ORIGINAL ARTICLE

Prevalence of oral mucosal lesions from birth to two years

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Abstract

Objective: The purpose of this study was to determine the prevalence of lesions of the oral mucosa from birth to two years in Turkish pediatric patients .

Materials and Methods: A total of 299 infants from newborn to two years of age were evaluated from the Outpatient Clinics of the Pediatric Department, in the Fatih University Hospital, Ankara, Turkey. The mucosal lesions were documented. The data were presented as percentages and for categorical comparisons Chi-square or Fisher's Exact test were used. A *P*-value less than 0.05 was considered statistically significant.

Results: Of the 299 infants, mucosal lesions were seen in only 65 (21.27%). In the study, the most common lesions were candidiasis (10.70%), Ebstein's pearls (2.68%), and geographic tongue (2.68%). The frequency of children with mucosal alterations was higher in the group of children from two to twelve months.

Conclusions: Although the lesions that were found the most in our study were benign lesions, unrelated to systemic diseases, we still believe that oral mucosal lesions can be a sign of a systemic or dermatological disease in infants, which affects the oral feeding of the infants. Routine examination of the oral mucosa should be a part of the pediatric examination.

Key words: Infant, lesion, oral mucosa

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Introduction

Chilhood oral mucosal lesions (COML) are one of the rare topics that pediatricians, dentists, and dermatologists are interested in. To make a correct diagnosis, it is important to avoid unnecessary research and treatment. So far studies for the incidence and classification of COML have been rare. Although these studies do not have a certain standard, with regard to age grouping and methods, they are mostly performed on the children of age two and over. Although there have been studies[1-5] starting with birth, including a wide period until five to twelve years of age, there have been no studies with regard to the incidence and classification of COML for the zero to two age group of children. Bezerra *et al*,[1] have found the incidence of COML in 1042 patients, zero- to five-year-old children, to be 2.30%, by looking over their dental records. The most frequent clinical findings that they have determined are as follows; Bohn's nodules (37%), candidiasis (25%), and benign migratory glossitis (21%). Bessa *et al*,[4] have found the incidence of COML in zero- to four-year-old children to be 24.9% and the most frequent lesions they have determined are geographic tongue (9.8%) and bite injuries (6.11%).[4] In a study from Mexico, which was published in 2006,[5] COML incidence in the age group between one and sixteen years was found to be 7.38%. According to this study, the most frequent lesions were fibrous hyperplasia (43.02%), erythematous candidiasis (25,58%), and oral ulcers (16.27%).[5]

Our study was performed on 299 infants (zero- to two-year-

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olds) who had been admitted to the Pediatrics Outpatient Service of the Hospital in the Fatih University Faculty of Medicine, for various complaints, during the period of January to July, 2009, and our purpose was to determine the incidence of COML in this age group and to investigate whether COML had any relationship with the birth method, birth time, concomittant diseases, familial dermatological diseases, use of pacifier, and nutrition.

Materials and Methods

Study population

This study was a prospective investigation. The study population consisted of 299 infants (145 female and 154 male patients) with a mean age of 7.5±5.5 (0.8 – 23) months, who were brought to the well-child care clinics of the Fatih University Hospital and enrolled in the study. The following data were obtained: age, gender, body weight and height, form of delivery, usage of pacifier, type of feeding (breastfeeding, bottle usage), dermatological, systemic, genetic disease diagnosis, if any drug usage, lesions of oral mucosa, and the number and location of the affected oral mucosa. The oral lesions types were diagnosed by a specialist in dermatology oral diseases. The monthly povertly line of a family of four has been reported to be 767 $ by the Turkish Statistical Institute in 2008. Based on that data, a monthly income below 800 $ was accepted as low socioeconomic status, between 800 – 1600 $ as intermediate and above 1600 $ as a high socioeconomic status.

Ethical committee approval

In the study, an approval was obtained from the Fatih University, Faculty of Medicine Ethical Committee on June 13, 2009. In addition, written approvals of the parents were collected from the families of the participants.

Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) 11.5 software (SPSS Inc., Chicago, IL, United States). Although continuous data were shown as mean±standard deviation (minimum–maximum), nominal data were expressed as the number of cases and percentage. The prevalence of each lesion and 95% confidence intervals were calculated. Whether the differences in lesion prevalence regarding age and gender groups were statistically significant or not were evaluated by the Chi-square test. A *P*-value less than 0.05 was considered statistically significant.

Results

A total of 299 infants were examined: 154 (51.5%) males and 145 (48.5%) females. The infants were divided into three age groups: 0 – 1 month old, with 22 (7.4%) patients, 2 – 12 months old, with 216 (72.4%) patients, and 13 – 24 months old, with 61(20.4%) patients. The dermographic data of the patients is shown in Table 1.

Fourteen different mucosal lesions were diagnosed and the most common lesions were candidiasis (10.70%), Ebstein's pearls (2.68%), and geographic tongue (2.68%). Table 2 shows the lesions found and the prevelance findings by age and sex of groups.

The results of this study showed that 21.27% of the patients examined had oral mucosal lesions, without significant difference related to sex. The frequency of children with mucosal lesions was higher in the group of children from 2 – 12 months [Table 3]. On the other hand, prevalence was not associated with race–ethnicity.

Candidiasis were prevalant in children from 2 – 12 months old. It occured in 10.70% of the children, of whom 12.4% were nourished with breastfeeding. Breastfeeding with (P=0.025) or without bottle (P=0.048) are statistically significant for candidiasis as shown in Table 4.

No association between economic status and frequeny of

Table 1: Dermographic data of the infants

Variables	*n*=299
Age (month)	7.5±5.5 (0.8 – 23)
Age groups	
0 – 1 month	22 (7.4%)
2 – 12 months	216 (72.2%)
13 – 24 months	61 (20.4%)
Gender	
Male	154 (51.5%)
Female	145 (48.5%)
Gestation	
Mature	258 (86.3%)
Premature	31 (10.4%)
Postmature	10 (3.3%)
Delivery type	
NSVD	85 (28.4%)
C/S	214 (71.6%)
Socioeconomic status	
Low	68 (22.8%)
Intermediate	13 (4.3%)
High	218 (72.9%)
History of systemic diseases in patients	34 (11.4%)
Anemia	7 (2.3%)
Frequency of upper respiratory tract infection	4 (1.3%)
History of systemic diseases in family	6 (2.0%)
Use of pacifier	109 (36.5%)
Pacifier usage expiration (month)	7.3±5.2 (1 – 22)
Feeding type	
Only on breast feeding	209 (69.9%)
Only with baby bottle	58 (19.4%)
Both	18 (6.0%)

Table 2: Prevalance of lesion types and 95% confidence intervals

Lesion type	Lesion number	Prevalance (%)	Std.error (%)	95% CI
Recurrent aphtous stomatitis	2	0.67	0.46	0.00* – 1.59
Bite	3	1.00	0.65	0.00* – 2.13
Ulcer	1	0.33	0.325	0.00* – 0.98
Herpetic gingivostomatit	1	0.33	0.325	0.00* – 0.98
Geographical tongue	8	2.68	0.915	0.85 – 4.51
Papilloma	1	0.33	0.325	0.00* – 0.98
Angular cheilitis	3	1.00	0.65	0.00* – 2.13
Epstein pearls	8	2.68	0.915	0.85 – 4.51
Oral candidiasis	32	10.70	1.75	7.20 – 14.20
Hemangioma	1	0.33	0.325	0.00* – 0.98
Eruptive papillit	2	0.67	0.46	0.00* – 1.59
Fibroma	1	0.33	0.325	0.00* – 0.98
Xantogranuloma	1	0.33	0.325	0.00* – 0.98
Hairy tongue	1	0.33	0.325	0.00* – 0.98

*When the lower bound is negative it is rounded to zero

Table 3: Lesion prevalances according to age groups and gender and 95% confidence interval

