FACIAL SPACE INFECTIONS IN PATIENTS SEEN AT RURAL HEALTH CENTER BHABRA, PUNJAB. PAKISTAN

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Abstract

Objectives: *The purpose of the study was to determine facial space infection frequency, the teeth involved and also its association with quackery among the patients visiting Rural Health Care Center Bhabra, Pakistan.*

Materials & Methods: *A cross-sectional study was carried out in RHC, Bhabra over a period of six months onto the patients reporting to the centre with facial space infection. Total 60 patients were included in the study after fulfilling the inclusion and exclusion criteria. A structured questionnaire was distributed among these patients, and the data were collected. All the data was entered in the SPSS 20 and tabulated into percentages and figures. p-value of < 0.05 was considered signiicant.*

Results: *Facial space infection reported for different etiological factors and their relationship with demographical variables, different teeth involved and predisposing factors were measured. Canine space infection was seen to be significantly involved with a p-value of 0.033. Maxillary canine followed by maxillary third molars were the teeth commonly involved with a p-value of 0.023. Role of quack in the spread of facial space infection was seen to be very strong with the linear by the linear association of 0.872, with strong correlation for dental caries and Facial Space Infection with Spearman correlation of 0.82.*

Conclusion: *There was a lack of awareness among the people of rural health area population, Bhabra regarding oral health care. Facial space infection a life-threatening disease is evocatively associated with quackery practices at rural areas of Pakistan and should be stopped immediately through proper implementation of legislation to prevent such practices.*

Introduction

Odontogenic infection" means infection originating from the tooth either from within it or in its closely surrounded tissue. It has the potential of remaining localized or spreading to the surrounding soft tissue area. Once they involve the facial planes, they are termed as facial space infections. Facial space infections (FSI) are most commonly odontogenic in origin[1]. The sources of odontogenic infection (OI) vary, but periapical inflammation counts for the 70% of all the odontogenic infections which include periapical abscess, periapical periodontitis and periodontal abscess[1].

Despite new advancements in medical technology treatment of odontogenic facial space infection is very difficult. Facial space infection has shown resistance to many antibiotics. Furthermore, local and systemic factors like diabetes, smoking and poverty also play a pivotal role in its inception[2], direct correlations have been seen between odontogenic infection and diabetes[3].

Odontogenic infection is commonly seen in 3th& 4th decade of life[7]. Tooth reported to be most

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commonly involved is mandibular third molar [8]. Most common etiological factor for facial space infection is mandibular 3rd molar, and it is mostly due to its impaction or partial eruption which leads to operculum formation creating a locus of infection[9]. Second most common teeth reported to be involved are mandibular premolars and first and second permanent molars[8]. The mandible is reported to be more affected due to its high vascularization in comparison to maxilla[10].

Odontogenic infection (OI) has the potential to spread quickly from its loci in periapical tissue to the surrounding facial spaces[5]. It can involve deep structures of the neck in almost 40% of cases. It has a mortality rate of 40-50% by compressing the respiratory system. The already crippled immune system makes the disease flourish thus the patients on steroids or those suffering from any systemic disorder are more prone to its spread. Surgical intervention is needed to decrease the microbial load and to prevent the fatality of the disease in most of the cases. It is generally considered as a disease of poor socioeconomic status due to increased prevalence and lack of provision of health services in them[6].

The aim of this research was to determine the frequency and pattern of facial space infection in patients reporting at Rural Health Care Centre at Bhabra, further more,to assess and increase awareness regarding Odontogenic infection among these patients. Also to see Odontogenic infection association with different demographical variables and different teeth involved. Lastly, determine the role of quackery in the spread of facial space odontogenic infection.

Materials and Methods

A descriptive cross-sectional study was carried out in the dental OPD of RHC Bhabra for over a period of six months from October 2016 till May 2017. Patients presenting with facial space infection irrespective of the gender, age, socio-economic status, education and tooth involved were included in the study. Patients with only primary facial planes involved were taken. Only those cases were included who got facial space infection after any dental treatment from either a dentist or an unqualified personal/ quack. Patients with psychiatric disorders who were unable to recall history were excluded from the study. Patients with facial space infections after getting treatment from a dentist or an unqualified personal/ quack were assessed at the RHC dental OPD. These patients were examined after obtaining their informed consent. History along with clinical & radiological examination was carried out. Data was gathered by using specially designed questionnaire which was validated by a pilot study. Reliability test for the questionnaire was done and Cronbach Alpha value was calculated to be 0.66.

