



Oral Manifestations of Systemic Alterations in Early Childhood

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ABSTRACT

Aim: This study aimed to describe certain common oral manifestations during early childhood that should be known by the pediatric dental surgeon.

Background: The correct diagnosis and treatment of oral manifestations during early childhood is important for children's development. The pediatric dentist is responsible for maintaining oral health in children, since they change constantly during their development and growth.

Case report: Four cases of oral lesions are described, in which the diagnosis and related approach for each one is reported. The first was an acute primary herpetic gingivostomatitis, the second, pseudomembranous candidiasis, the third, chickenpox and the last was molluscum.

Conclusion: Professionals who treat children in this age group must be able to diagnose and treat common oral manifestations when necessary and should refer the child to a pediatrician for effective treatment if the presence of any systemic alteration is suspected.

Clinical significance: Pathognomonic signs of the most common oral manifestations in early childhood should be known by dentists to improve early diagnosis and proper management.

Keywords: Oral manifestations, Early childhood, Pediatric dentistry.

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BACKGROUND

In order to achieve and maintain oral health during early childhood, it is important for the pediatric dentist to know how to diagnose and treat oral manifestations in this age group when necessary and refer the child to a pediatrician for effective treatment, if the presence of any systemic

alteration is suspected. Thus, it is fundamental to understand the child in a dynamic manner, acknowledging the constant changes during his/her development and growth.¹⁻³

Primary herpetic gingivostomatitis acute infection is more frequent in the oral mucosa in children with herpes simplex virus type 1 (HSV-1) and rarely in type 2 (HSV-2).¹⁻³ Transmission occurs by direct or indirectly contact.^{1-3,5,6} In addition, body fluids or crusted lesions are an important transmission route.⁴ The clinical manifestations are preceded by nonspecific symptoms, such as nausea, headaches, irritability, fever and cervical adenopathy, which may last a few days.¹⁻³ The acute manifestation of the oral mucosa presents as red and enlarged, with numerous vesicles that rupture within 24 hours.⁷ The ulcers may coalesce to form larger ulcers¹ and gradually regress from 7 to 10 days, without leaving a scar.² Differential diagnosis includes erythema multiform and necrotizing ulcerative gingivitis.⁸

Candidiasis is caused by fungi that normally inhabit the oral cavity,^{9,11} presents with a white membrane composed of cellular debris, bacteria and fungi. The causative agent is *Candida* species, particularly *Candida albicans* or *Candida tropicalis*. Under certain conditions, this fungus presents the filamentous form (hyphae) in order to penetrate into the mucosa.^{10,11} Neonatal infection occurs by direct contact in the vaginal tract during birth. Pseudomembranous candidiasis is one of the most common, with a predilection for children with mild symptoms that are rarely painful.^{9,10} The diagnosis is obtained by clinical evaluation. It should be noted that the entire white patch must be removable.^{9,11,12}

Chickenpox is very common in children and a highly contagious disease caused by the varicella-zoster virus (VZV). The incubation period is approximately 2 weeks by direct transfer or indirectly through contaminated objects.¹³ The prodromal period is characterized by headache, pharyngitis, anorexia and fever in 80% of cases, followed

by vesicular eruptions on the skin. The rash starts on the trunk and spreads, involving the face, arms and legs. The vesicular rash evolves rapidly, turning into pustules that burst and form crusts. Primary manifestation in the oral mucosa is characterized by multiple small vesicles located mainly in the oral mucosa, palate and pharynx. The disease is self-limiting (2-3 weeks), with latency in the sensory ganglia manifested in the form of herpes zoster.¹⁴

