



ROLE OF SOCIOECONOMIC FACTORS IN MAXILLOFACIAL ABSCESS OF ODONTOGENIC ORIGIN

ODONTOJENİK ORJİNLİ MAKSİLLOFASİYAL APSELERDE SOSYOEKONOMİK FAKTÖRLERİN ROLÜ

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ABSTRACT

Objectives: This study aimed to determine the socioeconomic factors, etiology, location, microbiology and management of maxillofacial infections of odontogenic origin.

Materials and methods: The records of 91 elderly patients who were diagnosed as maxillofacial abscesses were reviewed. Spilka's system was used to categorize each maxillofacial infection. Kuppuswamy revised classification was used to assess the socioeconomic status and literacy of all patients.

Results: There were 91 patients with ages ranging from 16 to 71 years. Most of the patients (86.8 %) were of low socioeconomic status and 75.8 % illiterate or primary school certificate. 80 % of the patients live in rural area. Submandibular space was the most frequently encountered location. 75.8 % of the patients had poor oral hygiene. Smoking was the most common addictions. Pain, fever, and dysphagia were the most common presenting symptoms.

Conclusions: Low socioeconomic status, poor oral hygiene and smoking may play an important role in the occurrence of maxillofacial infections. Early diagnosis and treatment are critical in the management of patients with maxillofacial abscess

Key words: maxillofacial infections, socioeconomic factors, location, microbiology and management

ÖZET

Amaç: Bu çalışmada odontojen kaynaklı maksillofasial enfeksiyonlarda sosyoekonomik faktörler, etiyoloji, lokalizasyon ve tedavi yönetimini tespit etmek amaçlanmıştır.

Materiyal ve Metod: Maksillofasial apse teşhisi konan 91 yetişkin hastanın kayıtları incelendi. Maksillofasial enfeksiyonları sınıflandırmada Spilka sistemi kullanıldı. Sosyoekonomik durum ve okuryazarlık değerlendirilmesinde revize, Kuppuswamy klasifikas-yonu kullanıldı.

Bulgular: Yaşları 16-71 arasında değişen 91 hasta mevcuttu. Hastaların çoğu düşük sosyoekonomik statüye sahipti (%86.8) ve % 75.8' i okuryazar değildi ya da ilkokul diplomasına sahipti. Hastaların % 80 i kırsal kesimde yaşıyordu. Bu enfeksiyonlarda submandibular loj, en sık tespit edilen bölge idi. Hastaların %75,8 i kötü oral hijyene sahipti. Bu hastalarda sigara en yaygın kötü alışkanlıktı. Ağrı, ateş ve yemek yeme güçlüğü en yaygın semptomlardandı.

Sonuçlar: Düşük sosyoekonomik statü, kötü oral hijyen ve sigara kullanımı maksillofasial enfeksiyonların oluşumunda önemli bir rol oynayabilir. Erken tanı ve tedavi maksillofasial apselerin tedavi yönetiminde oldukça kritiktir.

Anahtar Kelimeler: Maksillofasial enfeksiyonlar, lokasyon, mikrobiyoloji ve yöntem.

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INTRODUCTION

Although there have been recent dramatic improvements of the treatments of maxillofacial infections, severe maxillofacial infections still remains a relatively common entity in developing countries. ¹ Complications such as suppurative mediastinal or intracranial extension, retropharyngeal spread and airway obstruction, pleuropulmonary involvement, and hematogenous dissemination indicate the potentially serious nature of these infections. ^{2, 3} Socioeconomic factors, particularly ignorance, illiteracy and poverty may play an important role for such infections.

The aim of this study was to determine the socioeconomic factors, aetiology, location and management of maxillofacial infections.

PATIENTS AND METHODS

Ninety-one elderly patients with maxillofacial abscesses who were treated at the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry at Atatürk University, Erzurum, Turkey were included in the study. Before enrollment, each patient consented to a reviewed protocol and all procedures followed the tenets of the Declaration of Helsinki.

