ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 10, Issue, 01, pp. 33446-33449, January, 2020

RESEARCH ARTICLE OPEN ACCESS

PREVALENCE OF ORAL ALTERATIONS IN NEWBORNS OF PALMAS (BRAZIL)

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ARTICLE INFO

Article History:
Received 18th October, 2019
Received in revised form
06th November, 2019
Accepted 22nd December, 2019
Published online 31st January, 2020

Key Words:

Newborn, Oral manifestations, Pediatric dentistry, Maternity

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ABSTRACT

The aim of this study was to verify the prevalence of oral alterations in newborns and the treatments indicated. It was cross-sectional research, retrospective, that analyzed 9390 of newborns records in the Maternity and Intensive Unit of the Hospital and Maternity Dona Regina (HMDR) in the city of Palmas, Tocantins state, Brazil. Data were collected by a single examiner. In 2016 and 2017 the largest oral alteration found was: Epstein pearl (535), followed by Bonh Nodule (1669), the altered labial frenulum (1621) and ankyloglossia (1405). Records of surgical procedures were found, frenectomy in 797 newborns and natal teeth were removed (12). The oral anomalies in infants are not uncommon, inclusion cysts were the most common alterations of the oral cavity, the prevalence of ankyloglossia was above the indices found in the literature and frenectomies procedures were high. The HDR team did not present data on the indication of lip frenotomy surgery, and the prevalence of natal teeth was rare.

Citation: ***Rise ConsolaçãoIuata Rank, Ana ClaraSilva Cardoso, Juliana Batista Da Silva et al.*** **2020.** "Prevalence of oral alterations in newborns of palmas (Brazil)*", International Journal of Development Research*, 10, (01), 33446-33449.

INTRODUCTION

The mouth has its own characteristics and it is in constant growth, being in a very dynamic relationship with other systems organs at different stages of development (Sharma, 2013). The oral cavity of babies requires special attention because many oral aspects are unique and peculiar in this period of life, presenting characteristics of transient anatomical structures, in addition to a variety of developmental changes and pathologies inherent to this age group (Abanto *et al*., 2009). Although most of the mentioned lesions in the literature are benign lesions, which do not correlate systemic diseases, it is also believed that lesions of the oral mucosa may be a sign of systemic or dermatological disease in babies. The routine examination of the oral mucosa should be part of the pediatric examination (Pérez *et al*., 2013). Clinical aspects, symptomatic reports and the history of injury are fundamental for safe diagnosis.

Clinical examinations should follow an order to examine each anatomical structure of the oral cavity in detail (Friend *et al*., 1990). In the case of congenital oral alterations in babies, the most frequent are: cysts of the dental lamina like Bohn nodules and Epstein pearls, natal and neonatal teeth, cleft palate fissures, micrognathia, alterations associated with the tongue, between others (Flinck *et al*., 1994). Regarding these congenital alterations, clinical follow-up is necessary because some children with ankyloglossia cannot breastfeed properly, the option should be surgical intervention (Ingram *et al*., 2015). Dixon *et al*., (2018) stated that when detecting the type of alterations of the lingual frenulum, some may be corrected with myofunctional therapy, and surgery was not required in all cases. The aim of this study was to verify the prevalence of the most common oral alterations in newborns of the Hospital and Maternity Dona Regina (HMDR), according to the records control by health professionals from 2016 to 2017, relating to gender and procedures performed.

MATERIALS AND METHODS

This is a retrospective research, documentary analytical cross-sectional, at the HMDR in the Palmas city, state of Tocantins, Brazil. This study was approved by the Ethics Committee on Human Research of the Lutheran University Center of Palmas (Ceulp/Ulbra) 83148517.2.0000.5516. Palmas has a total area of 2219 km^2, is located in the geographical coordinates 10◦ 11' 04" South, 48◦ 20' 01" west, and parallel 10 South, the Meridian 48 West pass through the territory of the municipality. The HMDR is considered a reference hospital for the Health micro-region called Golden Grass, which covers 14 municipalities of the Tocantins state. There is an average of 15 children born per day in this hospital, and according to Brazilian Institute of Geography and Statistics (2009), the mortality rate is 9.88 deaths per thousand live births. For the present study, all individual medical records of the electronic database of the Joint Maternity Accommodation (ALCON) and in the Intensive Care Unit (ICU) were analyzed, including both genders from January 2016 to December 2017. The consultations were performed in a multidisciplinary manner by physicians, dentists and speech therapists at the birth of the child. Thus, all medical records were evaluated by the team, verifying the main oral alterations found in babies, and gender was also verified, whether there was some type of treatment and/or procedure. The data in this study were recorded, tabulated in Microsoft's Excel program and submitted to statistical analysis using the Chi-square test ($p < 0.05$) to compare the variables gender of the newborn and treatments performed.