Variable	Case number	Lesion number	Prevalance (%)	95% CI
Age groups				
0 – 1 month	22	6	27.27	8.66 – 45.88
2 – 12 months	216	46	21.30	15.84 – 26.76
13 – 24 months	61	13	21.31	11.03 – 31.59
Total*	299	65	21.74	17.06 – 26.42
Gender				
Male	154	32	20.78	14.37 – 27.19
Female	145	33	22.76	15.94 – 29.58
Total**	299	65	21.74	17.06 – 26.42

*Chi-square test, *P*-value=0.808; **Chi-square test, *P*-value=0.678

children presenting with oral mucosal lesions was found in this study ($P=0.648$).

Discussion

In the face of the numerous alterations that can arise in the mouth of children, the professional should be able to detect the lesions, while conducting the appropriate and correct diagnostic treatment. A complete oral examination is an essential part of any dermatological and pediatric examination. Unfortunately, the oral cavity is frequently examined in a fleetting manner, particularly in the context of an uncooperative child, especially 0 – 2 years old. In this study, the oral mucosal alterations have been diagnosed in a single examination of each child.

The frequency of children with oral mucosal lesions and the prevalence of each lesion show a wide range of literature and this may be a result of the difference of geographic areas, sociodermographic characteristics of the population studied, and the clinical diagnostic criteria.

Our findings indicated a significant difference in the freqency of children presenting with oral mucosal lesions according to the age group, and were not related to sex, birth method, or birth time. Higher frequency was found in children 2 – 12 months old (21.3%). The most prevalent oral lesions found in this study were candidiasis (10.70%), Ebstein's pearls (2.68%), and geographic tongue (2.68%).

The most common lesion found in the study was candidiasis, a fungal infection caused by *Candida albicans*. This finding was in conformity with the information given by Castro *et al.* and Sonis,[1] who described the condition as being quite common in neonates, especially around the seventh day of life, due to birth contact with an infected mother. In our study, oral candidiasis was higher in infants who were breastfeeding compared to bottle usage. However, in the other studies,[6] bottle use was a significant predictor of both maternal and infant oral colonization. There are several possible explanations for this association. The simplest hypothesis is that the bottle acts as a vector for the *Candida* in the environment. However, if this was the principal

Table 4: Factors that could affect the development of oral candidiasis

Variables	Oral cand. (-) (n = 267)	Oral cand. (+) (n = 32)	P value
Age groups			0.108
0 – 1 month	19 (86.4%)	3 (13.6%)	
2 – 12 months	189 (87.5%)	27 (12.5%)	
13 – 24 months	59 (96.7%)	2 (3.3%)	
Gender			0.579
Male	139 (90.3%)	15 (9.7%)	
Female	128 (88.3%)	17 (11.7%)	
Gestation			0.316
Mature	233 (90.3%)	25 (9.7%)	
Premature	25 (80.6%)	6 (19.4%)	
Postmature	9 (90.0%)	1 (10.0%)	
Type of delivery			0.708
Normal spontaneous vaginal delivery	75 (88.2%)	10 (11.8%)	
C/S	192 (89.7%)	22 (10.3%)	
Socioeconomic status			0.310
Low	62 (91.2%)	6 (8.8%)	
Intermediate	10 (76.9%)	3 (23.1%)	
High	195 (89.4%)	23 (10.6%)	
History of systemic disease in Patients			0.554
No	235 (88.7%)	30 (11.3%)	
Yes	32 (94.1%)	2 (5.9%)	
Use of pacifier			0.897
No	170 (89.5%)	20 (10.5%)	
Yes	97 (89.0%)	12 (11.0%)	
Feeding type			0.019
Only on breast feeding	183 (87.6%)	26 (12.4%)[a]	
Only with baby bottle	56 (96.6%)	2 (3.4%)[a,b]	
Both	14 (77.8%)	4 (22.2%)[b]	
Other	14 (100%)	0 (0%)	