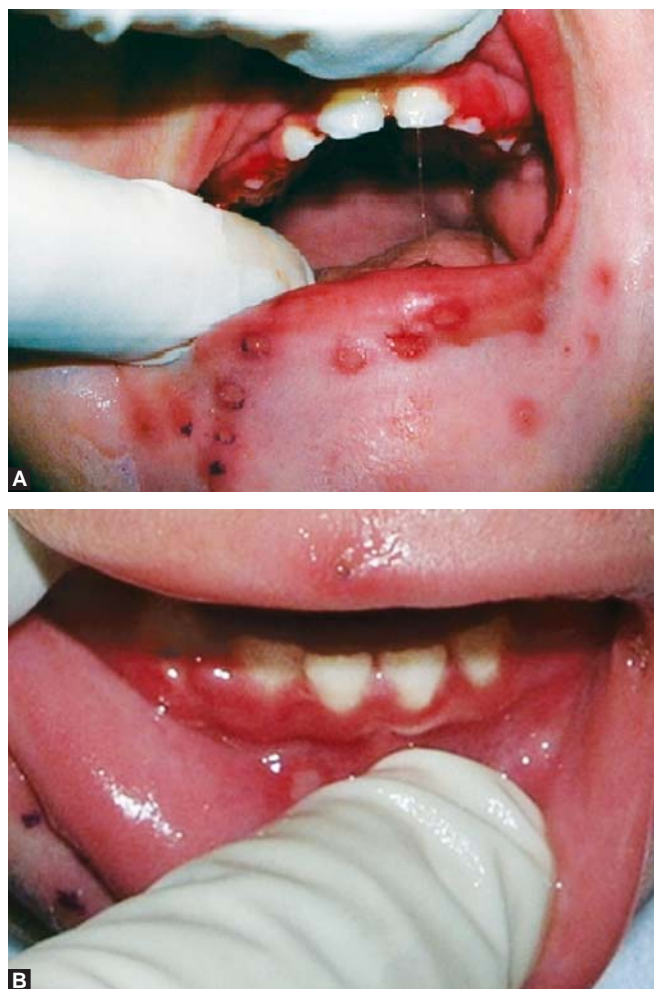
Molluscum contagiosum is a viral disease that affects the skin and mucous membranes throughout the body (except the palms and soles). It is caused by the *Molluscum contagiosum* molluscipoxvirus (MCV), which has four main subtypes (I-IV).¹⁵ Transmission occurs through direct contact with infected people or indirectly through contaminated objects.¹⁵⁻¹⁷ In children, it usually affects exposed parts of the body, like the face, arms and legs. Clinically, small, sessile, firm papules are observed that can be single or numerous, depending on the patient's immune status. The size varies from 1 to 2 mm, the lesions are self-limiting and may regress after 6 to 9 months or up to 5 years.¹⁸ Differential diagnosis should include aspergillosis, basal cell carcinoma, condyloma acuminatum, herpes and varicella.^{18,19}

The purpose of this study was to describe certain common oral alterations during early childhood that should be known to the pediatric dental surgeon.

CASE REPORT

A 14-month-old male baby presenting difficulty in feeding, fever and lack of appetite in the preceding 2 days. The extraoral examination revealed submental and submandibular lymphadenopathy, perioral and intraoral ulcerations, intense generalized gingivitis that bled following the slightest touch and ulcers on the tongue and mucous membranes, leading to a diagnosis of acute primary herpetic gingivostomatitis (Figs 1A and B). Treatment was directed toward relieving the acute symptoms and the child's mother was instructed to maintain fluid and food intake. Due to the acute pain, the mother was also oriented to improve oral hygiene, using a gauze moistened with hydrogen peroxide diluted with filtered water (1:4), combined with bicarbonate water,²⁰ in order to reduce the risk of secondary infection. Clinical improvement was observed in a week and complete resolution occurred in 10 days.

A 2-month-old baby boy presenting white plaques was observed disseminated throughout the oral cavity. Following oral hygiene using gauze soaked in 0.9% saline, reddish regions were observed. With the information obtained, a diagnosis of pseudomembranous candidiasis was made



Figs 1A and B: Acute primary herpetic gingivostomatitis

(Figs 2A and B). Treatment was based on oral hygiene with bicarbonate water,²⁰ three times a day for 10 days, and topical treatment with an antifungal drug (nystatin), five times a day for 10 days. The mother was informed about the risks of pacifier use and adequate breast hygiene and care. After 10 days of treatment was observed regression of signs.

A 36-month-old female child presented facial and buccal eruptions and fever during the preceding 3 days. The following day, some lesions appeared on the body. Small lesions were observed on the child's body and an extraoral examination revealed similar wounds in the perioral and intraoral regions as well as occasional mucosal and tongue ulcerations (Fig. 3). Chickenpox was diagnosed. Oral hygiene was emphasized during treatment. After 10 days, all the clinical symptoms were resolved.

