

Oral Health Care for Patients With Microcephaly

Cuidados na Saúde Bucal dos Pacientes com Microcefalia

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Abstract

Patients affected with microcephaly have a head circumference below the average for sex and age, and in most cases it is associated with altered brain structure, developmental problems and dysmorphic facial features. Thus, the objective of this study was to describe the therapeutic approaches for dental care of patients with microcephaly. The selection of scientific articles for the study construction was carried out through the databases Scielo, Medline, Bireme and PubMed with a total selection of 16 scientific articles with years of cut-off between 2010 to 2019. Microcephaly affects not only the patient's general health status, but also dental care, which is hampered by the small number of professionals qualified to care for special patients and the little knowledge of the craniofacial and dental characteristics of these individuals. In most cases, the dental surgeon is unprepared and insecure before these patients, which is hampered by the little knowledge they have of their main oral and craniofacial characteristics. Thus, the professional is unable to determine clinical procedures to be performed. Thus, it can be concluded that it is necessary for the dentist to have knowledge about microcephaly and provide instruction to the children's parents and guardians in this condition, thus facilitating the dental procedures execution.

Keywords: Disabled Persons. Dental Care for Disabled. Oral Pathology.

Resumo

Os pacientes acometidos com microcefalia possuem um perímetro cefálico inferior à média para o sexo e idade, e na maioria dos casos está associado à estrutura cerebral alterada, problemas de desenvolvimento e características faciais dismórficas. Sendo assim, o objetivo deste trabalho foi descrever as condutas terapêuticas para atendimento odontológico de pacientes com microcefalia. A seleção dos artigos científicos para construção do trabalho foi realizada por meio de bases de dados Scielo, Medline, Bireme e PubMed, com seleção total de 16 artigos científicos com anos de corte entre 2010 a 2019. A microcefalia afeta não apenas o estado de saúde geral do paciente, mas também o atendimento odontológico, que se torna dificultado devido ao pequeno número de profissionais habilitados para o atendimento a pacientes especiais e ao pouco conhecimento das características craniofaciais e dentárias desses indivíduos. Na maioria dos casos, o cirurgião-dentista encontra-se despreparado e inseguro diante desses pacientes, o que é dificultado pelo pouco conhecimento acerca das principais características bucais e craniofaciais. Com isso, o profissional fica impossibilitado na determinação de procedimentos clínicos a serem realizados. Desta forma pode-se concluir que é necessário ao cirurgião-dentista um conhecimento sobre a microcefalia e proporcionar instrução aos pais e responsáveis pelas crianças nesta condição, facilitando assim a execução dos procedimentos odontológicos.

Palavras-chave: Pessoas com Deficiência. Assistência Odontológica para Pessoas com Deficiências. Patologia Bucal.

1 Introduction

Microcephaly is a rare condition, which consists of a clinical sign of the reduction of head circumference in the occipital-frontal direction. The most common causes of microcephaly are genetic and exposure to risk factors, such as: infections by syphilis, toxoplasmosis, rubella, cytomegalovirus and herpes simplex virus, severe malnutrition due to lack of nutrients or insufficient nutrition and exposure to harmful substances such as alcohol, certain drugs or toxic substances¹.

Patients with microcephaly present physical characteristics such as: muscle hypotonia, growth retardation, shortened and flat forehead, large and short nose, microstomy, retrognathia and short neck with wrinkled skin, typical craniofacial alterations, which cause serious problems such

as malocclusion, periodontal diseases, airway obstruction, speech problems and recurrent infections².

In view of the difficulties in managing the patient, the choice of hospital care may be a viable option, especially before a greater number of procedures that the patient with microcephaly has and the option of performing them in a single appointment care. However, according to Scharcosim et al.³, non-collaboration with outpatient care is the factor that contributes most to the search for intervention under general anesthesia, which significantly minimizes the risk of accidents to the patient and professional, as well as ensuring the correct technique of the necessary different dental procedures.

Microcephaly patients may present several oral and dental alterations due to the commitment of neuropsychomotor

development, to neurological alterations, and hence, the preventive action of the dental surgeon has the function of avoiding future and major dental problems, in addition to establishing an adequate treatment plan to enable prevention of oral diseases through education, by overcoming existing difficulties. In addition, the narrowing of the family-patient-professional bond is important to consolidate the treatment, since this link will bring the patient more comfort, in which the patient will feel safety and stability in the treatment, thus facilitating the coexistence and procedures that will need to be performed⁴.