All patients had fluctuant masses. The locations and etiologies of the abscesses, age, sex, predisposing factors, previous treatment, history of infection, presenting signs and symptoms were recorded. Spilka's system ⁴ was used to categorize each maxillofacial infection. Kuppuswamy revised classification ⁵ was used to assess the socioeconomic status and literacy of all patients. Urgent incision and drainage was done.

When there was no any penicilin sensitivity, crystalline penicilin was used singly or in combination with metronidazole, and/or gentamicin. Antibiotics were modified depending on the result of culture and sensitivity reports when it was necessary.

RESULTS

All of the abscesses were odontogenic origin. The results for sex, age, tooth of etiology, clinical

presentation and treatment are presented in Table I. The youngest patient was 16 years and the oldest 71

Table I. Data Summary for the study sample (n=91)

Sex	(n=91)	
Male	47	%51,6
Female	44	%48,4
Age (yr)	(n=91)	
16-18	12	%13,2
18-20	22	%24,2
21-30	24	%26,4
31-40	13	%14,3
41-50	9	%9,9
51-60	7	%7,7
60- and up	4	%4,4
Frequency of tooth involvement	(n=91)	
maxillary incisors	6	%6,6
maxillary canines	6	%6,6
maxillary premolars	8	%8,8
maxillary molars	17	%18,7
mandibular incisors	7	%7,7
mandibular canines	2	%2,2
mandibular premolars	12	%13,2
mandibular molars	33	%36,3
Preadmission antibiotic use	(n=91)	
Yes	20	%22
No	71	%78
Presenting symptoms	(n=91)	
Pain	34	%37
Pain and fever	26	%28,6
Pain, fever and trismus	22	%24,2
Dysphagia	9	%9,9
Previous treatment	(n=91)	
No treatment	41	%45
Referred from primary health centre	6	%6,6
Sought treatment from unqualified practitioner	44	%48,4
Treatment	(n=91)	
Ext only with Abx	7	%7,7
I&D with Abx	12	%13,2
I&D, Ext, with Abx	72	%79

years. Mandibular molars were the most common source of infection. Submandibular space was the most frequently encountered location both in patients with multispace infections and in patients with single space infections (Table II). Pain was the most common symptoms. The median range of admission temperature was 37.76±0.66 and median range of admission WBC count was 14350±522. Smoking was the most common addictions (n=64; 70.3 %), tobacco chewing (n=2; 2.2 %) and alcohol misuse (n=7; 7.7 %) were less. The average duration of symptoms prior to admission was 3.86±2.29 days, with only 6 (6.6 %) being referred from a primary health centre. 44 patients (48.4 %) were being treated by unqualified



local practioners and 41 (% 45) took no medication. Sixty-nine patients (75.8 %) had poor oral hygiene and 46 (50.5 %) had dental caries. 79 (86.8 %) of the patients were of low socioeconomic status and 69 (75.8 %) illiterate or primary school certificate. 80 % of the patient live in rural area. Six (6.6 %) patients were aware of the predisposing factors and potential complications of maxillofacial abscess (Table III). All patients recovered completely with no complications.

Table II. Locations of odontogenic abscess according to Spilka's system

Locations			
<i>Single space (n= 56)</i>			
Submandibular		24	%26,4
Buccal		17	%18,7
Canine		6	%6,6
Submental		9	%9,9
<i>Multispace combinations (n=35)</i>			
Submandibular / buccal		10	%11
Submandibular / submental		9	%9,9
Buccal/canine		7	%7,7
Submandibular/lateral pharyngeal		2	%2,2
Buccal / lateral pharyngeal / temporal		2	%2,2
Submandibular / sublingual		3	%3,3
Submandibular/buccal/submental		1	%1,09
Buccal / masseteric		1	%1,09
Total		91	