A 36-month-old male child was attended following a complaint of a 'small ball in the corner of his mouth'. The presence of onychophagia was observed, together with similar lesions on the back and legs, which appeared after attending swimming lessons for about 3 months and which the child tried to remove with his fingernails. A pediatrician



Figs 2A and B: Pseudomembranous candidiasis



Fig. 3: Chicken pox



Fig. 4: Molluscum

DISCUSSION

Numerous studies have proven the importance of the dentist's participation during the diagnostic process of numerous systemic diseases, resulting in an overview of the patient's condition, since the initial manifestation of alterations can often occur in the oral cavity.^{12,15,19} Immunosuppression predisposes a child to candidiasis, recurring aphthous ulceration, periodontal disease, herpes simplex and glandular alterations, in agreement with the results observed in these four case reports.

The incidence of primary infection with HSV-1 increases after 6 months of age, peaking between 2 and 4 years old,³ though rarely before 6 months of age, as a result of the mother's circulating antibodies⁵ and the presence of lysine.²¹ In this case, primary herpetic gingivostomatitis was observed at 14 months. Rest is frequently recommended as well as antipyretics/analgesics to control fever and pain, in addition to fluid intake in order to prevent dehydration. In some cases, mild topical anesthetic, such as lidocaine viscous, before meals might be necessary.²²

Candidiasis is an opportunistic fungal infection that is more common in pediatric patients with systemic changes.²³ In poor socioeconomic conditions, the presence of angular cheilitis in children may result from malnutrition and folic acid, riboflavin and iron deficiencies.²⁴ Candidiasis is common in infants during periods of change in their dietary habits or prolonged use of antibiotics and steroids.^{9,10,23} In addition to the mouth, the lesions may extend to the pharynx and lungs, with fatal consequences.^{10,22} When symptoms remission does not occur or the patient's immune system is compromised, the use of systemic antifungal medications is necessary.²⁵ In this case, topical treatment and advice regarding oral hygiene were proposed.

diagnosed the lesions as molluscum (Fig. 4). The mother was oriented that the labial lesion was probably caused by self-contamination by biting the contaminated nail. The pediatrician suggested that the labial lesion could be removed surgically or they could await regression. The mother chose the second option.

Regarding chickenpox, the diagnosis can usually be made based on the history of exposure to VZV during the preceding 3 weeks and the presence of the characteristic skin rash.^{13,14} The treatment depends on the reaction of the patient's immune system. The use of aspirin as a fever suppressant with chickenpox can contribute to Reye's syndrome (severe metabolic encephalopathy)²⁶ and acetaminophen is the drug of choice. The child had been vaccinated previously and showed minimal symptoms.

Molluscum lesions are very common in children who attend swimming pools^{15,17} and can be transmitted by autoinoculation, as in our case, in which the child presented onychophagia. In general, these lesions are asymptomatic, similar to the present case; however, some cases present itching and/or eczema.^{15,16} Depending on the patient's clinical status, the lesions can be removed surgically with cryotherapy, chemically^{15,16} or by laser surgical treatment.¹⁸ When the patient's immune response is normal, the lesions spontaneously regress,¹⁵⁻¹⁷ as occurred in this case.

CLINICAL SIGNIFICANCE

Pathognomonic signs of the most common oral manifestations in early childhood should be known by dentists to improve early diagnosis and treatment.

CONCLUSION

Professionals who treat children in this age group must be able to diagnose and treat oral manifestations when necessary and should refer the child to a pediatrician for effective treatment if the presence of any systemic alteration is suspected.

