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The prevalence of oral mucosal lesions in croatian children

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The prevalence of oral mucosal lesions in children and young adolescents are scarce and vary throughout the world; therefore, we investigated the prevalence of oral mucosal lesions in children and young adolescents referred to the Department of Oral Medicine, School of Dentistry in Zagreb. Out of 4523 patients referred to the Department of Oral Medicine during the period of three years, there were 142 children and young adolescents with oral mucosal lesions aged from one year to 19 years. Data from patient charts were organized into working sheets, which included age, sex, detailed medical history, clinical presentation of the oral disease, laboratory, microbial and biopsy findings when needed. Oral mucosal lesions were recorded according to the World Health Organization. The most prevalent lesion was primary herpetic gingivostomatitis (21.12%), followed by recurrent aphthous ulceration (14.08%), traumatic lesions (11.9%) and geographic tongue (13.38%). There were no significant sex differences in the prevalence of primary herpetic gingivostomatitis and recurrent aphthous ulceration (p=0.704). No significant differences were observed in the prevalence of oral diseases according to age groups, except for recurrent aphthous ulceration and primary herpetic gingivostomatitis. A statistically significant difference was found in the occurrence of recurrent aphthous ulceration and primary herpetic gingivostomatitis according to age groups. Primary herpetic gingivostomatitis was more frequently recorded in children from 1-6 years and recurrent aphthous ulceration in older age groups. There was no correlation between oral mucosal diseases and systemic diseases.

Keywords: epidemiology; child; adolescents; mouth diseases; prevalence; Croatia

INTRODUCTION

The exact prevalence of oral mucosal lesions in children is not well known. As stated by *Petersen et al*. (1) and many other authors in the field, and despite the World Health Organization (WHO) recommendations (2), the epidemiological literature on children and adolescents in the field of oral medicine is quite limited. Therefore, there is an increasing need of epidemiological studies on this topic. Most of the studies on oral mucosal lesions in children were based on atypical samples (biopsies, clinic attendants or schools) which, according to *Shulman* (3), pose serious challenges to validity because they are not representative of the general population. Also, it seems that children from higher socioeconomic background have a higher prevalence of recurrent aphthous ulceration (RAU) and geographic tongue, whereas children from lower socioeconomic background have a higher prevalence of angular cheilits and recurrent herpes labialis (3). *Garcia-Pola et al*. (4) found coated tongue (16%) to be the most prevalent lesion among Spanish 6-year-olds, followed by traumatic lesions (12.2%), geographic tongue (4.5%) and hemangioma (3.8%). *Bezerra and Costa* (5) found the prevalence of oral lesions in children aged 0-5 years to be 2.3% and the children suffered most frequently from Bohn's nodules (37%), candidiasis (25%) and benign migratory glossitis (21%). *Bessa et al*. (6) report on geograph-

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ic tongue as the most frequent finding (30.05%), followed by cheek bite injuries (20.22%) and melanotic macule (8.47%) in Brazilian children aged 0-4 years. *Espinosa-Zapata et al.* (7) found fibrous hyperplasia (43.02%), erythematous candidiasis (25.58%) and oral ulcers (16.27%) to be most frequent in Mexican children aged 1-16 years. *Kleinman et al.* (8) report on RAU as the most prevalent lesions (1.23%), followed by recurrent herpes infection, smokeless-tobacco-related lesions (0.71%) and geographic tongue (0.6%).

So far, in Croatia there have been inadequate data on the prevalence of oral mucosal lesions in children and young adolescents; therefore, we retrospectively examined patient charts to obtain valuable data on the issue.

MATERIALS AND METHODS

Clinical diagnostic criteria proposed by the WHO were followed. Patients were examined under standardized conditions on a dental chair with dental mirror. Every patient underwent clinical examination of the oral cavity. When needed, laboratory serum findings were obtained as well as Candida swabs and biopsy specimens.

Data from patient charts were organized into working sheets, which included age, sex, detailed medical history, clinical presentation of the oral disease, laboratory, microbial and biopsy findings when needed.

Statistical analysis was performed by use of descriptive statistics and χ^2-test; p values lower than 0.05 were considered significant.

