

Mouth Breather Diagnosis Considerations-A Critical Review

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Abstract

Introduction: The habit of oral respirator is characterized by the deleterious act of breathing through the mouth. It Is induced by anatomical alterations that cause respiratory disturbances inducing the affected children to use the oral route to breathe.

Objective: This study aimed to perform a critical review of part of the literature to explain the mechanisms of oral respirator diagnosis, as well as the importance of it.

Methods: We arbitrarily selected 30 relevant articles on the topic approached from the databases PUBMED/MEDLINE, SCIELO and LILACS, and extracted the main information for the production of this review.

Results: Mouth breathing occurs by narrowing or obstruction of the airways that prevent the passage of air, causing the individual to breathe through the mouth. Hypertrophy of the tonsils and adenoids are common causes, being frequently diagnosed in children between 4 and 11 years of age. The habit of mouth breathing presents clinical manifestations peculiar to it, which imply biological, physiological, orthopedic and aesthetic alterations.

Conclusion: For this, it is necessary that a multidisciplinary team perform the diagnosis and treatment. Therefore, it is essential that the dentist has the clinical knowledge for the management of the diagnosis and treatment of the oral respirator for the best quality of life of the patient.

Keywords: Oral respirator; Diagnosis; Maxillofacial development; Nasal obstruction

Introduction

Nasal breathing is a vital act for humans [1]. It represents an important factor for the development and functioning of the oral cavity, as well as all facial bone formation. Obstruction or congestion of the upper respiratory tract may negatively affect the nasal breathing pattern, which is considered the correct pattern. The change of nasal breathing to the mouth can promote serious clinical consequences in the development of craniofacial anomalies and malocclusions [2-4].

The deleterious habit of mouth breathing can cause a series of morphological and functional alterations in the stomatognathic system and in the whole organism in general. Alterations in speech, posture, shape of the dental arches, position of teeth and alterations in the

facial pattern of the individual are some of the deformities that may occur [5].

Mouth breathing has a high prevalence, about 59% in children between 4 and 11 years of age [6] and can be extended until adolescence [7]. Its most common etiology is adenoid hypertrophy [4,8], with tonsils hypertrophy, nasal septum deviation and inferior turbinate hypertrophy can also cause a significant obstruction and promote the habit of breathing through the mouth [9].

The main clinical manifestations of mouth breathing appear in the craniofacial structures. The physical characteristics most present are: elongated face, drooping eyes, dark circles, narrow nostrils, inadequate lip sealing with resected and hypotonic lips, narrow upper lip, anterior open bite and ogival palate [6].

Oral alterations include: masticatory deficiency and decreased tongue pressure [10,11], a state of poor oral health with presence of active caries and gingivitis [12], besides being more common to have class II malocclusion, division 1 of Angle [13].

The clinical diagnosis of mouth breathing should aggregate the results of a visual evaluation, wellperformed anamnesis and respiratory tests. There is no standardization for the clinical recognition of oral breathing by dental surgeons, the most commonly performed procedures are inefficient to recognize the difference between mouth breathing by habit and obstruction [14].

Due to the variety of systemic alterations found in the mouth breathing child, the diagnosis and early treatment of a multidisciplinary team is of great importance. Since mouth breathing can influence in the full postural, facial, occlusal development and also in the quality of life of individuals presenting this breathing pattern, the aim of this study was to conduct a critical review the main clinical features and methods for the diagnosis of mouth breathing patients.

Methods

This study is a critical review of the literature, which are ample publications appropriate to describe and discuss the development of a particular subject, from a theoretical or contextual point of view. They constitute, basically, analysis of literature published in books, articles of printed and electronic magazines, in the interpretation and personal critical analysis of the author [15,16].

The electronic bases researched were LILACS (Latin American and Caribbean Literature on Health Sciences). International Literature in Health Sciences (PubMed/MEDLINE) and SCIELO (The Scientific Electronic Library Online). In the PubMed/MEDLINE and SCIELO databases, key words were used in english, while in LILACS, keywords were used in portuguese and english. The coverage period was between january 2013 and october 2018. In addition, other references from the articles raised were also checked and some articles published before 1999 were included according to their relevance in terms of definitions.

For the search of the articles, we used the descriptors standardized by the descriptors in health sciences, namely: mouth breathing, diagnosis, maxillofacial development, nasal obstruction. To refine the search, these combinations were added to the terms, classification, diagnostic techniques for the mouth breathing patient.

The titles and abstracts of all articles identified in the electronic search were revised. The studies that fulfilled the criteria for inclusion were obtained in full. Based on this action, a list of articles was created to be included in the study. The abstracts were compiled and directed according to the objectives for the construction of the article. The inclusion criteria were: research articles, case studies and systematic reviews that showed a proven relevance above the theme of choice.

Results

Among the articles selected in the PubMed/MEDLINE database, in the period between 2013 and 2018, 23 articles were identified that fulfilled the inclusion criteria and 13 were selected. In the total of 13 articles, 6 were found in the LILACS database and 11 in SCIELO, totalling 30 articles that fulfilled the inclusion criteria.

The main reasons for excluding the articles were: they did not directly address the method of diagnosis of the mouth breathing patient, 14 of the studies presented transversal design, 6 of retrospective data analysis, both with quantitative approach and 10 Studies have a crosssectional design with a qualitative approach.

Studies originating from the five continents were found, with emphasis on north american, brazilian and european publications. In relation to Brazil, studies of case reports on the diagnosis of mouth breathing patients were highlighted.

Discussion

Breathing is a vital function of our organism. Through it the air, rich in oxygen, is inspired, reaches the lungs and occurs the gas exchange, resulting as a final product the carbon dioxide [16].

