A Case Report of Cellulitis of the Mouth Floor Presenting as Necrotizing Fasciitis

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Abstract

Cellulitis of the mouth floor can seldom be complicated by necrotizing fasciitis. Cellulitis of the mouth floor that has been identified in association with necrotizing fasciitis tends to arise in cervicofacial region of patients who have predisposing factors. But this article describes a rare case of cellulitis of the mouth floor causing necrotizing fasciitis in a healthy woman. The clinical features, diagnosis, and treatment are discussed in detail.

Keywords: Cellulitis • Mouth floor • Necrotizing fasciitis

Introduction

Cellulitis of the mouth floor is one of the severe oral and maxillofacial space infections, involving the bilateral submandibular space, sublingual space, and submental space [1]. The main cause is odontogenic infection, which is periapical periodontitis of the focal tooth, periodontal abscess, subperiosteal abscess or complications caused by dental treatment. Other common causes include salivary glands, lymphadenitis, acute tonsillitis, and soft tissues of the floor of the mouth. Injuries and mandibular fractures, etc. [2,3]. Although the incidence of cellulitis at the floor of the mouth has been reduced, it is often accompanied by serious complications. The rapid spread of the infection on the floor of the mouth leads to diffuse swelling of the floor of the mouth, elevated tongue, and compression of the airway. Upper respiratory tract obstruction leads to suffocation and even death. If treatment is delayed or improperly treated, the infection spreads, which can lead to serious complications such as multi-space infection in the deep neck, downward mediastinitis, sepsis and even sepsis, with a high case fatality rate [4-6].

Necrotizing Fasciitis (NF) is a rare soft tissue infection resulting in the death of subcutaneous and fascial tissue. It usually occurs in the extremities, abdomen, and perineum [7]. But cervicofacial NF is rare, and usually occurs as a complication in patients who are immunocompromised. Cellulitis of the mouth floor that have been identified in association with NF tend to arise in cervicofacial region of patients who have predisposing factors including extremes of age, immunosuppression, diabetes mellitus, alcohol, and tobacco smoking [8,9]. Here this article describes a rare case of cellulitis of the mouth floor causing upper limbs and cervicofacial NF in a patient without medical conditions.

Case Report

A 41-year-old woman presented to the emergency room with a seven-day history of severe, progressive swelling of her neck associated with odynophagia. She reported increased pain that was dull and 7/10 in intensity, localized to her right neck. The patient had no other comorbidities Oral cavity examination was remarkable for trismus with mouth opening limited to two fingers. On physical examination, she was awake, alert, and in mild respiratory distress. There was an extensive tender brawny swelling of right submandibular and submental and cervical regions, in which fluctuation could be touched. On admission, an elevated leukocyte count of 20.89 and Serum High sensitivity C-reactive protein of 337.5 mg/L were recorded. A CT study gave evidences of multiple air pockets with fluid collections got involved in the tissue spaces of right parotid gland and neck at first (Figure 1). Broad-spectrum antimicrobials with cephalosporin and metronidazole were initiated; emergent surgical debridement was performed and fibroptic support was necessary for a difficult orotracheal intubation. Under general anesthesia multiple incisions and through and through drains were placed. Bacterial cultures of intraoperative samples identified Streptococcus anginosus. Infectious disease was consulted for further antibiotic management. Her antibiotics were switched to vancomycin and imipenem/cilastatin.

On the afternoon of the fifth day, patient presented diffusing blue-purple ecchymosis over the bilateral inguinal regions. A matter of considerable concern was the observed drop in hemoglobin level and blood platelet count, which worsened to 71 and 50 respectively. The results of coagulation function test at this time showed an ascend except descending thrombin time hence decided to transfuse 2 units of packed cells and human albumin. As her hospitalization progressed, the right side of her chest and left upper limb had drainage openings with a necrotic appearance associated with a foul smell (Figure 2). Multiple bullae and small blisters around necrotic area were noted. The clinical picture and CT findings (Figure 3) confirmed the diagnosis of necrotizing fasciitis. The patient underwent aggressive bedside wound debridement of the necrotic tissue exposing the contents and packed open with BIPP dressing. The clinical course was complicated by septic shock, acute respiratory distress syndrome and acute renal failure. Despite aggressive medical and surgical intervention, the patient expired from multisystem organ failure on day twenty.

Discussion

Cellulitis of the mouth floor is an acute diffuse cellulitis involving bilateral submandibular space, sublingual space, and submental space. It is caused by bacterial infection and has the characteristics of rapid onset, rapid spread, and high mortality. Some patients with severe oral cellulitis have complications, which makes the treatment more difficult. When the infection spreads to the mediastinum or forms of purulent pleurisy, despite the use of
antibiotics, the mortality rate is still as high as 38% to 60%. When combined with necrotizing fasciitis, the recent mortality rate is reported to be 18% to 22% [8], although cervicofacial necrotizing fasciitis is rarely seen in patients with cellulitis of the mouth floor [9]. Direct and distant spread of necrotizing fasciitis can lead to complications that include intracranial, retropharyngeal, and pulmonary infections. Hematogenous dissemination can also occur, leading to complications such as septic shock, rheumatic disease, and cardiac problems [10]. If left untreated, the rapid dissemination of the infection can be fatal. Cellulitis of the mouth floor and necrotizing fasciitis are the two aggressive manifestations of soft tissue infection to occur in the cervicofacial region. Both of the conditions can be aggressive form of underlying tissue destruction as seen in our case. The natural course of this infection is the rapid extension into contiguous areas and results in supportive fasciitis and cutaneous necrosis of fatty and cellular tissue.

Nevertheless the two conditions represent completely different pathogenic mechanisms; for this reason, the occurrence of both conditions in the same patient is rare and creates diagnostic dilemma at the onset of the disease. All authors agree on the association illness like diabetes mellitus in most reported cases of cervicofacial NF. The immune compromise is the principal deciding factor in the establishment and in the course and prognosis of the disease. However, this paper illustrates an interesting scenario in which a middle-age patient with unknown etiology developed a presentation of cellulitis of the mouth floor complicated by necrotizing fasciitis. This demonstrates the two similar clinical entities can occur in the same patient who has no medical condition. Therefore, early differentiation and detection is the key to change the management strategy.

**Conclusion**

Clinical presentation of cellulitis of the mouth floor can be obvious even in individuals with extensive underlying tissue destruction as seen in our case. It is important to maintain a high index of suspicion for necrotizing fasciitis in the setting of Ludwig’s angina. Delay in the diagnosis and treatment is associated with a high mortality and morbidity.

**References**