RESULTS

The most prevalent lesion was primary herpetic gingivostomatitis (PHGS, 21.12%), followed by RAU (14.08%), traumatic lesions (11.9%) and geographic tongue (13.38%). There were no significant sex differences in the prevalence of PHGS and RAU (p=0.704). No significant differences were recorded in the prevalence of oral diseases according to age groups, except for RAU and PHGS. Significant differences were found between PHGS and RAU according to age at occurrence; RAU was less frequently seen in the 1-6 age group (5%) as compared with the 7-12 (12.6%) and 13-19 (7.35%) age groups. PHGS was more prevalent in the 1-6 age group as compared with older age groups (Table 1).

TABLE 1. Distribution of oral mucosal lesions in the study sample according to age and sex

Diagnosis	1-6 years	7-12 years	13-19 years	Male	Female
Primary herpetic gingivostomatitis	17	9	4	14	16
Recurrent aphthous ulceration	1	12	7	9	11
Traumatic lesions	4	8	5	9	8
Geographic tongue	9	7	3	9	10
Mucocele	0	5	3	3	5
Exfoliative cheilitis	0	3	0	3	0
Halitosis	1	1	1	1	2
Angular cheilitis	1	1	1	0	3
Fibroma	0	1	2	3	0
Gingival erosions	0	2	0	2	0
Verruca vulgaris	0	2	0	0	1
Ranula	0	2	0	0	2
Epulis	0	1	1	1	1
Eruptive cyst	2	0	0	1	1
Focal infection (alopetia)	0	0	2	0	2
Haemangioma	1	1	0	1	1
Gingivitis	2	0	1	1	2
Lymphadenitis	0	2	1	2	1
Papilloma	0	1	0	1	0
Lichen	0	1	0	0	1
Fissured tongue	0	0	1	0	1
Burning mouth syndrome	0	0	1	1	0
Perioral dermatitis	0	0	1	1	0
Erythema multiforme	0	0	1	1	0
Gingival herpes infection	1	0	0	1	0
Palatal herpes infection	0	1	0	1	0
Ptyalism	0	1	0	1	0
Pigmentation	0	1	0	0	1
Lymphangioma	0	0	1	1	0
Fibroepithelial tumor	0	1	0	1	0
Burn	0	0	1	1	0
Gingival hyperplasia	0	1	1	2	0
Quincke's edema	1	0	0	1	0
Allergic reaction	0	0	1	0	1

DISCUSSION

As stated by many researchers in the field, published literature reviews pose considerable methodological problems due to the lack of standard protocols and wide variation in the methods used.

Rioboo Crespo et al. (9) report that RAU, labial herpes, geographic, coated and scrotal tongue, followed by candidiasis and traumatic lesions are the diseases that stand out when the results of published studies are examined. We found that the majority of our patients had PHGS (22.7%), RAU

(13.79%), traumatic lesions (13.79%), geographic tongue (12.41%), mucocele (5.51%) and lick cheilitis (2.75%).

It is well known that herpes infections are quite widespread in the pediatric and adolescent population; however, their prevalence varies throughout the world. It seems that herpes infections are more prevalent in children from low socioeconomic groups. *Ramos-Gomez* (10) reports that herpes infection occurs in 1.7%-24% of children, which is consistent with our findings.

In our study, the prevalence of herpes infection in children was 22.7% (n=32), which is in contrast to the findings of *Majorana et al*. (11), who found the prevalence of herpes virus infection in their patients to be 6.9% regardless of systemic health status. These findings suggest that the prevalence of herpes infection is quite widespread in our population.

Furlanetto et al. (12) report that the RAU prevalence rates vary, ranging from 0.5% to 39.2%. The reason for this wide prevalence range is the intermittent nature of RAU lesions. The results of our study showed that after PHGS, RAU was the second most frequent type of oral lesions with a prevalence of 13.79% in our study population.

Majorana et al. (11) found that oral lesions were present in almost one-third of the total number of children (N=10.128) examined at the Department of Pediatric Dentistry, University of Brescia. The most common lesions were oral candidiasis (28.4%), traumatic lesions (17.8%), recurrent aphthous stomatitis (14.8%), geographic tongue (10.9%), oral herpes simplex recurrent infection (9.3%), PHGS and erythema multiforme (0.9%). *Yilmaz et al*. (13) also found that candidiasis was the most common lesion (10.70%), followed by Epstein's pearls (2.68%) and geographic tongue (2.68%). This finding is in contrast with our results, as we found no cases of candidal infection in our sample of children and only one patient suffering from erythema multiforme.

