dental, and medical teams is essential for improving patients. More research will be required to identify new diagnostic and therapeutic approaches toward improving care and outcomes for patients with dental abscess-associated necrotizing fasciitis.

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