When born, by a natural instinct and favoured by the morphology of the stomatognathic system, breathing tends to be exclusively by the nose, because the oral cavity is small, mostly taken by the tongue, which makes breathing difficult through the mouth. During breastfeeding in the correct way, the baby is unable to breathe through the mouth, since her lip will be totally in contact with the mother's breast, resulting in sealing of the oral cavity that prevents the passage of air and allows a suction and swallowing effectively [17].

According to Fujimoto, et al. mouth breathing is a consequence of some form of impediment to breathing through the nose. This impediment may be due to an anatomical predisposition or some problem acquired throughout development such as allergic problems, adenoid hypertrophy, tonsils hypertrophy, turbinate hypertrophy, nasal polyposis, nasal trauma, tumors nasal cavity and rhinopharynx, deleterious buccal habits, generalized muscular hypotonicity and others [18]. Among the obstacles to a proper nasal breathing, the main cause is allergic rhinitis that generates a sensation of discomfort and difficulty in nasal breathing, consequently leading to compensation of this breathing by the oral route [19].

The harmonic development of the face of an individual mouth respirator does not occur. Nasal breathing causes an asymmetric development of the maxillary bones, as well as the dysfunction of the entire intra-and perioral musculature. As you can see, despite not being able to debelate the problem alone, undoubtedly the dentist becomes one of the fundamental parts for its correct and early diagnosis, and it should be known the various characteristics that the patient oral respirator can present up to puberty as the pale and elongated face (dolichofacial), separate and resected lips, short upper lip, everted lower lip, narrowed nose, dark circles, biofilm accumulation on upper incisors, chronic gingivitis, ogival palate, dental malocclusions, interposition of the lower lip between the lower and upper incisors, loss of space providing incorrect dental irruptions, accentuated curve of Spee, tongue keeping constantly moist the resected lips, phonation altered among several others [19].

For Abreu, et al. mouth breathing provides the individual with a series of postural alterations in order to facilitate the passage of air through the mouth. Among the most frequent alterations we can highlight the anteriorization of the neck and nape, shoulders inclined forward, forward and tilt of the head forward, and by virtue of these alterations to keep the balance of the body other alterations occur as more open and distant feet and arms in a more posteriorized position [20].

The effective diagnosis of an individual oral respirator must follow some criteria of analysis, highlighting a careful anamnesis where information on history of allergies, habits, quality of sleep, etc. A well-done clinical examination is also essential. In this evaluation, postural characteristics, muscle tone and facial alterations should be observed. In the clinical evaluation, it is also the intraoral evaluation where it is necessary to observe the presence or absence of crossbite, aspect of the ogival palate, whether deep or not, presence or lack of labial sealing at rest [21].

The physical examination of the nasal cavities should be performed with direct or indirect illumination. It is observed the nasal mucosa staining (normostained, pale or hyperemic), the size of the inferior and/or medium nasal shells (eutrophic, hypertrophic or atrophic) and the presence or absence of secretions. The examination of the oral cavity should be performed with adequate illumination, tongue inside the mouth and spatula in its middle third to not provoke vomiting reflex. Otoscopy may reveal the presence of persistent effusion in the middle ear. The palate, in general, has a ogival anatomy [22].

According to the anamnesis and physical examination, it is sometimes necessary to perform complementary exams to define the interventions to be performed, such as the rhinopharynx radiography which is a low-cost, simple and easily available method. However, its evaluation is subjective and can be difficult to perform in younger children, due to the lack of collaboration for proper positioning of the head. Hypertrophy is determined as an increase in adenoids \geq 50% and as obstructive to nasal flow those with an increase \geq 70% [23].

Nasal endoscopy is also performed, being a diagnostic method more reliable than cavum radiography for the evaluation of adenoid hypertrophy, has good acceptance and can be performed outside the hospital environment,

which increases its routine use. For the endoscopic diagnosis, it is considered the nasal mucosa staining, the size of the inferior and middle nasal shells, the position of the septum in the nasal cavity and the size of the adenoids [24]. By nasal endoscopy, the adenoids occupying an area equal to or greater than 70% of the cavum [25] are considered hypertrophied.

The polysomnography can also be performed, where the sleep pattern is measured by means of sensors on the body surface, being a non-invasive method [26]. Some authors consider that the gold standard for the evaluation of Oral respirator includes polysomnography [24,26]. BluStone (2006) states that the allergen evaluation test is also an examination that needs to be performed, to be ruled out any allergenic possibility [27].

Jefferson reports that the first and most effective way to prevent mouth breathing is to encourage breastfeeding during the first months of life and that breast milk besides possessing all the essential substances to the newborn during the first Months of life, provides the baby during the act of breastfeeding the necessary stimuli to the perfect development of the craniofacial complex [28]. During breastfeeding it is practically impossible for the baby to breathe through the mouth, which makes it stronger the thesis that breastfeeding is essential for a correct development of physiological functions, guaranteeing survival and especially a better quality of life [29,30].

Conclusion

After the analysis proposed by this critical review on the diagnosis of mouth breathing patients, it is concluded that early diagnosis requires a multidisciplinary team that understands odontopediatrics, orthodontist/orthopedist, physician Otorhinolaryngologist, alergista, speech therapist and physiotherapist, among others. For a correct diagnosis several methods and techniques can be used, however it should be observed, mainly for the clinical evaluation of the patient observing the presence or not of the labial sealing. Mouth breathing can cause some negative effects on the growth and development of the individual in general and, mainly, in the craniofacial complex, creating severe malocclusions. Natural breastfeeding is the main form of prevention of mouth breathing, being an important factor for the correct exercise of facial muscles, and prevention of malocclusions.

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