



Most common oral mucosal lesions in children: Prevalence and differential diagnosis

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Abstract

Childhood oral mucosal lesions (COML) are one of the rare topics that pediatricians, dentists, and dermatologists are interested in. Considering the high number of lesions which can be found in children oral mouth, it becomes really important to make a correct diagnosis in order to plan the right research and treatment. So far studies for the incidence and classification of COML have been rare and, above all, they didn't have a certain standard, with regard to age grouping and methods. As a consequence, these studies have shown a wide variability in the prevalence of oral mucosal lesions in different regions of the world and have led researchers to draw disparate conclusions. This paper, reviewing the different epidemiological studies found in literature, wants to contribute data on the most common oral mucosal diseases in children in terms of prevalence and differential diagnosis.

Introduction

In the maintenance of children oral health, specialists have to consider more than one purpose: ensuring a complete permanent dentition, a correct periodontal condition and finally a good health of the others oral structures. Childhood oral mucosal lesions (COML) are one of the rare topics that pediatricians, dentists, and dermatologists are interested in. Considering the high number of lesions which can be found in children oral mouth, it becomes really important to make a correct diagnosis in order to plan the right research and treatment. An inadequate conduct during child oral examination and an inability to do a differential diagnosis between COML, can bring to overlook important diseases or to adopt unnecessary treatment plans. So far studies for the incidence and classification of COML have been rare and, above all, they didn't have a certain standard, with regard to age grouping and methods. The aim of this article is to make a comparison between the different epidemiological studies in literature to find relevant data concerning the prevalence of oral mucosal lesions in the paediatric population.

Methods

Reviewing the literature, we found 12 epidemiological studies published from 1988 to 2013, each one considering the prevalence of children oral mucosal lesions among different regions throughout the world. As regards countries of origin of each study, 3 of them came from Brazil, 2 from Mexico, 2 from USA and 1 from Italy, Turkey, Spain, South Africa, and Argentina, respectively.

The selected studies showed a considerable variation in the prevalence of oral mucous lesions in examined children; in fact, the percentage of lesions ranges from 4.1 to 69,5 %. Moreover a comparison between the surveys faces considerable methodological problems because of the absence of standard protocols and the wide variation in the methods used; in particular the number of examined children of each research varies from 299 to 39206. In [table 1](#), main features of each article (publication year, country of origin, number of examined children, total prevalence of oral lesions) are shown.

As regards the prevalence found for each lesion, they varies widely among research groups. In [table 2](#), the frequencies of the most common children oral mucosal lesions found in each epidemiological study are presented.

Discussion

Even if the reported prevalence for each lesion is quite different, the various authors agree almost completely on the most frequently observed oral mucosal lesions in children; in particular, they are aphthous stomatitis, labial herpes, geographic, coated and scrotal tongue, candidiasis and traumatic oral lesions.

Recurrent Aphthous Stomatitis (RAS): The prevalence of RAS in the examined studies ranges from 0,67 to 10,87%. While Bessa et al.^[3] found no significant association between the prevalence of RAS and socioeconomic level, Crivelli et al.^[5] in a previous research, observed an important difference between the prevalence of RAS in high level school students and low level school ones (19 % and 12%,

respectively). In addition, Majorana et al.^[10] in their study noticed that RAS was more common in children affected by systemic disease (immunodeficiency, nutritional deficiencies, malabsorption, celiac disease) than in healthy children.

Recurrent Herpes labialis (RHL): The prevalence of RHL in the examined studies ranges from 0,2 to 5,20 %. Interestingly, Crivelli et al.^[6] found that RHL lesions appeared in 10 % of a low socioeconomic level group and in 1% of a high socioeconomic level group, the inverse of the findings for EAR. Majorana et al.^[10] expressed limitations of their study in evaluating the prevalence of recurrent alterations such as RAS or RHL because the oral mucosal lesions were diagnosed after only a single examinations of each patients.

Tongue Diseases (Geographic, Coated and Scrotal Tongue) Epidemiological studies have shown a high frequency of tongue diseases among mucosal lesions of the oral cavity, although the prevalence varies in different parts of the world. Kleiman^[9] have stated that the study of tongue alteration in children is often overlooked. As regards geographic tongue, it is by far the most common tongue diseases reported in almost all studies; its onset starts in childhood, sometimes at a very early age^[4] and occasionally in puberty with a predominant presence in female. Majorana et al.^[10] found a high prevalence of this lesion in children with chronic disease, suggesting that underlying pathophysiologic abnormalities or the drugs these children take may account for this disorder. Regarding coated tongue, many authors have not considered it as a disease. On the other hand, the study of Garcia-Pola^[7] as well as the research of Viera-Andrade^[15] which both included coated tongue as an oral mucosal lesion, found that it was the most frequently observed diseases. Finally, the prevalence of scrotal tongue in the examined studies ranges from 0,6% to 27,7%, being the second most frequently observed tongue diseases in various studies. Interestingly, Sedano et al.^[13] underlined that the prevalence of scrotal tongue is higher in individuals with geographic tongue and vice-versa. This association can point out the importance of genetic factors in the pathogenesis of both these tongue diseases.