[a] There is a statistically significant difference between groups only on breast feeding and only with baby bottle usage (P value=0.048); [b]There is a statistically significant difference between the groups of both and only with baby bottle (P value=0.025)

mechanism, they would have found a similar association with pacifier use, which they did not. Hence 40 – 60 % of the infants carry the organism in their mouth, with 10 to 24% of the infants developing oral thrush within the first 18 months of life.[6]

The term Ebstein's pearls is applied most accurately to cysts of the oral mucosa that occur at the junction of the hard and soft palates. These likely represent remnants of epithelial tissue entrapped during palatal fusion. Clinically, all of these cysts appear similar, as small, white papules or translucent cysts. No treatment is indicated because they resolve spontaneously.[7]

Geographic tongue is a benign tongue condition affecting 2% of the population.[8] It is one of the most common conditions of the oral mucosa clinically observed in children.[1,9] The cause is unknown. The condition may be hereditary. Clinically, the dorsum of the tongue has well-defined erythematous regions of depapillation, each surrounded by a raised white edge. Although usually asymptomatic, soreness sometimes occurs, especially with salty or spicy foods.[10] It was the second most frequent condition, together with Ebstein's pearls, found in this study. Effective treatment for the geographic tongue is yet not known, as its etiology has not been well elucidated. There has been a debate on whether or not the condition is an oral manifestation of psoriasis.[11]

Our results should also be used as baseline data for future studies involving different children populations in order to obtain more information about the prevalence of oral mucosal alterations and the factors associated with them.

What is already known on this topic and what this article adds?

We think that oral mucosal lesions other than benign lesions, especially in children, are important to diagnose as they can be clues to systemic diseases.Although, there are some physiological, benign lesions of the mucosa that should be differentiated from the other lesions that need treatment. Through our search of the literature, there is no study on the age group of 0 – 2 year old children.

Therefore, this study adds, the frequently seen oral mucosal lesions in this age group to the literature. Chilhood oral mucosal lesions are one of the rare topics that pediatricians, dentists, and dermatologist are interested in. To make a true diagnosis, it is important to avoid unnecessary research and treatment.

References

1. Bezerra S, Costa I. Oral conditions in children from birth to 5 years: The findings of a children's dental program. J Clin Pediatr Dent 2000; 25:79-81.
2. Sousa FB, Etges A, Corrêa L, Mesquita RA, de Araújo NS. Pediatric oral lesions: A 15-year review from São Paulo, Brazil. J Clin Pediatr Dent 2002;26:413-8.
3. Gültelkin SE, Tokman B, Türkseven MR. A review of paediatric oral biopsies in Turkey. Int Dent J 2003;53:26-32.
4. Bessa CF, Santos PJ, Aguiar CF, do Carmo MA. Prevalence of oral mucosal alterations in children from 0 to 12 years old. J Oral Pathol Med 2004;33:17-22.
5. Espinosa-Zapata M, Loza-Hernández G, Mondragón-Ballesteros R. Prevalence of buccal mucosal lesions in pediatric patients: Preliminary report. Cir Cir 2006;74:153-7.
6. Morrill JF, Heinig MJ, Pappagianis D, Dewey KG Risk factors for mammary candidiasis among lactating women. J Obstet Gynecol Neonatal Nurs 2005;34:37-45
7. Witman PM, Rogers RS 3rd. Pediatric oral medicine. Dermatol Clin 2003;21:157-70.
8. Luker J. Disease of the oral mucosa and tongue. In: Harper J, Oranje A, Prose N, editors. Texbook of pediatric dermatology. 1st ed. Oxford: Blackwell Science; 2000. p. 1435-59.
9. Kleinman DV, Swango PA, Pindborg JJ. Epidemiology of oral mucosal lesions in United States schoolchildren: 1986-87. Community Dent Oral Epidemiol 1994;22:243-53.
10. Sigal MJ, Mock D. Symptomatic benign migratory glossitis: Report of two cases and literature review. Pediatr Dent 1992;14:392-6.
11. Buchner A, Begleiter A. Oral lesions in psoriatic patients. Oral Surg Oral Med Oral Pathol 1976;41:327-32.

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