



Marija BOKOR-BRATIĆ

The prevalence of precancerous oral lesions. Oral leukoplakia

ABSTRACT

It is well known that leukoplakia is the most common precancerous lesion of the oral mucosa. The aim of this study was to show the prevalence of oral leukoplakia in a selected population, distribution according to age, sex and intraoral locations. The study material comprised 2385 outpatients of a Department of Oral Disease and Periodontology at the Clinic of Stomatology in Novi Sad. Oral leukoplakia was diagnosed and grouped according to internationally accepted criteria. Oral leukoplakia was diagnosed in 53 cases. The majority of cases (45) were of the homogeneous type and 8 cases were of the non-homogeneous type. Eighty one percentage of oral leukoplakia occurred in men and 18.9% in women. Eighty six percentage of men were over 40 years of age. Oral leukoplakia was registered on the buccal mucosa in 28.3% of cases. The prevalence of oral leukoplakia was 2.2%, for homogeneous type was 1.9% and for non-homogeneous type 0.3%. Oral leukoplakia occurred more frequently in men over 40 years of age. The intraoral location of leukoplakia was preponderant in buccal mucosa.

Key words: Epidemiology; Mouth mucosa; Precancerous condition; Mouth leukoplakia

DEPARTMENT OF ORAL DISEASE AND PERIODONTOLOGY,
CLINIC OF STOMATOLOGY, MEDICAL SCHOOL, UNIVERSITY OF
NOVI SAD, YUGOSLAVIA

Archive of Oncology 2000,8(4):169-70©2000, Institute of Oncology Sremska Kamenica, Yugoslavia

INTRODUCTION

The majority of oral cancers consist of squamous cell carcinomas, malignant tumours, that arise from the epithelium of the mucosa. An unknown percentage of these squamous cell carcinomas are preceded for several months, or years, by clinically visible alterations of the oral mucosal surface, most often having a white appearance (leukoplakia) with or without a red component. Such changes are referred to as precancerous lesions.

It is well known that leukoplakia is the most prevalent precancerous lesion of the oral mucosa.

Oral leukoplakia has been defined as a white patch or plaque that cannot be characterized clinically or pathologically as any other disease (1). Smoker's palate (leukokeratosis nicotina palati), cheek and lip biting (2), frictional white lesion and snuff dipper's lesion should not be considered leukoplakia (3,4).

Epidemiological data on the prevalence of oral leukoplakia have shown ranges from 0.7 to 24.8% (3). Marked differences are found between the prevalence rates in various countries, in different parts of one country but also in the same population. Reasons for the variation in prevalence rates could relate to methodology, the diagnostic criteria and the study population selection.

The purpose of this study was to show the epidemiological status of oral leukoplakia in a selected population in order to obtain such data as prevalence, distribution according to age, sex and intraoral locations.

PATIENTS AND METHODS

The study material comprised 2385 patients aged 20-70 years, who visited the Department of Oral Diseases and Periodontology at the Clinic of Stomatology in Novi Sad, between 1988 and 1990. As a part of the routine oral examination procedure the presence of oral leukoplakia was evaluated and documented by the author, with the experience of previous 5 years in the diagnosis of oral mucosal lesions.

The patients were examined sitting in a dental chair, with artificial light, using mouth mirrors. Lesions were recorded on the WHO standard recording form for oral mucosal diseases (5). The clinical diagnosis of oral leukoplakia was based on the criteria as provided by the

WHO (5) and modified by Axell (3) including the clinical distinction between homogeneous and non-homogeneous type of leukoplakia.

Localization was registered using the topographic division of the oral mucosa modified after Roed-Petersen & Renstrup (5).

Statistical analyses were performed according to the Chi-square test.

RESULTS

Out of 2385 patients, who were examined, 53 were diagnosed as having leukoplakia, resulting in a prevalence rate of 2.2%. The majority of cases (45) were of the homogeneous type, and only 8 cases of the non-homogeneous type. The prevalences are 1.9% and 0.3%, respectively, with a difference that was statistically significant ($p < 0.001$) (Table 1).