RESULTS

Of 9390 medical records analyzed, 4508 (48%) there was a record of some oral alteration. The types of alterations presented in this study were the five most found, in several cases, there was a record of more than one change in the same child. In 2016 (Table 1) no data was obtained in August, September, and October in maternity due to renovation in the building. In the ICU, only seven months were recorded in the file because the others were incomplete, and they were excluded (Table 2). Data from the medical records of newborns in Maternity and ICU demonstrated that in 2016 the most common oral alterations were Epstein Pearls (2,184) followed by Bonh Nodule (738). Frenectomies were performed in 300 newborns and 7 natal teeth were found. Male birth exceeded females, but the statistical difference in the sexes on Maternity and ICU was not significant (*p= 0.71 and p= 0.36*). Ankyloglossia showed a high percentage (15%) in 2016 when observing the data and the frenectomy was indicated in 52.5% of the tongue alterations in the newborns, but the relation of ankyloglossia and frenectomy was not statistically significant (*p= 0.59*). In 2016, the percentage value of ankyloglossia that was indicated for surgery showed that in maternity care it was 52% and in the IU a total of 55%. In 2017, it was possible to collect the data for all months of maternity and intensive care. When adding the data of maternity and ICU (Tables 3 and 4), it was observed that the order of oral alterations found was similar to the year 2016: Epstein Pearl (3451), followed by Bonh Nodule (983), Altered labial frenulum (930), ankyloglossia (837), neonatal teeth (16) and the frenectomy procedure was done in 491 newborns. The birth of males exceeded females but was not statistically different in Maternity (p= 0.99) or ICU (p= 0.99). The total of ankyloglossia in 2017 was 14.5%, and frenectomy was indicated in 58.6% of the tongue alterations in newborns.

Table 1. Monthly distribution of alterations found in the Maternity records (2016)

MATERNITY HMDR (2016)	Jan	Feb	Mar	Apr	May	Jun	Jul	Nov	Dec	Total		P- value
										n	%	
Female	117	195	194	186	211	174	191	177	177	1622	48%	0,71
Male	112	186	195	218	233	209	211	202	206	1772	52%	
Total	229	381	389	404	444	383	402	379	383	3394	100%	
Epstein Pearls	130	239	228	230	258	223	253	215	221	1997	58%	
Bonh Nodule	63	77	77	90	113	84	73	62	55	694	20%	
Labial Fenulum	37	60	56	78	92	60	82	72	85	622	18%	
Natal teeth	1	0	0	0	0	1	1	0	2	5	01%	
Ankyloglossia	46	60	44	55	58	63	60	69	61	516	15%	
Total	277	436	405	453	521	431	460	418	424	3834	100%	0,59
Frenectomy	23	27	25	26	22	27	34	47	40	271	8%	

*Chi-square test with a significance level of p<0.05

Table 2. Monthly distribution of alterations found in the Intensive Care Unit (2016)

ICU – HMDR (2016))	Jan	Apr	May	Jun	Jul	Nov	Dec	Total		P- value
								n	%	
Female	2	13	17	14	12	34	20	112	45%	0,36
Male	2	20	28	24	16	25	21	136	55%	
Total	4	33	45	38	28	59	41	248	100%	
Epstein Pearls	2	25	33	26	25	40	36	187	53%	
Bonh Nodule	6	2	13	8	2	8	5	44	12%	
Labial Fenulum	1	10	14	2	6	23	13	69	19%	
Natal teeth	0	0	0	0	2	0	0	2	0,5%	
Ankyloglossia	5	12	7	5	7	9	7	52	15%	
Total	14	49	67	41	42	80	61	354	100%	0,083
Frenectomy	2	0	10	5	5	5	2	29	8%	

*Chi-square test with a significance level of p<0.05

The ankyloglossia and frenectomy ratio was not statistically significant in the Intensive Care Unit (p= 99) but was significant in the maternity of HDR (p> 0.001). In 2017, the percentage value of ankyloglossia that was indicated for surgery showed that in maternity care it was 56% and in the ICU a total of 95%.