In view of the above, the objective of the present study was to conduct a narrative review of the literature on the main oral health care of patients with microcephaly and their respective treatments.

2. Development

2.1 Methodology

The methodological approach of the present study was the elaboration of a narrative Review of literature using a qualitative and bibliographic research in the context of knowledge production, from 2010 to 2019. National and international scientific books and articles were used in the English and Portuguese languages, found through sources such as SciELO, Medline, Bireme and PubMed. The following materials were included: clinical cases; research; literature reviews and monographs, which deal with the subject in question, observing the keywords as the source of research: Etiology. Microcephaly and Prevention. A total of 40 articles were researched and 16 selected, and articles that did not address the topic in a broad way were established as exclusion criteria, with more details under dental management about the subject proposed in the present research.

2.2 Concept and History of disease

Microcephaly is a malformation in which the brain does not develop properly, with a smaller size than the standard for age and sex. This is a neurological condition in which the brain is underdeveloped and the moles or fontanelle (open spaces between the bones, which will allow the brain to grow without compression of the structures) close with prematurity, which results in a small head, smaller than other children of the same age and sex^{1,5}.

According to Melo et al.⁶, a significant increase in the number of cases was observed in Brazil in 2015, and different theories have been related to the outbreak of microcephaly, among them the association with Zika Virus. Microcephaly is a neurological condition in which the brain is underdeveloped because of the early closing of the fontanelle, which causes a reduction in head circumference, which reaches a smaller size than expected. This pathology alone does not cause mental and motor problems, however such characteristics are frequent in these children.

The basic defect of this condition may occur because the baby's brain did not develop properly during pregnancy or stopped growing after delivery, which results in a smaller cephalic circumference. The World Health Organization (WHO) recommends for the first 24 to 48 hours of life that measures for both sexes should refer to the Intergrowth parameters. The reference measurement for children born at 37 weeks of gestation will be 30.24 cm for girls and 30.54 cm for boys⁴.

Microcephaly does not have treatment or cure. However, so that the child has a better quality of life, it is important that they be followed up and stimulated precociously⁸.

2.3 Etiology and Prevalence

The etiology of microcephaly may involve congenital factors, acquired during pregnancy or presented in the first years of life. Thus, there is the possibility of being related to genetic alterations and chromosomal factors, as well as to environmental exposures of the mother in the prenatal period, such as the consumption of alcoholic beverages, illicit drugs or teratogenic drugs; in addition to contact with chemical substances or ionizing radiation, the occurrence of infectious processes and metabolic alterations¹.

Microcephaly usually occurs after the first trimester of intrauterine life if infectious, toxic or vascular insults interrupt the normal brain development, resulting in overlapping of sutures and wrinkling of the leather⁹.

The conditions that can lead to microcephaly are divided into two periods. Prenatal: abusive consumption of alcohol and/or drugs such as aminopterin, methylmercury, pyriproxyfen, cocaine and heroin during pregnancy; lead poisoning; decompensated maternal diabetes; maternal hypothyroidism; placental insufficiency and other factors associated with fetal growth restriction and preeclampsia; cerebral anoxia; genetic abnormalities; exposure to atomic bomb radiation; Infections during pregnancy, especially rubella, cytomegalovirus, toxoplasmosis and Zika virus. Postnatal: Intracranial infections (encephalitis and meningitis); copper poisoning; childhood hypothyroidism; chronic childhood anemia; disruptive traumas (such as stroke) and chronic renal failure⁵.

Until the last decades, estimates of the incidence of microcephaly at birth ranged from 1:6.250 to 1:8.500 cases, being more frequent in males. They also demonstrated a greater appearance in individuals of the same family, registering family and autosomal microcephaly as the most common types².

Zika virus is considered an arbovirus belonging to the genus *Flavivirus* and its transmission occurs mainly through the *Aedes aegypti* mosquito, which also transmits three other diseases, such as: Dengue, Chikungunya, and yellow fever, present in all tropical and subtropical regions¹⁰.

This virus was highlighted in Brazil from October 2015, after being associated with the growing number of children

born with microcephaly in the country, especially in the Northeast region. With the arrival of this outbreak in the Brazilian territory, a significant increase in the number of children born with microcephaly was observed⁴.

2.4 Clinical Repercussions

The head of microcephalic patients is disproportionately smaller than the rest of the body, and the presence of facial dysmorphism is reported. Facial dysmorphisms observed are: brachycephaly, hypoplasia of the middle face, flat face, thin lip, narrow and flat forehead, flat malar region, large and short nose, short neck with wrinkled skin, hypertelorism, high eyebrows, epicanthic folds of the direct side, nasal bridge and flat middle third, plagiocephaly, box-shaped skull, open anterior fontanelle and prominent forehead¹¹.