Information was collected regarding age, gender, occupation, literacy, tooth and space involvement, presenting sign & symptoms, prior treatment and drug allergies. Localized odontogenic cause for spread of primary facial space infection was included whereas non odontogenic causes, multiple facial space infection, deep neck infection and secondary facial space infections were excluded.

Causative tooth were divided into six groups i.e. maxillary anterior teeth, maxillary posterior teeth, maxillary 3rd molar, mandibular anterior teeth, mandibular posterior teeth & mandibular 3rd molar teeth.

All the recorded data was coded and entered into SPSS 20. Data was presented in tables, frequencies, percentages and bar charts. Associations of facial space infections with various variable of interest were taken by applying chi square test and assessing likelihood ratio with p value < 0.05 was taken as significant.

Results

A total of 60 patients with male to female ratio of 1.4:1,with majority having age 35 years or above presented with the facial space infection at the rural health care center, Bhabra. Most common presenting complaint was pain followed by swelling, fever, suppuration, trismus, etc, shown in Table 1.

Primary facial space infections were assessed clinically and different teeth related to each facial space infection were noted and are given in a tabulated form in table 2 below. Approximately 78 teeth were related to FSI with mandibular 3rd molar being the most commonly involved tooth for the mandibular buccal space infection followed by maxillary first molar for maxillary buccal space infection.

Most of the patients with facial space infection 65% were seen to be related with poor oral hygiene. Caries was seen as the major (58%) predisposing factor in facial space infection followed by tooth

morphology (11.7%). The facial space infection predisposing factors were seen to be significantly related with the socio-economic status of the individuals, strong association was seen with both middle class and low socioeconomic class with p value of 0.015. Both highly educated and poorly educated individuals were significantly associated with facial space infection predisposition with p value of 0.000.

Within maxilla no association was seen with lateral and central incisors but significant association was seen with the canine space infection with p value of 0.033. In maxillary posteriors no association was seen with premolars, first and second molar but significant association was seen with maxillary third molar i.e., p value of 0.023.

Within mandible no association was seen with any anterior dentition with that of facial space infection. However, mandibular second and third molar are more likely to enter into facial space infection following a pulpitis due to caries with a likelihood ratio of 0.016 and 0.053. Caries can also be seen to be the number one cause of pulpit is and facial space infection as can be seen in Figure 1 with p value of < 0.000.

Maxillary first molars were not significantly involved in FSI but its association with the role of quack was seen to be very strong with the linear by linear association of 0.872. Patients getting treatment from quacks and suffering from FSI had a strong association with p value of 0.000. In the comparison of both Quacks and Dentists as shown in Figure 2, patient with caries visiting Quacks suffered more from facial space infection in comparison to the dentists, rather there is no patient who presented with caries and ended up into FSI among the dentist group. The green bars represent patients with different predisposing factors leading to FSI visiting Dentist,where no patient with dental caries reported for FSI to our center. Extraction and mucosal injury were the main causative factors but are seen to be insignificant. However, blue bars representing quacks, shows large number of patients taking treatment for caries by quacks ended up into FSI, a strong correlation is seen between the two with spearman correlation of 0.82. Therefore quacks play a major role in infection spread in patients presenting with caries.

Table 1: Frequency of presenting complaint among FSI patients

Presenting Complain	Frequency	Percent
Pain	25	41.7
Swelling	17	28.3
Fever	7	11.7
Suppuration	2	3.3
Trismus	4	6.7
Mixed	5	8.3
Total	60	100.0

Table 2: Primary facial space infection in relation to diferent teeth involved

Primary maxillary spaces	No of teeth involved	Diferent teeth involved
Canine space	5,1= 6	Max. Canine, Max. 1st Pre-Molar
Buccal space	2,16,12=30	Ant. Incisor, 1st Molar, 2nd Molar
Infratemporal space	4	Max. 3rd Molar
Primary mandibular spaces	No of teeth involved	Diferent teeth involved
Submental space	1	Mand. Ant
Buccal space	5,9,23= 37	Mand. 1st,2nd& 3rd Molars
Submandibular space	0	-
Sublingual space	0	-
Submasseteric space	0	-
Cervical spaces	0	-
Total	78	

Discussion

Among dental disease facial space infection (FSI) is the most common disease categorized as a fatal disease having odontogenic origin and extending into the facial planes[12]. Current study was carried out to assess the frequency, pattern, characteristics of FSI of patients presenting to the rural health care center dental OPD Bhabra after getting treatment from a dentist or a quack. Odontogenic facial space infection is a disease of socially deprived patients and has a rampant nature[2,13].However, we have seen it to be common in both middle class and low socioeconomic people but much stronger in poor class as