Table 3. Monthly distribution of alterations found in the Maternity records (2017)

MATERNITY HMDR (2016)	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Set	Out	Nov	Dec	Total		P- value
													n	%	
Female	165	183	210	187	208	186	220	207	209	188	180	192	2335	48%	0,99
Male	209	181	202	237	219	234	226	223	175	210	219	234	2569	52%	
Total	374	364	412	424	427	420	446	430	384	398	399	426	4904	100%	
Epstein Pearls	212	211	226	249	259	217	257	263	222	227	234	269	2846	58%	
Bonh Nodule	62	50	60	64	78	100	73	75	66	77	53	54	812	16%	
Labial Fenulum	68	56	56	65	67	65	72	78	52	73	70	43	765	16%	
Natal teeth	0	4	0	2	1	1	0	2	0	1	0	0	11	0,2%	
Ankyloglossia	73	52	51	71	72	73	72	57	72	72	76	56	797	16%	
Total	415	373	393	451	477	456	474	475	412	450	433	422	5228	100%	>0,001*
Frenectomy	47	1	36	38	41	47	41	45	42	39	47	29	453	9%	

*Chi-square test with a significance level of p<0.05

Table 4. Monthly distribution of alterations found in the Intensive Care Unit (2017)

ICU - HMDR (2017)	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Set	Out	Nov	Dec	Total		P- value
													n	%	
Female	19	21	37	32	62	69	28	50	47	41	20	19	445	53%	0,998
Male	16	14	33	29	59	57	26	46	42	35	20	22	339	47%	
Total	35	35	70	61	121	126	54	96	89	76	40	41	844	100%	
Epstein Pearls	27	26	45	44	81	97	36	70	61	60	35	23	605	72%	
Bonh Nodule	7	9	16	13	41	17	9	17	19	12	6	5	171	17%	
Labial Fenulum	10	16	19	17	30	17	12	14	14	7	4	5	165	19%	
Natal teeth	0	0	0	3	0	0	0	0	0	1	0	1	5	0,5%	
Ankyloglossia	2	1	2	5	5	4	4	6	3	6	2	0	40	5%	
Total	46	52	82	82	157	135	61	107	97	86	47	34	986	100%	0,99
Frenectomy	1	1	2	7	5	4	3	4	3	6	2	0	38	4%	

*Chi-square test with a significance level of p<0.05

DISCUSSION

The present study demonstrated a high prevalence of oral alterations in Maternity and ICU from 2016 - 2017, in which the most common was the cyst of inclusion of the oral mucosa, with a higher prevalence of Epstein Pearls and Bohn nodules. These results agree with the literature, in which the prevalence ranges from 46% to 99% (Sharma, 2013). Donley and Nelson (2000) verified the cause of the high frequency of cysts in newborns, and state that cysts are rarely observed after three months of age. They realized that the prevalence of alveolar cyst increases with the highest gestational age, postnatal age and birth weight. Gingival cysts appear as small multiple lesions, nodular, white to yellowish in the maxilla and random of the newborns are considered benign without gender predilection (Donley and Nelson, 2000; Moda, 2011). In the present study, cysts of the oral mucosa were defined in terms of appearance and location. Epstein Pearls are retained, clinically asymptomatic epithelial remains and appear as nodules in the middle palatine raphe region or along the fusion line, with a prevalence of 65% (Karim *et al*., 2019). Bohn Nodules are probably derived from the structures of the palatine salivary gland, commonly appear with several nodules along the alveolar junction and soft palate (Navas *et al*., 2010), and their prevalence ranges from 25% 4 to 53% (Karim *et al*., 2019). Most oral alterations in newborns are benign, requiring no specific treatment (Abanto *et al*., 2009). The HMDR has a multidisciplinary team in maternity and IU composed of a dentist, speech therapist and pediatrician who assesses the conditions of the oral cavity in the newborn since childbirth making the medical record online and offline, these data allowed this study to be carried out. Although it seems simple, the newborn's oral cavity has its complexities, since the mouth must be fully functioning to perform activities such as sucking, swallowing and breathing (Ranly, 1998). In newborns when the cases of persistent lip frenulum are difficult or prevent good lip sealing during breastfeeding, surgery should also be indicated (Abanto *et al*., 2009). However, this study found no records of surgical performance on the labial frenulum. Ankyloglossia limits lingual movements making it difficult to suction and swallow, preventing the newborn from feeding properly. Thus, when ankyloglos-sia is diagnosed, in many cases immediate frenotomy is indicated (Zhu *et al*., 2017). The HMDR has been using bristol protocol since 2017 to diagnose the ankyloglossia. This study demonstrated that the frequency of surgeries performed in newborns was high because most cases of ankyloglossia were indicated to receive the surgical procedure. In February there was a reduction in the frenotomy procedures on the maternity ward with a significant result in 2017, but in the same period, there was an increase in the percentage of surgeries in the ICU, reaching a percentage over 90%. However, the Canadian health medicines and technology agency - CA DTH (2016) shows uncertainty about the benefits of surgical correction of ankyloglossia. Dixon *et al*. (2018) stated that when detecting the type of alterations of the lingual frenulum, some of them may be corrected with myofunctional therapy, and surgery is not required in all cases. In the literature, data on the prevalence of ankyloglossia vary on average from 1% to 10.7% (Forlenza *et al*., 2010), with other quantitative studies in which the prevalence in Spain reached 12%, between 2 and 3 times higher than expected, which could be 4% (Jiménez et al., 2014). The incidence of ankyloglossia is also exposed by Joseph (2004), in a study conducted in Canada, in which 459,445 live births obtained 3,022 cases of this change between 2004 and 2013. The study showed that the population incidence of ankyloglossia increased by 70% (rate ratio 1.70, confidence interval of 95%; CI from 1.44-2.01), from 5.0 per 1000 live births in 2004 to 8.4 per 1000 in 2013. However, the present research surpassed these statistical data, since in Palmas the percentage of 15% was found in 2016 and 14.7% in2017.The present study did not verify a significant association of oral alterations in relation to gender. The only ankyloglossia showed a higher occurrence for males of 2:1,

