

Is Odontogenic Infection Still the Most Common Cause of Orofacial Bacterial Infections ?

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Background: Orofacial infections considered as one of most common infections of the body and need rapid and adequate treatment as it is affect very delicate region and associated with serious complications that can threat the life, so the knowledge of diagnosis and dealing with these infections is strictly important, orofacial infections can be either odontogenic that mean caused by teeth and associated structures or non-odontogenic not associated to teeth.

Objectives: This study aims to detect the most common cause of orofacial bacterial infections.

Materials and Methods: A descriptive study carried out on 45 patients with different forms of oro-facial infections, Data regarding age, gender, cause, presenting signs were collected through history, clinical examination and radiographs, culture and sensitivity was done for each case to identify the causative agent of infection.

Results: Patients with orofacial infections showed a female to male ratio of 1.25:1. The mean age was 33 years. Most of the patients were in the (31-40) years of life 27%. The most common cause was odontogenic in origin 62%.

Conclusions: Odontogenic infections is the most common cause of the orofacial bacterial infections which affect patient of (3rd-4th) decade of life more in female than male.

Keywords

Odontogenic infections; Orofacial bacterial infections

Introduction

Odontogenic infections have been one of the most common diseases in the oral and maxillofacial region associated with mortality rate of 10–40%. With the advent of modern antibiotics, mortality rates have significantly reduced. Such infections are usually self-limiting; purulent material may occasionally burrow deep into fascial spaces. Propagation can be produced by direct continuity, by lymphatic or hematogenous dissemination and depends on the patient's local and systemic factors and on the virulence of the pathogen. Multiple severe complications of have been reported, such as airway obstruction, mediastinitis, necrotizing fasciitis, cavernous sinus thrombosis, sepsis, thoracic empyema, cerebral abscess, and osteomyelitis [1]. Orofacial infections may straight to significant complications unless they are managed timely and appropriately. Morbidity and mortality linked to these infections depend on the site of involvement and the degree of spread to other tissues. A majority of these infections are confined to the dentoalveolar and/or facial tissues at the time of presentation, but may spread to local, regional or distal sites if treatment is postponed [2]. The commonest odontogenic infections are periapical abscess, pericoronitis and periodontalabscess, these infections are a community health concern and are most common in under-served patients lacking access to health care, spreading odontogenic infections are the most common form of serious oro-facial infections encountered by oral and maxillofacial surgeons these infections signify the transformation from a localized dentoalveolar infection; usually a peri radicular abscess to a destructive infection that can spread rapidly through the tissue planes resulting in noteworthy incidence of mortality. Infection from the original focus can spread along the tissue spaces and lead to facial cellulitis involving deeper fascial spaces. These spaces are leap by muscles, bones and actual facial layers. These spaces communicate with one another and therefore allow the spread of infection beyond a single space [3]. Deep neck infections (DNIs) are vital emergencies requiring prompt diagnosis and treatment to prevent risky complications such as mediastinitis, lemiere syndrome, necrotizing cervical fasciitis, carotid artery aneurysm, sepsis and even death. In the pre-biotic era, 70% of DNIs were caused by tonsillitis, and DNIs were seen much more regularly. However, in the recent literature, there has been a decline in tonsillitis-related DNIs and a relative increase in odontogenic causes in the adult population [4]. In order to deal with

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these infections scientifically, correct recognition of the etiology and pathology of the disease is important. Appropriate choice and duration of antimicrobial prescription for these infections count on the age, systemic infection and other co-morbidities of the patient. Analysis of etiopathogenesis and presentations of orofacial infections, in a general dental practice would help to understand the clinical spectrum of these important illnesses and to tailor the right treatment strategy for patients in future [5]. In this descriptive study we were detect the demographic data of orofacial infections and determine the most common etiology of these infections.

Materials and Methods

This study included (45) patients who attended Oral and Maxillofacial Unit at Ghazi AL-Hariry Hospital in Medical City Baghdad. The patients complained from acute or chronic swelling that involved one or more of fascial spaces in the head and neck region of odontogenic or non-odontogenic causes. This swelling was associated with one or more of the following signs and symptoms: fever, redness of skin, tenderness, or limitation of mouth opening, the age of the patients ranged between (4-80) years, patients were (20) males and (25) females, For every patient verbal consent was taken then a standard case sheet was filled, this concentrated on demographic information, history, investigation, diagnosis, treatment, and postoperative follow up, after that clinical examination was done which include extra oral examination which comprise inspection and palpation of the swelling to detect site ,size ,the redness of skin, extension of the swelling and presence of breathing difficulties, sinus or discharge in the head, neck, and face. Palpation of the lymph nodes for any lymphadenopathy in the head and neck lymph nodes, then intra oral examination of the oral cavity, dentition, oropharynx was done by using diagnostic set. Examination include inspection, palpation of the causative factor(exposed bone, exposed plate, sequestra... ect), or the offending tooth if it is carious or fractured, percussion and vitality test for the tooth were done , then radiographic request form was filled to obtain the radiographic view of offending region, radiographic films either intra-oral film (Periapical), or extra-oral film (Orthopantomography), preoperative investigations also requested included (hemoglobin level, blood sugar, blood urea, serum creatinine, blood pressure and chest x-ray).