The eruption of the decent teeth of a patient with this condition is slightly advanced for some elements and within the normality pattern, when compared to the literature. The dental elements that present the greatest deviation of the eruption chronology are: canine, first molar and second molar, in both arcades¹².

Leite and Varellis⁵ reported that children with microcephaly in Brazil showed oral alterations, such as: periodontal diseases, dental caries, malocclusion, micrognathia, delay in the dental eruption, dysphagia, bruxism and dental traumas. Still according to Brunoni et al.⁹, the most frequent changes related to microcephaly are: intellectual deficit, epilepsy, cerebral palsy, delayed language and/or motor development, ophthalmologic, cardiac, renal disorders, and urinary tract disorders.

Microcephaly persons are special patients and therefore may present a high incidence of oral diseases due to salivary alterations, pasty feeding, constant intake of carbohydrates, chronic use of medicines, lack of ability to perform their own oral hygiene, undue movements of chewing muscles and tongue. These are some of the risk factors that contribute to the higher prevalence of oral diseases in this population. In addition, they also present alterations such as: malocclusion, micrognathia, delay in the teeth eruption, bruxism and dental trauma⁴.

2.5 Dental management of the Patient

Anamnesis is the moment when the professional has the opportunity to know the psychological aspects that involve the patient, the family, the expectations regarding treatment and previous frustrated experiences¹³.

Dental care for patients with special needs requires care that depends on the ability of the dental surgeon so that the treatment is successful. The pediatric dentist performance in the health team is essential, especially in view of the emergence of new cases of children with microcephaly¹².

There are difficulties in performing the prevention and dental treatment of patients with special needs, which

represent a great challenge. For this reason, it is necessary for the dentist-surgeon to know the baby with microcephaly, to perform preventive consultations, oral hygiene instruction with family involvement so that he or she can propose the best dental intervention, offering improvement in the quality of life of this patient^{14,15}.

For the care of these special patients, it is possible to adopt the behavior management techniques currently used. Nitrous oxide sedation is also effective, provided there is neurological maturity to command nasal and oral breathing. In case of moderate sedation, anesthesiologists are recommended for better patient follow-up in hospital⁵.

The oral cavity cleaning is an effective method in the control and progression of caries, especially when fluorine dentifrice is used. The oral hygiene orientation of these patients should be one of the first points to be addressed with family members or caregivers, demonstrating how it should be done¹⁵.

The use of electrical brushes can be used to optimize plaque control, considering the lack of dexterity of these individuals when using hand brushes, or considering the caregivers' preference. The education of those responsible/caregivers for the child's oral hygiene is of paramount importance for the prevention and prevention of the caries disease progression⁵.

Therefore, routine appointments should be carried out in order to pass on all the guidelines, techniques and care in order to prevent the development of caries and periodontal changes. It is essential that caregivers and/or guardians have basic knowledge about oral hygiene, in order to reduce oral diseases resulting from the dental biofilm accumulation¹⁶.

Another preventive measure refers to dietary advice. The dental surgeons should encourage a non-cariogenic diet and guide those responsible about the high cariogenic potential of nocturnal food after dental eruption and pediatric oral medicines, rich in sucrose^{14,16}.

The increased risk for developing oral diseases in patients with special needs justifies the importance of dental prevention in these patients, acting on information and integration in child care, in which supervised brushing programs aimed at parents and caregivers, dietary guidance and topical fluoride application are included, and these measures aim at creating healthy habits and conditions, and overcoming existing difficulties due to a limitation. Thus, programs for the promotion of oral health of patients with special needs are favorable to the patient's conditioning, since they provide the maintenance of health and allow the narrowing of the family-patient-professional bond⁴.

3 Conclusion

Based on the bibliographic survey, the need is highlighted for the dental surgeon to know the characteristics of patients with microcephaly and motivate the parents or guardians about the need for routine follow-up since the pre-eruptive period, in which the conditioning of these patients will occur gradually,

fact which facilitates the dental procedures execution . There are no dental care protocols and in-depth studies on dental characteristics of patients with microcephaly, requiring further studies on it.

In view of the above, the care protocol remains the same as that of patients with special needs, the conditioning of these, the family involvement, multidisciplinary communication and management techniques, which makes the care humanized and easier.

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