agreeing with other studies, in which embryological anatomical alteration usually affects men more than women in a ratio of 3:1(Friend et al., 1990; Han et al., 2012).With this information, it is suggested that the positive result of males comes from a dominant autosomal disorder, through the X chromosome (Han et al., 2012).The intraoral characteristic most commonly found in the study of Chandler (2018), was the fibrous cord of Magitot, however, the presence of it was considered a normal anatomical characteristic of the newborn by the HMDR team, so there is no record of presence or absence of it. Of the 23 cases of natal teeth found,12 teeth were removed for safety reasons, because the elements were mobility and the others were indicted forcontrol by a pediatric dentist. The prevalence of the natal teeth of this study was low (0.2%), it is according to authors who consider a rare alteration and that if this tooth presents mobility, there is a risk of aspiration by the newborn, and the exodontia should be indicated(Friend et al., 1990;Leung et al., 2006; Wang et al., 2016).According to Singh (2012), visits to the dentist should stilltakeplaceinthematernityward,orinthefirstyearofthechild'slifesothatparentsreceive the first educational information in oral health. It is important to explain to parents about the alterations and abnormalities that can be found in the oral cavity of babies (Chandler et al., 2018). The multidisciplinary HMDR team guided parents about the changes, and also when surgical procedures wereneeded.Although the data of newborns were available to the study, the limitations found were concentrated in two main situations: the accounting of medical records for a few months that were missing due to situations of reforms in the structure that compromised some online files, and also because hospital staff hadnotbeencalibratedtoperformthesemedicalrecords,soseveralfactorssuchasthetechnicalandpracticalexperienceofprofessionals mayhaveinterfered in this study. In addition, intraoral findings in newborns associated with neonatal and parental variables, these associations may be better examined in future studies.Basedonthedatafromthenewborns'medicalrecordsexaminedinHMDR,thefollowingconclusionsweredrawn:inclusioncystswerethemostcommon alterations of the oral cavity, the prevalence of ankyloglossia was above the indices found in the literature and the frequency of indication of frenotomy for ankyloglossiawasabove50%.TheHMDRteamdidnotpresentdataonanindicationoflipfrenotomysurgeryandtheprevalenceofnatalteethwasrare.

REFERENCES

Abanto J, Raggio DP, Alves FBT, Corrêa FNP, Bönecker M, Corrêa MSNP. 2009. Oral characteristics of newborns: report of some oral anomalies and their treatment. *Int J Dent.* 8(3):140-145

Brazilian Institute of Geography and Statistics-IBGE [Internet]. [cited 20 of December de 2019]. Available in: https://cidades.ibge.gov.br/brasil/to/palmas/pesquisa/39/30279.

