



Pediatric Orofacial Cellulites: A Case Report and Review of Literature

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Introduction

Cellulitis of the orofacial region is an acute infection that involves the dermis and subcutaneous tissues of the facial spaces. Cellulitis involving the facial region are diffuse due to the rapid spread of the infections in the neighboring anatomical tissue spaces.

Orofacial cellulitis has an etiology of either odontogenic or non-odontogenic origin with the former being more frequent, especially in pediatric population. Odontogenic infections are generally caused due to pulpal necrosis, diseases of the periodontium, pericoronitis, apical lesions or iatrogenic errors/complications of dental procedures [1]. Cellulitis of odontogenic origin are usually acute, deep and diffusely spread into the subcutaneous tissues to anatomic regions, tissue spaces, and throughout the aponeurotic plane [2]. Though the spread of Odontogenic infections is usually insidious, their spread into deeper structures involve hematogenous or lymphatic routes to reach distant organs [3].

The rate of spread depends on the patient's immune status, microbial factors and environmental factors that collectively determine the host response [4]. The most common cause of odontogenic infection is dental caries. The pediatric population are more prone due to dental caries [5]. Though most of the odontogenic infections progress slowly, they are best treated immediately as any significant delay in treatment might lead to fatal complications such as osteomyelitis, odontogenic sinusitis, periorbital infections, cavernous sinus thrombosis, bacterial endocarditis, Ludwig's angina, cervicofacial necrotizing fasciitis, mediastinitis, meningitis, brain abscess, septicemia, and thromboembolism [6,7]. The main objective is to control and eliminate the causative agent, which, in some cases, requires the specialized care of a pediatrician and vital management. Here we

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present a case of orofacial cellulitis which was reported a week later after trying home remedies to reduce the swelling and highlight the importance of treating such conditions as early as possible.

Case Report

An 8-year-old female reported to the clinic with a chief complaint of swelling in the right side of her face for the past week and a half. History revealed that the swelling was had an insidious onset a week ago and had reached to its current size. She had difficulty in mastication, mouth opening and vomiting but had no history of fever. On further questioning, it was found that the patient had resorted to home remedies and other unconventional treatment to reduce the swelling size, but it was not of any avail, later she had consulted general physician who after examination referred them to the dentist. She had no other contributory history. General examination showed the patient to be alert, afebrile now of presentation and was alter in time, place, and person. Facial asymmetry was seen. This swelling involved the inferior border on the right side of the mandible and extended up to the right inferior orbital region due to which she had some problems closing the right eye (Figure 1). Extraocular movements were intact. On palpation, there was tenderness, warmth over the swollen area. Intraoral examination revealed a severe decrease in mouth opening (10 to 15 mm), poor oral hygiene and a grossly decayed 55, 54 which were tender on percussion. An OPG was taken to observe the extent and found grossly decayed teeth. She was then diagnosed with Orofacial cellulitis with grossly decayed 54, 55. She was prescribed antibiotic medication of Amoxicillin with clavulanic acid 500mg, metronidazole 200 mg and Ibuprofen for 5 days which was then tapered for a second course of 3 days of the same medication. After completing the course, the swelling

had gradually reduced in size. Extraction of 54, 55 was done under local anesthesia after which space maintenance was planned for future. The patient is yet to report for follow up.



Figure 1: Swelling in the inferior border on the right side of the mandible.

Discussion

Odontogenic infections are frequent in pediatric population. In many cases that have been reported, acute infection of the oral cavity occurs because of neglected dental caries. Early management and recognition of orofacial infections in children is crucial to prevent systemic involvement [8]. In this regard, the prevalence of orofacial cellulitis has increased in the past decades. Orofacial cellulitis of odontogenic origin in children is like that in adults; however, pediatric patients require special considerations due to their acute course resulting from the easy dissemination of the infection. Despite numerous caries preventive programs, children in poor socioeconomic groups remain greatly affected.

In a retrospective study by Al-Malik et al, Odontogenic infection was found to commonly involved the primary posterior teeth (84%) with the most affected tooth being the primary first molar (34%), followed by the primary second molar (31%). The mandibular primary posterior teeth were more commonly affected than the maxillary primary posterior teeth (54.4% versus 45.6%). Extra-oral swelling was seen in 64% of patients [4]. In our case, the patient had presented with a grossly decayed primary first and second molar, which was the source of infection that had progressed to cellulitis.

The classic presentation of rubor (redness), dolor (pain), tumor (swelling), calor (heat) are the hallmarks of cellulitis. The spectrum of severity ranges from localized erythema in a healwel

patient to the rapidly spreading erythema and fulminant sepsis seen with necrotizing fasciitis in immunocompromised patients. Timing and evolution of the findings may differentiate cellulitis from some of the common mimics with more chronic clinical course. In addition to pain, such infections can cause acute abscess related to deciduous teeth, potentially leading to serious sequelae such as recurrent fever, brain abscesses, and orbital cellulitis [9]. Complete and detailed history of the patient combined with results of the physical examination is usually sufficient to make a diagnosis of cellulitis.

Trismus seen in such patients are suggestive of serious orofacial infections. Mouth opening with less than 20 mm or more in a short period of time, with severe pain, is a sign of involvement of the the peri mandibular anatomical spaces by the infection. If the cellulitis is of odontogenic origin, the location of the swelling depends on whether the offending tooth is maxillary or mandibular. Due to the diffuse spread of the infection, the offending tooth is difficult to localize. If the tooth is maxillary, the infection involves the canine or buccal space whereas; if the tooth is mandibular, the swelling likely involves the submandibular, sublingual, and buccal spaces. In our case, maxillary primary molars were involved so it is likely that infection had involved the buccal and canine spaces.

Odontogenic infections tend to be mixed (aerobic and anaerobic bacteria). The most common microorganisms involved are facultative Gram-positive aerobic organisms like *Streptococcus* and Gram-negative organisms such as *Prevotella*, *Porphyromonas* and *Fusobacterium* [10]. Acosta et al reported that the most common bacterial species involved in odontogenic infections were *Streptococcus mutans* (24.5%), *Porphyromonas endodontalis* (18.2%), *Porphyromonas gingivalis* (23.6) and the most relevant causative agents are *Streptococcus salivarius* (10.1%) and *Streptococcus sanguis* (8.2%) [11,12].

Antibiotic therapy is the first-line treatment for orofacial infections. However, antimicrobial treatment is not always sufficient. Removal of the offending agent leads to complete resolution of the infection. Once the acute odontogenic infection has subsided, the involved tooth should be immediately be treated whether it necessitates endodontic treatment or complete removal of the tooth [13]. In our case, hospitalization was not required since the patient did not exhibit any active signs of infection or sepsis, Fever higher than 38°, vomiting and she was afebrile, alert at the time of presentation.

Moreover, chronic abscesses often damage the underlying developing permanent tooth bud. Infection of dental origin is one of the most common diseases of the orofacial region. Dentists must understand that this condition may initially present as a simple infection, but that it requires appropriate and early management to thwart any unwanted complications later.

Conclusion

Early diagnosis, prompt treatment should always give priority in orofacial cellulitis especially in pediatric population. Appropriate antibiotic use, and dental treatment are key for the rapid resolution of this condition. Caregivers and parents should be educated about impact of delay in seeking treatment for such conditions.

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