Geographic tongue is said to be one of the most prevalent oral conditions in the pediatric population; however, its prevalence varies widely across the studied populations. We found geographic tongue in 12.41% of study children, which is a higher prevalence when compared with other authors, except for *Bezerra and Costa* (5). However, our sample was not selected from the general population, as these patients were referred to our Department of Oral Medicine. In contrast to the findings reported by *Majorana et al*. (11), we found no systemic disease in any of our patients with geographic tongue.

Garcia-Pola et al. (4) report on the prevalence of traumatic lesions of 12.17% in their sample, which is in concordance with the results of our study. We also found that 13.79% of the children had traumatic lesions. Such a relatively high prevalence has also been reported by *Benevides dos Santos et al*. (14) as well as *Arendorf* and *van der Ross* (15), and is in contrast with the results of *Kleinman et al*. (8). On the contrary, *Shulman et al*. (16) found that the most prevalent lesion was cheek/lip bite (1.89%), followed by RAU (1.64%), nevus (1.54%), recurrent herpes infection (1.42%) and geographic tongue (1.05%).

Majorana et al. (11) also found a significantly higher prevalence of oral lesions in children suffering from systemic diseases. This is in contrast to the findings of this study, as there was only one child with chronic lymphocytic leukemia, while all other children were healthy at the time when they were referred to our Department. *Jahanbani et al*. (17) report no statistically significant sex differences in the prevalence of oral mucosal lesions. This finding is in accordance with the results of our study.

And the last but not the least, retrospective cross-sectional studies are important for estimating the prevalence of a disease in the population as well as identifying high-risk populations, as stated by *Majorana et al*. (11).

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SUKOB INTERESA/*CONFLICT OF INTEREST*

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SAŽETAK

Učestalost oralnih lezija u djece u Hrvatskoj

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S obzirom na nedostatne i različite podatke o učestalosti oralnih mukoznih lezija u djece i adolescenata u svijetu, istraživali smo njihovu učestalost u djece i adolescenata na Zavodu za oralnu medicinu Stomatološkog fakulteta u Zagrebu. Od ukupno 4 523-je bolesnika primljenih u Zavod za oralnu medicinu, u trogodišnjem razdoblju, bilo je 142-je djece i adolescenata u dobi od 1 do 19 godina života. Podatci su iz bolesničkih kartona organizirani u datoteku u kojoj su navedeni dob, spol, medicinska anamneza, klinički izgled lezija, laboratorijski, mikrobiološki, radiološki i histopatološki nalazi, kad je bilo potrebno. Lezije oralne sluznice zabilježene su prema kriterijima Svjetske zdravstvene organizacije. Najčešća lezija na oralnoj sluznici bila je primarni herpetični gingivostomatitis (21,12%), potom su slijedile rekurentne aftozne ulceracije (14,08%), traumatske lezije (11,9%) i geografski jezik (13,38%). Nisu dobivene značajne razlike u pojavnosti oralnih bolesti u djece s obzirom na njihovu dob, osim u slučaju rekurentnih aftoznih ulceracija i primarnog herpetičnog gingivostomatitisa. Razlike između dječaka i djevojčica nisu utvrđene ni kod herpesa niti kod rekurentnih aftoznih ulceracija (p=0,704). Nije bilo značajne razlike između dječaka i djevojčica u učestalosti oralnih lezija, kao što nije bilo ni značajnih razlika u oralnim bolestima s obzirom na dob djece, osim u slučaju rekurentnih aftoznih ulceracija i primarnog herpetičnog gingivostomatitisa. Primarni herpetični gingivostomatitis se češće javljao u djece u dobi od 1-6 godina, dok su se rekurentne aftozne ulceracije češće javljale u starijoj dobnoj skupini. Nije bilo povezanosti oralnih lezija sa sistemskim bolestima.

Ključne riječi: epidemiologija; djeca; adolescenti; bolesti usne šupljine; prevalencija; Hrvatska