Table III. Socioeconomic staus according to Kuppuswamy's revised classification

<i>(A) Education</i>		<i>Score</i>	
1 Professional degree		7	
2 Graduate or post graduate		6	
3 Intermediate or post -high-school diploma		5	
4 High school certificate		4	
5 Middle school certificate		3	
6 Primary school or literate		2	
7 Illiterate		1	
<i>(B) Occupation</i>			
1 Profession		10	
2 Semi- Profession		6	
3 clerical, shop owner, farmer		5	
4 Skilled worker		4	
5 Semi- Skilled worker		3	
6 Unskilled worker		2	
7 Unemployed		1	
<i>(C) Family income per month (TL)</i>			
1. ≥ 1750		12	
2. 1250-1749		10	
3. 1000-1249		6	
4. 750-999		4	
5. 500-749		3	
6. 250-499		2	
7. <249		1	
Total score (A+B+C) class (n=91)			
26-29	upper (I)	n=3	%3,3
16-25	upper middle (II)	n=9	%9,9
11-15	lower middle (III)	n=19	%20,9

5-10	upper lower (IV)	n=25	%27,5
<5	lower (V)	n=35	%38,5

DISCUSSION

Our investigation reported a very broad age range of elderly patients having maxillofacial infections of odontogenic origin, from 16 years to 71 years with the majority in the 16-30 year age group in both man and women.. These results confirm previous studie⁶⁻⁸

It is reported that odontogenic infections most commonly involve the mandibular molar teeth.^{1, 2, 8, 9} Our results confirm these previous studies. These results may be related that molar teeth are most often affected by caries, and mandibular third molar are affected by pericoronal infection which occurs in an erupting or a partially impacted tooth.¹⁰

Odontogenic infections usually spread from the structures supporting the affected tooth along the planes of least resistance to the facial spaces in the vicinity.¹ Therefore, teeth of origin showed obvious relationship to the adjacent anatomic space infected.⁷ Our most commonly affected site was the submandibular space in both multispace infections and single space infections. It has been reported as the most commonly involved site in most past studies.¹⁰⁻¹³

Socioeconomic status may play an important role to admit on time to qualified professionals particularly oral surgeon and to receive adequate treatment. They minimize both morbidity and mortality. In the present study, 6.6 % of the patients being referred from a primary health centre, 48.4 % were being treated by unqualified local practioners and % 45 took no medication. They mostly lived in rural area and the average duration of symptoms prior to admission was about 4 days. These results showed that lack of primary health care facilities may contribute to high incidence of severe odontogenic infections because of delay of immediate treatment. Most of our patients were of low socioeconomic status and illiterate or primary school certificate and were not aware of the predisposing factors and potential complications of maxillofacial abscess. 75.8 % of them had poor oral hygiene. Our results coincides with the data of Agarwal et al.¹¹ who found that low socioeconomic status, illiteracy, bad habits, and lack of primary health care facilities contribute to a high incidence of deep neck abscess in India. Early



diagnosis, prompt surgical management (incision and drainage) and adequate antimicrobial treatment are the essentials of managing odontogenic abscess.¹⁴ Dentist and other qualified practioners should give information about dental infections to the people particularly lived in rural area. These prevent important complications.

Until the mid-1970s, it was believed that odontogenic infections were caused by a single species of aerobic or facultative bacteria.¹ Now, it is well known that odontogenic infections may result from mixed infections caused by a wide range of aerobic and anaerobic microorganisms.¹⁻⁴ The type and the combination of the microbial flora develop in response to the surrounding environment. Factors that influence whether species shall die or survive are the particular ecological niche, nutrition, anaerobiosis, pH and competition with other microorganisms.¹⁵ An aerobic-anaerobic mixed infection is present where in aerobic streptococci through consumption of oxygen prepare the medium for anaerobic bacteria. Therefore, the adequate and immediately treatment of odontogenic infection is very important. Late or inadequate treatment may cause complex microbial flora. Antibacterial treatment of such infection requires wide spectrum.¹⁶⁻¹⁹ If there is no penicilin sensitivity, penicilin may preferable as a first choice of antibiotic for the initial empiric therapy. If penicilin sensitivity present, clindamycin may be used.

The conclusions of this study are that low socioeconomic status, poor oral hygiene and smoking are important contributory factors towards the high incidence of severe odontogenic infections. Severity of infections may be related the the microbial flora. Early diagnosis and treatment are critical in the management of patients with odontogenic abscess because delay can result in local spread of the infection to vital anatomic structures and may cause life threatening complications.

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