Table 1. Occurrence of oral leukoplakia among 2385 examined persons

	n	%
Leukoplakia	53	2.2
homogeneous	45	1.9 *
non-homogeneous	8	0.3

* $p < 0.001$

Table 2 shows the age and sex distribution of patients with leukoplakia. The prevalence of leukoplakia 2.2%; 3.3% and 0.9% for men and women respectively, a difference that was statistically highly significant ($p < 0.001$). There were

Address correspondence to:

Prof. Dr Marija Bokor-Bratić, Clinic of Stomatology, Medical School, Hajduk Veljkova 12, 21000 Novi Sad, Yugoslavia

The manuscript was received: 14. 09. 2000.

Provisionally accepted: 04. 10. 2000.

Accepted for publication: 08. 11. 2000



significant differences among the age groups, as shown in Table 2: differences were found between men over and under 40 years of age ($p < 0.001$), and among women only between the age groups 30-39 and 50-59 years.

found leukoplakia in 3.6% of population. Axell (4) found oral leukoplakia in 3.6% of 20333 Swedish individuals above 15 years of age. The prevalence rate for leukoplakia was 2.9% in Americans over 35 years of age (11). Studies

The buccal mucosa was the most frequently involved site, followed by the commissure, the tongue and the lower lip. The results have also shown that the objects for mass screening for oral leukoplakia should preferably be restricted to men over 40 years of age.

Table 2. Sex and age distribution of 53 patients with oral leukoplakia

Age group (year)	MEN		WOMEN		TOTAL leukoplakia
	n	leukoplakia	n	leukoplakia	
20 - 29	53	2	114	1	3
30 - 39	398	4	472	1	5
40 - 49	345	13	156	2	15
50 - 59	267	16	166	5	21
60 - 69	153	5	160	1	6
70 >	72	3	29	0	3
Total	1288	43 (3.3%)	1097	10 (0.9%)	53 (2.2%)

* $p < 0.001$, NS not significant

MEN: 1.-2.:*; 2.-3.:*; 2.-4.:*; 2.-5.:NS; 2.-6.:NS; 3.-4.:NS; 1.2.-3.4.5.6.:*

WOMEN: 2.-3.:NS; 3.-4.:NS; 2.-4.:*; 1.2.-3.4.5.6.:NS

The distribution according to the intraoral locations for leukoplakia is shown in Table 3.

Table 3. Distribution of 53 patients with oral leukoplakia according to oral locations

Location	n	%
Buccal mucosa	15	28.3
Commissure	11	20.8
Tongue	8	15.1
Vermilion	7	13.2
Labial mucosa	5	9.4
Alveolar ridge	5	9.4
Floor of the mouth	2	3.8
Total	53	100.0

The most frequent location for leukoplakia was the buccal mucosa (28.3%), followed by the commissure (20.8%), tongue (15.1%) and vermilion (13.2%).

DISCUSSION

In this study the prevalence of leukoplakia in a selected population was 2.2%. This result should be interpreted with great caution since the relatively small size and highly selected character of the screened population was investigated.

Hogewind and Van der Waal (6) found a prevalence of oral leukoplakia of 1.4% in 1000 dental outpatients, Axell and coworkers (7) a prevalence of 1.3% in 234 Thai and 233 Malaysian outpatients, Ikeda and coworkers (8) a prevalence of 2.5% in a selected Japanese population and a prevalence of 1.1% in a selected Cambodian population (9).

On the other hand, there are few studies reporting on oral precancerous lesions in general population. The first epidemiologic study in Europe was performed by Bruszt (10), who

from Hungary showed prevalences of 1.3% (12) and 5.74% respectively (13). The same authors suggested the organizational model of connecting oral examinations to the compulsory lung screening. By this type of examination a greater sample of the population, could be embraced especially the "risk group" of elderly people and those who are not visiting a dentist regularly. The prevalence of oral leukoplakia in Malaysia was 1.4% in a representative sample of 11707 subjects aged 25 years and above (14, 15).

The present study showed that oral leukoplakia occurred more frequently in men over 40 years of age. This result supports previous findings (4,7,9,11,12).