REFERENCES

1. Reibel J, Kragelund C. Infections of the oral mucosa. *Ugeskr Laeger* 2010; 1;172(44):3023-26.
2. Slezák R, Buchta V, Förstl M, Prásil P, Sustová Z, Bukac J. Infections of the oral mucosa caused by herpes simplex virus. *Klin Mikrobiol Infekc Lek* 2009;15(4):131-37.
3. Lagnese M, Daar ES, Christenson P, Rieg G. Herpes simplex virus type 2 seroprevalence and incidence in acute and chronic HIV-1 infection. *Int J STD AIDS* 2011;22(8):463-64.
4. Guinan ME, Wolinsky SM, Reichman RC. Epidemiology of genital herpes simplex virus infection. *Epidemiol Rev* 1985;7:127-46.
5. Shobhana A, Guha SK, Neogi DK. Mucocutaneous manifestations of HIV infection. *Indian J Dermatol Venereol Leprol* 2004;70(2):82-86.
6. Roxby AC, Drake AL, John-Stewart G, Brown ER, Matemo D, Otieno PA, et al. Herpes simplex virus type 2, genital ulcers and HIV-1 disease progression in postpartum women. *PLoS One* 2011;6(5):e19947.
7. Bessa CFN, Santos BPJ, Aguiar MCF, Carmo MAV. Prevalence of oral mucosal alterations in children from 0 to 12 years-old. *J Oral Pathol Med* 2004; 33:17-22.
8. Meylan P. Herpes simplex virus infections, an update for the practitioner. *Rev Med Suisse* 2011;7(292):886-88, 890-93.
9. Domaneschi C, Massarente DB, de Freitas RS, de Sousa Marques HH, Paula CR, Migliari DA, et al. Oral colonization by *Candida* species in AIDS pediatric patients. *Oral Dis* 2011;17(4):393-98.
10. Mattos-Graner RO, Moraes AB, Rontani RMP, Birman EG. Relation of oral yeast infection in Brazilian infants and use of a pacifier. *ASDC J Dent Child* 2001;68(1):33-36.
11. Akdeniz BG, Koparal E, Sem BH, Ates M, Denizni AA. Prevalence of *Candida albicans* in oral cavities and root canals of children. *ASDC J Dent Child* 2002;69(3):289-92.
12. Bosco VL, Birman EG. Oral manifestations in children with AIDS and in controls. *Pesqui Odontol Bras* 2002;16(1):7-11.
13. Brincks LF, Sato HK, Oselka GW. Varicella vaccines and measles, mumps, rubella, and varicella vaccine. *J Pediatr* 2006;82(3 Suppl):S101-08.
14. American Academy of Pediatrics, Committee on infectious diseases. In: Peter G (Ed). *Red Book. Report of the committee on infectious disease* (24th ed). Elk Grove Village: American Academy of Pediatrics 2003.
15. Pérez VM F, Mata M, Vielma H, Oliver M. Molusco contagioso en labio, presentación inusual: Reporte de un caso. *Acta Odontol Venez* 2000;38(3):36-38.
16. Carvalho ES, Martins RM. Varicela, vacina, imunossupressão, infecção hospitalar, síndrome de imunodeficiência adquirida. *J Pediatr* 1999;75 (Supl 1):126-34.
17. Santos-Anaya R, Beltrán-Grados G. Molusco Contagioso: Presentación como Quiste Epidérmico. *Dermatología Peruana* 2001;11(1):43-45.
18. Bhatia A, Forman S, Rowe D, Orenstein R, Nunley JR. Molluscum contagiosum. *Emedicine from webMD*. 2005 Oct 21 [cited: 2007 Nov 27]. Available from: <http://www.emedicine.com/med/topic1491.htm>
19. Guerra ME, Tovar V, Garrido E, Carvajal A. Lesiones Bucales y Estado Inmunológico en Niños VHI/SIDA. *Acta odontol venez* 2007;45(2):225-28.
20. Fox EC. The problem of oral ulcers in general practice. *Munch Med Wochenschr* 1968;110(51):2985-92.
21. Liang Y, Vogel JL, Narayanan A, Peng H, Kristie TM. Inhibition of the histone demethylase LSD1 blocks alpha-herpesvirus lytic replication and reactivation from latency. *Nat Med* 2009;15(11):1312-17.
22. James SH, Whitley RJ. Treatment of herpes simplex virus infections in pediatric patients: Current status and future needs. *Clin Pharmacol Ther* 2010;88(5):720-24.
23. Rwenyonyi CM, Kutesa A, Muwazi L, Okullo I, Kasangaki A, Kekitinwa A. Oral manifestations in HIV/AIDS-infected children. *Eur J Dent* 2011;5(3):291-98.
24. Arendorf T, Van der Ross R. Oral soft tissue lesions in a black pre-school South African population Community. *Dent Oral Epidemiol* 1996;24:296-97.
25. Collins CD, Cookinham S, Smith J. Management of oropharyngeal candidiasis with localized oral miconazole therapy: Efficacy, safety, and patient acceptability. *Patient Prefer Adherence* 2011;5:369-74.
26. Garcia FD. Ácido acetyl salicílico y Síndrome de Reye. *Rev Cubana Farm* 1998;32:140-42.

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