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# Smoking, alcohol consumption and denture use in patients with oral mucosal lesions

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## Abstract

**Background:** Epidemiologic researches about oral mucosal lesions have been performed in different populations. But, in dermatology outpatients, oral mucosal lesions have not been investigated previously.

**Objective:** We aimed to determine the prevalence of oral mucosal lesions among dermatology outpatients and the relationship between OML and smoking, alcohol intake, denture and dental filling use and skin diseases.

**Methods:** Randomly selected 1041 dermatology outpatients were examined for dermatological diseases and oral mucosal lesions. All of the patients were questioned about smoking, alcohol intake, denture and dental filling use.

**Results:** In 235 patients, oral mucosal lesions were recorded. 268 (25.7%) of the patients had history of smoking, 42 (4%) drinking alcohol and 180 (17.3%) denture and dental filling. 32 (64%) of the smokers, 54 (30%) of denture users and 10 (23.8%) alcohol consumers had at least one OML. Age and smoking were found as significant risk factors for oral mucosal lesions. Fissured tongue was the most common oral lesion and it was seen significantly higher in patients with denture. Smoking was risk factor for coated tongue and linea alba.

**Conclusions:** Oral mucosa should be examined carefully even if the patients do not attend with the complaint of oral lesions, especially in elderly patients, smokers and denture users. (*J Dermatol Case Rep*. 2011; 5(4): 64-68)

## Introduction

The prevalence rates of oral lesions in different populations show a wide variability. To date, epidemiologic researches were performed in normal populations and the dental outpatient.[1-4] Oral mucosal involvement of some of dermatologic disorders such as lichen planus, Behçet's disease, pemphigus is well known. There is only one study of oral mucosal lesions (OML) in dermatology clinics outpatients.[5] In this study, we aimed to determine the prevalence of OML among dermatology outpatient patients and the relationship between OML and smoking, alcohol intake, denture (removable, partial removable, nonremovable denture) and dental filling use and skin diseases.

## Material and methods

The study was performed on 1041 consecutive dermatology outpatients whom attended Ankara Numune Education and Research Hospital (It is the largest teaching government hospital in Turkey and has a patient profile with middle and low socioeconomic status generally coming from Middle, East and Southeast Anatolia). The study was approved by local ethic committee. All of the patients were questioned about smoking, drinking alcohol and denture and dental filling use and primary dermatological complaints. Dermatological and oral mucosal examination were done in all of the patients by the same dermatologists and the data was recorded in personal cards of the patients. The diagnoses of

oral mucosal lesions were based on World Health Organization guidelines (WHO, 1980, 1997) and, if necessary, laboratory investigations, KOH examination, dermoscopy and biopsy.

All patients were divided into 5 groups according to age as 0-15, 16-30, 31-45, 46-60 and more than 60 years. OML observed were recorded. Recurrent herpetic lesions and recurrent aphthous ulcer (RAU, if it repeats more than three in per year) were recorded only if they were observed at the time of the examination. The total number of the patients with OML and each mucosal lesion were evaluated according to age groups, smoking, drinking, the presence of denture and dental filling, and gender statistically with Pearson's Chi Square Test, Fisher's Exact Tests. Independent risk factors were detected with logistic regression analysis for OML that was found multiple significant factors.

Statistical evaluation showed that smoking (Odd's ratio: 1.77 (1.25-2.51), (p=0.001) ) and age were significant independent risk factors for OML. Three age groups were found to be risk factors for OML [31-45 years; Odd's ratio: 3.02 (1.32-6.89), (p=0.009), 46-60 years; Odd's ratio: 3.62 (1.55-8.49), (p=0.003), 60-years; Odd's ratio: 3.02 (1.19-7.66), (p=0.02)]. Sex, drinking and denture and dental filling use were not found related with OML. Smoking was independent risk factor for coated tongue (6.53 times) (p<0.001). Fissured tongue was observed statistically higher in patients who had denture and dental filling (p<0.05, p=0.01). The associations of linea alba and smoking (p<0.05, p=0.033), traumatic oral lesions and denture and dental filling use were statistically significant (p<0.05, p=0.02). Oral lichen planus lesions and smoking were poorly related (p=0.05).

## Results

543 (52%) of the patients were female, 498 (48%) were male. Age of the patients ranged between 1 and 86 years (mean age: 35.9 years). 268 (25.7%) of the patients had history of smoking, 42 (4%) drinking alcohol and 180 (17.3%) denture and dental filling.

249 OML were recorded in 235 (22.6%) patients. 13 patients had two OML, three had three OML. 19 different OML were diagnosed. Fissured tongue was the most common oral lesion and was seen in 67 (13.3%) patients. Other OML were coated tongue, aphthae, linea alba, glossitis, leukoplakia, candida infection and macroglossia. 32 (64%) of the smokers, 54 (30%) of denture users and 10 (23.8%) alcohol consumers had at least one OML. Coated tongue was the most common OML in smokers and alcohol consumers and fissured tongue was most common OML in denture users. The OML and distribution of OML according to sex, smoking, alcohol intake and denture and dental filling use are seen in Table 1. Most frequent OML was fissured tongue in all age groups. The other frequent OML in each age group are seen in Table 2.