Oral Candidiasis: In the study of Yilmaz et al.^[16], candidiasis was the most common lesion found (10, 70%); moreover they underlined that the prevalence was higher in infants who were breastfeeding compared to bottle usage. Majorana et al.^[10] observed that oral candidiasis was more likely to occur in

children with systemic diseases, owing to local and systemic predisposing factors. In addition, Espinosa-Zapata et al.^[6] have reported that the erythematous type was the most common found as well as the hard palate the most frequent localization.

Traumatic Oral Lesions: Examined studies found a prevalence of traumatic injuries which ranges from 0,09 to 12,17%. In the study by Garcia-Pola^[7], they were the second most common oral disease in children after the coated tongue. Moreover, Majorana et al.^[10] have not observed significant differences between healthy and systemically affected children regarding the prevalence of traumatic lesion; this can be explain considering that soft tissue lesions caused by incorrect habits such as cheek biting, morsicatio buccarum, tongue or lip sucking, object biting or by local injuries were common in both groups.

Conclusions

A complete oral examination is an essential part of any dermatological and pediatric examination. Unfortunately, the oral cavity is frequently examined in a fleeting manner, particularly in the context of an uncooperative 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. Although examined studies have provided helpful information in this field, the lack of uniformity in the criteria adopted by the researchers makes it difficult to draw coherent conclusions. Therefore, an appropriate protocol should be create in order to exactly evaluate the prevalence of the most common oral mucosal lesions in children and their association with a particular condition (age, gender, systemic disease, socioeconomic level).

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Illustrations

Illustration 1

Table 1: Main features of selected studies

N°	Study	Publication year	Country	Examined Children	Total percentage of oral lesions in examined children
1	<i>Arendorf TM [1]</i>	1996	South Africa	1051	32,9 %
2	<i>Bessa CFN[3]</i>	2004	Brazil	1211	27 %
3	<i>Benevides dos Santos PJ[2]</i>	2004	Brazil	587	52,6 %
4	<i>Crivelli MR[5]</i>	1988	Argentina	846	39 %
5	<i>Espinosa-Zapata M[6]</i>	2006	Mexico	1165	7,4 %
6	<i>García Pola MJ[7]</i>	2002	Spain	624	38,9 %
7	<i>Kleiman DV[9]</i>	1994	USA	39206	4,1%
8	<i>Maiorana A[10]</i>	2010	Italy	10128	28,9%
9	<i>Sedano HO[13]</i>	1989	Mexico	32022	25,2 %
10	<i>Shulman JD[14]</i>	2005	USA	10030	9,73%
11	<i>Vieira-Andrade RG[15]</i>	2013	Brazil	541	69,5 %
12	<i>Yilmaz[16]</i>	2011	Turkey	299	21,27%

Illustration 2

Table 2. Prevalence of the most common mucosal lesions in oral cavity of children

N°	Study	Geographic Tongue	Coated tongue	Scrotal tongue	Candidiasis	Ankyloglossia	Labial Herpes	Angular Cheilitis	Commisural lip pits	Traumatic Lesions	Bite injuries	Recurrent aphtha	Melanic Stain	Ulcer
1	<i>Arendorf TM</i> [1]	1,6%	-	0,6%	-	15,1%	0,8%	-	9,6%	2,5%	-	-	-	-
2	<i>Bessa CFN</i> [3]	9,08%	-	1,49%	0,91%	0,50%	0,82%	0,08%	0,74%	2,23%	6,11%	1,57%	2,56%	-
3	<i>Benevides dos Santos PJ</i> [2]	4,9%	-	27,3%	3,7%	-	0,2%	-	-	6%	-	0,9%	2,4%	-
4	<i>Crivelli MR</i> [5]	2,95%	-	-	-	1,41%	5,20%	3,54%	6,38%	1,41%	-	10,87%	-	-
5	<i>Espinosa-Zapata M</i> [6]	-	-	-	1,89%	-	-	-	-	-	-	-	-	1,20%
6	<i>Garcia Pola MJ</i> [7]	4,48%	16,02%	-	-	2,08%	1,6%	2,08%	-	12,17%	-	2,24%	1,12%	-
7	<i>Kleiman DV</i> [9]	0,60%	-	-	0,01%	-	0,78%	-	-	0,09%	-	1,23%	-	-
8	<i>Maiorana A</i> [10]	2,86%	-	-	-	-	-	-	-	-	-	-	-	-
9	<i>Sedano HO</i> [13]	1,98%	-	15,7%	-	0,83%	-	-	5,28%	-	-	-	-	-
10	<i>Shulman JD</i> [14]	1,05%	-	-	-	-	1,42%	-	-	-	1,89%	1,64%	-	-
11	<i>Vieira-Andrade RG</i> [15]	2,8%	23,8%	-	-	-	-	3,0%	-	-	-	-	14,4%	11,8%
12	<i>Yilmaz</i> [16]	2,68%	-	-	10,70%	-	-	1,00%	-	-	1,00%	0,67%	-	0,33%