Postoperative follow up

After the treatment has been completed and during the follow up of the patient for pus discharge after 24 hrs 72 hrs was assessed if there was no discharge the drain was removed if not the drain was replaced by another one with dressing.

Statistical analysis

Statistical analysis included descriptive statistics for the collected data in addition to Chi-square test to determine the significance of difference among different groups; the level of significance was set at $p < 0.05$.

Results

A total of 45 patients were enrolled in the study. Females having orofacial infections comprised 56% while 44% of the sample was males. The difference between females and males was not significant at $p \leq 0.05$ (X^2 Value is 0.556. The p Value is 0.456). The age of patients ranged from 4 to 80 years with the mean age of 33 years. The frequency of orofacial infections was the highest in the 4th decade 27% followed by 3rd decade 24% and 5th decade 15% and 2nd decades 15% equally respectively.

Etiology of orofacial infections

The most common cause of orofacial infections was odontogenic in origin 62%, and then postoperative infection 24%, then skin infection 7% and post trauma infection 4%, while post filler injection infection is least common 2% the details of etiology of orofacial infections are given in [Tables 1-3].

	Age Range	Number of patients	Percentage %
1	4-10	2	4.44%
2	11-20	7	15.55%
3	21-30	11	24.44%
4	31-40	12	26.66%
5	41-50	7	15.55%
6	51-60	2	4.44%
7	61-70	3	6.66%
8	71-80	1	2.22%
Total		45	100%

Table 1: Age Distribution

	Sex	Number of patients	%
1	Female	25	55.55%
2	Male	20	44.44%
Total		45	100%

Table 2: Sex Distribution

Etiology	Number of patients	%
Odontogenic infection	28	62.22
Postoperative infection	11	24.44
Post trauma infection	2	4.44
Post filler injection infection	1	2.22
Skin infection	3	6.66
Total	45	100

Table 3: Etiology of orofacial infections

Discussion

Infections occur when there is a disruption of the balance between the human defense mechanism and bacterial infection mechanism. The more significant factor of the two is human defense mechanism, i.e., local immunity, humoral immunity, and cellular immunity. Local immunity includes mechanical defense by the surface or mucous membrane of the host itself and defense of normal flora of skin, suppressing the growth of other infectious bacteria. Humoral immunity, a non-cellular immune system, includes the immune system by the complement or immunoglobulin and mainly exists in the serum or exudates. Cellular immunity means the immune system phagocytosis by phagocytes, such as polymorpho nuclear lymphocytes, monocytes, and macrophages [6]. The study showed that orofacial infections affect patients in their 3rd and 4th decade of life, this finding is similar to the earlier observation reported by Nitin suresh fating et al. [7]. Who reported that "orofacial infections were seen more in the patients of the third and fourth decade of life" and MARINA et al [5] who reported that "People in their third and fourth decades of life are the commonest age groups affected by orofacial infections"? Future studies may identify the exact cause of this interesting observation. Heightened oral health awareness among younger population may be one reason for this observation. This prospective study revealed a higher frequency of the females than malesmale 44% to 56% female to so the male to female ratio is about1: 1.25. However, the difference was not significant indicating that gender may not be considered as a determinant factor in the prevalence of orofacial infections and this accepted with Muhammad Ashfaq et al. [3] reported that "orofacial infections are more common in females with a male to female ratio of 1:1.87"and Akinbami et al. [2] recently reported a female preponderance in their study, the cause may be due to female has high pain threshold, socioeconomic reasons and cultural limits

where people have unwillingness to take their female patients to the dentist in this part of world, males were more commonly involved than females in the study of Mamta Singh et al. [8]. Geographical differences in the study cohorts may explain this disparity. Origin of maxillofacial infection could be from a periapical lesion, periodontal condition, peri coronal problem, post-surgical infection or direct trauma resulting in epithelial breach of these odontogenic ones are most commonly encountered [8]. Mostly an ignored or ill-treated decayed tooth becomes the root cause of a serious and life-threatening infection. In a country like India where healthcare providers are inadequate in number and facilities are less, ignorance to a dental problem adds to the worsening condition. Complications such as retropharyngeal spread and intracranial extension or mediastinal spread and airway obstruction indicate the potentially serious nature of these infections [8]. In this study the most common cause of orofacial infections was odontogenic in origin 62%, then postoperative infection 24% then skin infection 6% and post trauma infection 4%, while post filler injection infection is least common 2%, In A. Read-Fuller et al. [9] Showed that "79% were for infections of odontogenic origin. Other sources identified in the study included traumatic cases (10.7%), immunosuppression (1.6%), and pathology (1.6%), while other causes were responsible for the remaining 8% of cases". Also R. Sánchez [10] study found "the most frequent cause of infection was dental caries (33.8%)" MARINA et al. [5] who reported that "dental abscess was the commonest lesion for which antimicrobials was prescribed (31.5% of cases)" also keeping with Joon Kyoo Lee et al [11] who reported that "most common cause of deep neck infections was odontogenic in origin" also Bruno Veronez et al. [12] reported that "the 157 patients were affected by facial infection, 113 cases had odontogenic cause (72.15%) and 44 patients presented nonodontogenic infection (27.85%)", the cause may be due to the delay of treatment caused by the relatively high cost of dental care and public indifference of dental health.

Conclusion

Odontogenic infections is the most common cause of the orofacial bacterial infections which affect patient of (3rd-4th) decade of life, these infections more in female than male.

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