A total of 107 dermatoses were recorded and infectious skin diseases were most frequently observed (24.7%). 75 (7.2%) of the patients attended to our clinic with the complaint of OML and dermatologic disorders associated with OML such as RAU, Behçet's disease, warts, pemphigus, but OML were detected during oral mucosal examination incidentally in 158 (15.2%) patients. 27 of 48 patients with aphthae attended with RAU, 10 had Behçet's disease, but the others attended with different dermatological causes and aphthae was detected during oral mucosal examination. Fissured tongue was observed in four patients with psoriasis. Herpes infection was related with erythema multiforme in two patients and related with upper breath tract infection. All the patients with oral pemphigus lesions had cutaneous pemphigus. Oral lichen planus lesions were observed in 4 of 12 patients with lichen planus (33.3%). Macroglossia was seen in 7 patients with urticaria/angioedema. Candidosis related with treatments (antibiotics and chemotherapies) in 5 patients and related with diabetes mellitus. Five patients with glossitis had diabetes mellitus.

## Discussion

Most reports about the prevalence of OML are based on studies of different populations such as elderly, children, dental school patients, collage students, hospitalized patients, misusers and normal population.[2-4,6-14] The prevalence of the oral lesions and most common lesions have shown variations in different countries and populations. Pioneering study of prevalence of OML in Sweden was published by Axéll in 1975. Axéll reported that prevalence of OML was 61.6% and Fordyce's condition, leukoedema and history of recurrent aphthae were the most frequent.[1] The prevalence of oral lesions has been reported in different populations; 27.9% in United States adult population in 1994,[4] 10.26% in the study in United States children in 2005,[3] 4% in United States school children in 1994,[4] 27% in Brazil children in 2004,[6] 53% in elderly people Chile, in 2003,[7] 81.3% in Italian males in 2001,[8] 11.8% in German adult population in 2007.[9] Most prevalent lesions that was detected in these studies were denture-related lesions, lip/cheek bite, RAU, geographic tongue, denture stomatitis, coated tongue, exophitic neoplasia respectively.[2-4,6-9] In a recent study performed in Mexican patients by Castellanos, general lesion rate was found as 356.60 lesions per 1000 patients and most common OML were leukoedema, traumatic ulceration and frictional keratosis.[15]

Ramírez-Amador *et al*[5] found that 6% of the patients attended to the dermatology outpatient clinic with the complaint of OML. Most prevalent lesions were pemphigus vulgaris, lichen planus, candidiasis, recurrent aphthous ulcer and xserostomia. In our study 75 (7.2%) patients attended to our clinic with the complaint of OML and pemhigus vulgaris and lichen planus were detected less frequently, RAU and Behçet's disease were detected more frequently than Ramírez-Amador *et al*'s study. These discrepencies may be due to the difference of races and geographic regions. Also our hospital accepts patients both referred from other centers and non-referred patients, whereas the hospital where Ramírez-Amador *et al* performed their study in a tertiary care hospital.

A few studies were reported from Turkey about the prevalence of OML. Parlak *et al*[11] found the prevalence of OML

**Table 1.** The distribution of OML according to sex, smoking, alcohol use, denture use and dental filling.

| OML | Number of OML | % n: (249) | % n: (1041) | Sex | | Smoking | Alcohol use | Denture and dental filling |
|---|---|---|---|---|---|---|---|---|
| | | | | F | M | n (%) | n (%) | n:180 (%) |
| Fissured tongue | 67 | 27 | 6,4 | 35 | 32 | 19 (28.4) | 3 (5) | 22 (33) |
| Coated tongue | 50 | 20 | 4.8 | 19 | 31 | 32 (64) | 5 (10) | 15 (30) |
| Aphthae | 48 | 19.3 | 4.6 | 29 | 19 | 10 (21) | 0 (0) | 4 (8.3) |
| Linea alba | 11 | 4.4 | 1.1 | 6 | 5 | 6 (55) | 1 (9.1) | 2 (18.2) |
| Glossitis | 11 | 4.4 | 1.1 | 8 | 3 | 1 (9.1) | 0 (0) | 3 (27.3) |
| Leukoplakia | 7 | 2.8 | 0.7 | 3 | 4 | 4 (57.1) | 0 (0) | 3 (43) |
| Candidosis | 7 | 2.8 | 0.7 | 4 | 3 | 1 (14.3) | 0 (0) | 2 (29) |
| Traumatic wound | 7 | 2.8 | 0.7 | 3 | 4 | 2 (29) | 0 (0) | 4 (51.1) |
| Macroglossia | 7 | 2.8 | 0.7 | 3 | 4 | 1 (14.3) | 0 (0) | 0 (0) |
| Angular chelitis | 6 | 2.4 | 0.6 | 3 | 3 | 3 (50) | 0 (0) | 1 (17) |
| Herpes infections | 4 | 1.6 | 0.4 | 2 | 2 | 1 (25) | 0 (0) | 1 (25) |
| Melanocitic macules | 4 | 1.6 | 0.4 | 2 | 2 | 2 (50) | 0 (0) | 1 (25) |
| Lichen planus | 4 | 1.6 | 0.4 | 2 | 2 | 2 (67) | 0 (0) | 0 (0) |
| Fordyce spots | 3 | 1.2 | 0.3 | 2 | 1 | 0 (0) | 0 (0) | 0 (0) |
| Verruca | 3 | 1.2 | 0.3 | 1 | 2 | 2 (67) | 1 (33.3) | 1 (33.3) |
| Pemphigus vulgaris | 3 | 1.2 | 0.3 | 2 | 1 | 1 (33.3) | 0 (0) | 1 (33.3) |
| Geographic tongue | 3 | 1.2 | 0.3 | 1 | 2 | 0 (0) | 1 (33.3) | 0 (0) |
| Cysts | 3 | 1.2 | 0.3 | 1 | 2 | 0 (0) | 0 (0) | 0 (0) |
| Venous lake | 1 | 0.4 | 0.1 | 1 | 0 | 0 (0) | 0 (0) | 1 (100) |
| Total | 249 | 100 | 24 | 127 | 222 | 87 (35) | 11 (4.4) | 62 (25) |