Chandler CL, Azevedo ID, Junior MFS, Lopes JM, Gordón-Núñez MA, Pereira SA. 2018. Intraoral findings in newborns: prevalence and associated factors. *Brazilian Journal of Oral Sciences.* 17: e181344. 1-11.

Dixon B, Gray J, Elliot N, Shand B, Lynn A. 2018. A multifaceted program to reduce the rate of tongue-tie release surgery in newborn infants: Observational study. *International Journal of Pediatric Otorhinolaryngology*. 113, 156-163.

Donley CL, Nelson LP. 2000. Comparison of palatal and alveolar cysts of the newborn in premature and full-term infants. *Pediatric dentistry*. 22(4), 321-324.

Flinck A, Paludan A, Matsson L, Holm AK, Axelsson I. 1994. Oral findings in a group of newborn Swedish children. *International journal of paediatric dentistry*. 4(2):67-73.

Forlenza GP, Black NMP, McNamara EG, Sullivan SE. 2010. Ankyloglossia, Exclusive Breastfeeding, and Failure to Thrive. Pediatrics. 125(6):1500-1504.

Frenectomy for the Correction of Ankyloglossia: A Review of Clinical Effectiveness and Guidelines [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2016. Available from: https://www.ncbi.nlm.nih.gov/books/NBK373454.

Friend GW, Harris EF, Mincer HH, Fong TL, Carruth KR. 1990.Oral anomalies in the neonate, by race and gender, in an urban setting. *Pediatr Dent.* 12(3):157-161.

Han SH, Kim MC, Choi YS, Lim JS, Han KT. 2012. A Study on the Genetic Inheritance of Ankyloglossia Based on Pedigree Analysis. *Arch Plast Surg*. 39(4):329-332.

Ingram J, Johnson D, Copeland M, Churchill C, Taylor H, & Emond A. 2015. The development of a tongue assessment tool to assist with tongue-tie. *Archives of Disease in Childhood-Fetal and Neonatal Edition*. 100(4): F344-F349.

Jiménez DG, Romero MC, Galán IR, Martínez MG, Pando MR, & Prieto CL. 2014. Prevalence of ankyloglossia in newborns in Asturias (Spain). Anales de Pediatría. 81(2):115-119.

Joseph KS, Kinniburgh B, Metcalfe A, Razaz N, Sabr Y, Lisonkova S. 2016. Temporal trends in ankyloglossia and frenotomy in British Columbia, Canada, 2004-2013: a population-based study. CMAJ Open. 4(1):33-40.

Karim BA, Malik M, Laller S, Kumar S. 2019. A rare case of dental lamina cysts in newborn. *RevistaInternacional de PesquisaCientífica.* 8(1).

Leung AKC, Robson WLM. 2006. Natal teeth: a review. *Journal of the National Medical Association*. 98(2): 226–228.

Moda A. 2011. Gingival cyst of the newborn. *International Journal of Clinical Pediatric Dentistry.* 4(1): 83-84.

Navas RMA, Mendoza MGM, Leonardo MR, Da Silva RAB, Herrera HW, Herrera HP. 2010. Congenital eruption cyst: a case report. *Brazilian Dental Journal.* 21(3):259-262.

Patil S, Rao RS, Majumdar B, Jafer M, Maralingannavar M, Sukumaran A. 2016. Oral Lesions in Neonates. *Int J Clin Pediatr Dent.* 9(2):131-138.

Pérez MM, Robles Andrade MS, Guerrero Sierra C. 2014.Alteracionesbucales del reciénnacido. Revista de la *Asociación Dental Mexicana*.71(3):115-119.

Ranly DM. 1998. Early orofacial development. The Journal of clinical pediatric dentistry. 22(4):267-275

Sharma A. 2013. Non-syndromic multiple erupted natal teeth with gingival swelling: a rare case report. *Arch Oral Sci Res.*3(1):56–64.

Singh RK, Kumar R, Pandey RK, Singh K. 2012. Dental lamina cysts in a newborn infant. *BMJ Case Reports.* DOI:10.1136/bcr-2012-007061.

Wang CH, Lin YT, Lin YJ. 2016. A survey of natal and neonatal teeth in newborn infants. *Journal of the Formosan Medical Association.* 20:1-4.

Zhu XJ, Yuan X, Wang M, FangY, Liu Y, Zhang X, *et al*. (2017). A Wnt/Notch/Pax7 signaling network supports tissue integrity in tongue development. *Journal of Biological Chemistry.* 292(22): 9409-9419.

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