Fig: 1 Facial space infection (FSI) in mandibular irst molar due to caries

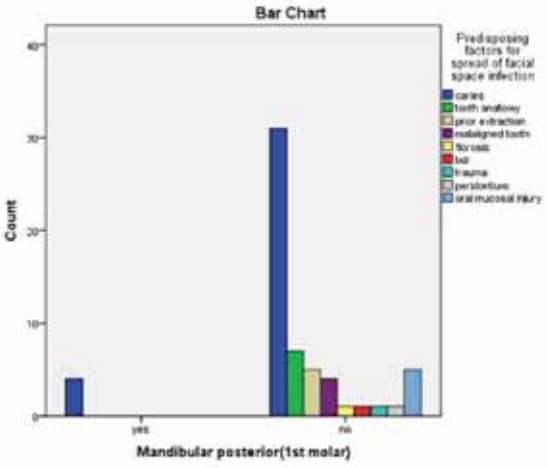
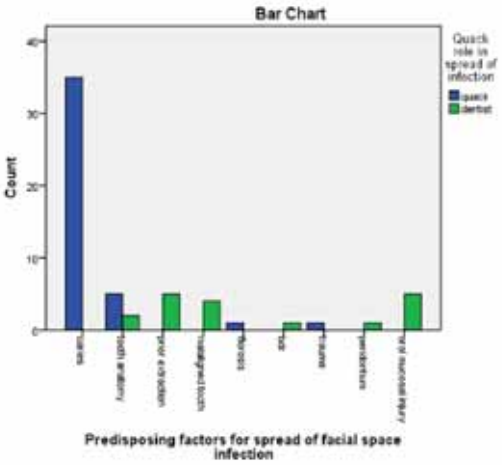


Fig: 2 Role of Quacks in the spread of FSI



also seen in the above mentioned studies. This could be postulated to the lack of awareness among these low socioeconomic patients and also to the lack of affordability to visit dentists therefore ending up getting treatment from the quacks. According to Rahman et al[14], male has a more predilection for this disease with a male to female ratio of 1.7:1,although slightly less but same can be seen in our study where again males are affected more with 1.4:1 male to female ratio. Pain & swelling are the chief complaints of patient visiting dentist with FSI as reported by different studies[15,16] same as mentioned in our study. Caries has been reported as most important predisposing factor in previously done studies[17,18] which is in cohesion with our study as caries is the most common contributing factor for pulpitis and periapical abscess. Permanent maxillary canine, maxillary third molar and permanent mandibular third molar are the mostly involved tooth in our study however majority of studies reported permanent first molar as the most commonly involved tooth[4,6].

Mandible has more incidence of facial space infection as compare to maxilla reason might be decrease blood supply[12], but in our study we found maxilla to be more affected mainly due to significant number of cases presenting with maxillary canine space infection. Poor oral hygiene has been reported as most common ailment by Eisleret al[19] which is seen to be same in our study. Poor oral hygiene remains the major cause of FSI in all literature. Education has been reported to play a pivotal role in better oral health[20]. It was seen that less educated individuals i.e below matriculation were highly affected by FSI in comparison to moderately or highly educated individuals. This can be postulated to low socioeconomic status of these patients and lack of awareness of oral hygiene maintenance. This lack of health education related to maxillofacial region compels them to visit quacks which further deteriorate their condition. Seventy two percent of patients have consulted quacks in this study and majority has ended up into FSI. Immune suppressing diseases like diabetes and factors like smoking are also reported to be in association with FSI[21] which are also the significant risk factors seen in our study.

Health delivery system of Punjab where dearth of dentist at Rural Health Centre (RHC) level is present, there is only one dentist for over more than 50 thousand population. Scarcity is seen even at-District Head Quarter (DHQ) & Tehsil Head Quarter (THQ) levels which promotes quackery and compels ordinary persons to visit quacks in order to get some treatment done[22]. Therefore, government should increase dentist ratio at these centers to efficiently deal the matter. Proper legislation for stopping quackery is available but implementation is lacking. Through this study we have tried to increase awareness among the general masses but still some people visit the dentist in majority of the cases after getting improper treatment from the quacks. Early diagnosis of these fatal infections at time is very important but prevention of patients from going to quack is even more important to help prevent spread of these infections.

Conclusion

There is lack of awareness among the people of rural health area population, Bhabra regarding oral health care. Facial space infection a life threatening disease is significantly associated with quackery practices at rural areas of Pakistan which should be stopped immediately through proper implementation of the legislation which prevents such practices.

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