**Table 2.** Distributions of all patients and OML (+) patients according to age groups, most frequent OML.

| | | 0-15 | 16-30 | 31-45 | 46-60 | 60- |
|---|---|---|---|---|---|---|
| All patients | M | 38 (48%) | 178 (48%) | 124 (42%) | 102 (50%) | 56 (62%) |
| | F | 41 (51%) | 194 (52%) | 172 (58%) | 102 (50%) | 34 (38%) |
| | T | 79 (100%) | 372 (100%) | 296 (100%) | 204 (100%) | 90 (100%) |
| OML (+) patients | M | 5 (71%) | 32 (49%) | 36 (46%) | 33 (53%) | 12 (52%) |
| | F | 2 (29%) | 33 (51%) | 42 (54%) | 29 (47%) | 11 (48%) |
| | T | 7 (100%) | 65 (100%) | 78 (100%) | 62 (100%) | 23 (100%) |
| Most frequent OML | | Fissured tongue(2), coated tongue(1), herpes infection(1), fordyce spots(1), gingivitis(1) | Fissured tongue(20), aphthae(17), coated tongue(10), linea alba(4), glossitis(4) | Fissured tongue(21), aphtha(20), coated tongue(19), linea alba(5), glossitis(4) | Fissured tongue(18), coated tongue(17), hyperpigment ation(3), gingivitis(3), leukoplakia(3) | Fissured tongue(6), aphthae(3), coated tongue(3), macro-glossia(2), Cyst(2) |

as 26.2% in 13- to 16-year-old students in Duzce. The most common lesion was angular chelitis. Dundar and Ilhan Kal[12] reported prevalence of the OML as 40.7% in elderly population. They found that the prevalence of the OML was 40.7% and it was related to the length of denture use, smoking and gender. Mumcu *et al*[10] found the prevalence of OML as 41.7% in the normal population in Istanbul, and excessive melanin pigmentation was the most frequently seen lesion. In this study, being elderly was found to be a significant risk factor for occurrence of some oral lesions. We found that the prevalence of oral lesions was 24.6% and the frequency of fissured tongue (6.4%) and aphthae (4.6%) was higher than the findings of Mumcu *et al* (5.2% and 1.2% respectively). The discrepeancies of the prevalences in these studies may be due to the different study populations and geographic areas.

In our study, when the total number of the patients who had OML was statistically evaluated according to age, sex, smoking, drinking alcohol, the presence of denture and dental filling, the mean age of the patients who had OML was significantly higher than those who had no OML. OML were observed statistically more commonly in smokers and users of denture and dental filling. These outcomes were consistent with the literature.[4,12,14,15] However statistically significant relationship was not observed between OML and sex and alcohol use differently from the literature.[13-15]

We found that most common OML was fissured tongue and it was observed statistically higher in patients who had oral implant than those who did not have oral implant. Bessa *et al* showed a statistically significant association of fissured tongue and allergy.[6] We think that the development of fissured tongue may be due to a contact reaction to the materials of oral implants. Traumatic lesions were significantly related with the use of oral implant. Our study showed that smoking was an independent risk factor for coated tongue. Also, smoking may be a predisposing factor in development of linea alba. In our study, we found that oral lichen planus was poorly related with smoking. But we do not know that if there is a real relation or not, because the number of patients with oral lichen planus was low in our study.

Mucocutaneous conditions are a group of disorders mainly observed in dermatology practise. OML may be the initial feature, only a sign of such disorders or an associated finding to a skin disorder.[5] Sometimes OML may be present in the patients who are not aware of it. We suggest that oral mucosa should be examined carefully even if the patients do not attend with the complaint of oral lesions, especially in elderly, smokers and denture users.

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