The results of this study also show that homogeneous leukoplakias are much more prevalent than non-homogeneous and this finding is in accordance with previous studies (4,6-9,12). Non-homogeneous leukoplakias are considered to carry a considerably higher risk for malignant change than homogeneous ones (16).

The occurrence of the most intraoral locations of leukoplakia in this study is in good agreement with previous findings (4,7,8,11,12,17), but the tongue localisation shows lower occurrence compared with previous data (12,6). In the present study, most frequently, lesions were located on the buccal mucosa and the commissure. According to Axell (4) those are locations which are unusual for the development of oral cancer in Sweden.

CONCLUSION

The present study has shown that the prevalence of oral leukoplakia was 2.2% in relatively small and highly selective character of the screened population. Oral leukoplakia occurred more frequently in men over 40 years of age.

REFERENCES

- WHO: Collaborating Centre for Oral Precancerous Lesions. Definition of leukoplakia and related lesions: an aid to studies oral precancer. *Oral Surg* 1978;46:518-39.
- WHO. Application of the international classification of diseases to dentistry and stomatology. Geneva: WHO, 1978.
- Axell T, Holmstrup P, Kramer IR, Pindborg JJ, Shear M. International seminar on oral leukoplakia and associated lesions related to tobacco habits. *Comm Dent Oral Epidemiol* 1984;12:145-54.
- Axell T. Occurrence of leukoplakia and some other oral white lesions among 20333 adult Swedish people. *Comm Dent Oral Epidemiol* 1987;15:46-51.
- WHO. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions. *Comm Dent Oral Epidemiol* 1980;8:1-26.
- Hogewind W, Van der Waal I. Prevalence study of oral leukoplakia in a selected population of 1000 patients from the Netherlands. *Comm Dent Oral Epidemiol* 1988;16:302-5.
- Axell T, Zain RB, Siwamogstham P, Tantiran D, Thampit J. Prevalence of oral soft tissue lesions in outpatients at two Malaysian and Thai dental schools. *Comm Dent Oral Epidemiol* 1990;18:95-9.
- Ikeda N, Ishii T, Iida S, Kawai T. Epidemiological study of oral leukoplakia based on mass screening for oral mucosal diseases in a selected Japanese population. *Comm Dent Oral Epidemiol* 1991;19:160-3.
- Ikeda N, Handa Y, Khim S, Durward C, Axell T, Mizuno T et al. Prevalence study of oral mucosal lesions in a selected Cambodian population. *Comm Dent Oral Epidemiol* 1995;23:49-54.
- Bruszt P. Stomat-omkologische Reihenuntersuchungen in sieben Gemeinden Südungarns. *Schweiz Monatsschr Zahnheilkd* 1962;72:758-66.
- Bouquot J. Common oral lesions found during a mass screening examination. *JADA* 1986;112:50-7.
- Bánóczy J, Rigó O. Prevalence study of oral precancerous lesions within a complex screening system in Hungary. *Comm Dent Oral Epidemiol* 1991;19:265-7.
- Dombi C, Czeglédy A, Gyurkovics C, Freisleben A, Sari K. Stomatologic mass screening in the 3rd district of Budapest. *Fogorv Szle* 1994;87:45-8.
- Zain R, Ikeda N, Razak I, Axell T, Majid Z, Gupta P, et al. A national epidemiological survey of oral mucosal lesions in Malaysia. *Comm Dent Oral Epidemiol* 1997;25:377-83.
- Zain R, Ikeda N, Gupta P, Warnakulasuriya S, van-Wyk C, Shrestha P. Oral mucosal lesions associated with betel quid, areca nut and tobacco chewing habits: consensus from a workshop held in Kuala Lumpur, Malaysia. *J Oral Pathol Med* 1999;28:1-4.
- Bouquot J, Whitaker S. Oral leukoplakia rationale for diagnosis and prognosis of its clinical subtypes. *Quintessence Int* 1994;25:133-40.
- Saito T, Sugiura C, Hirai A, Notani K, Totsuka Y, Shindoh M, et al. High malignant transformation rate of widespread multiple oral leukoplakia. *Oral Dis* 1999;5:15-9.