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Increase in the number of measles cases in Brazil: importance of the dentist in the early diagnosis of the disease

Aumento en el número de casos de sarampión en Brasil: importancia del dentista en el diagnóstico precoz de la enfermedad

Aumento do número de casos de sarampo no Brasil: importância do cirurgião dentista no diagnóstico precoce da doença

ABSTRACT

In recent years, eradicated diseases such as measles have returned, characterizing outbreaks across the country, making it is a challenge to combat and early diagnosis. Objective: to identify the importance of dental care to the clinical signs of Measles. Method: The present study was carried out by means of a bibliographic review, guided by books and scientific articles in Spanish, English and Portuguese, using the search engines Google Scholar, PubMed, SciELO and Science Direct between 2009-2020. Results: The integrative review showed that the dental surgeon for acting in the oral region where the first symptoms of the disease appear, such as Koplik's spot, characterized by whitish, grayish or bluish elevations with an erythematous base at the height of the second molars, and other signs less frequent among them candidiasis, necrotizing ulcerative gingivitis and necrotizing stomatitis, has a privileged role in early diagnosis in addition to providing guidance on the importance of vaccination to prevent contagion. Thus, mitigating the aggravating cases of the disease and assisting in prevention. Conclusion: With the rise of measles cases in the country, the dentist has a fundamental role in guiding the incentive to vaccination as the main form of prevention and diagnose to help in the eradicate the disease.

DESCRIPTORS: Measles; Prevention; Dentistry.

RESUMEN

En los últimos años, enfermedades erradicadas como el sarampión han resurgido, caracterizando los brotes en todo el país, lo que lo convierte en un desafío combatirlos y diagnosticarlos a tiempo. Objetivo: identificar la importancia del cuidado dental para los signos clínicos del sarampión. Método: El presente estudio se realizó mediante una revisión bibliográfica, guiada por libros y artículos científicos en español, inglés y portugués, utilizando los motores de búsqueda Google Scholar, PubMed, SciELO y Science Direct con un período de tiempo 2009-2020. Resultados: La revisión integrativa mostró que el cirujano dentista por actuar en la región bucal donde aparecen los primeros síntomas de la enfermedad, como la mancha de Koplik, caracterizada por elevaciones blanquecinas, grisáceas o azuladas con base eritematosa a la altura de los segundos molares, y otros signos menos frecuentes entre ellos la candidiasis, la gingivitis ulcerosa necrosante y la estomatitis necrosante, tiene un papel privilegiado en el diagnóstico precoz además de orientar sobre la importancia de la vacunación para prevenir el contagio. De esta manera, mitigar los casos agravantes de la enfermedad y ayudar en la prevención. Conclusión: Con el aumento de casos de sarampión en el país, el odontólogo tiene un papel fundamental en orientar la importancia de la vacunación y el diagnóstico para ayudar en la erradicación de la enfermedad.

DESCRIPTORES: Enfermería; Prematuro; Humanización.

RESUMO

Nos últimos anos, doenças erradicadas como o Sarampo, voltaram a surgir, caracterizando quadros de surtos pelo país, tornando um desafio o seu combate e seu diagnóstico precoce. Objetivo: identificar a importância do atendimento odontológico aos sinais clínicos do Sarampo. Método: O presente estudo foi edificado por meio da revisão bibliográfica, direcionada por livros e artigos científicos em espanhol, inglês e português, utilizando os sites de busca Google Acadêmico, PubMed, SciELO e Science Direct com recorte temporal de 2009-2020. Resultados: A revisão integrativa, demonstrou que o cirurgião dentista por atuar na região oral onde surgem os primeiros sintomas da doença como a mancha de Koplik, caracterizada por elevações esbranquiçadas, acinzentadas ou azuladas com uma base eritematosa na altura dos segundos molares, e outros sinais menos frequentes entre eles candidíase, a gengivite ulcerativa necrosante e a estomatite necrosante, possui papel privilegiado no diagnóstico precoce além de orientar sobre a importância da vacinação para prevenção do contágio. Assim, atenuando os casos agravantes

artigo

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da doença e auxiliando na prevenção. Conclusão: Com a alta de casos de sarampo no país, o odontólogo tem papel fundamental na orientação sobre a importância da vacinação e diagnóstico para auxiliar na erradicação da doença.

DESCRITORES: Sarampo; Prevenção; Odontologia.

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INTRODUCTION

In recent years, diseases that were previously eradicated by the conquest of the vaccine have reappeared in the country. In 2016, the Ministry of Health of Brazil received, from the Pan American Health Organization (PAHO), the measles eradication certificate; however, in 2018 more than 10.000 cases were reported in the states of Amazonas and Roraima.^{1,2}

The disease is caused by the Morbillivirus virus, it is a highly contagious viral infection that mainly affects children and can lead to death. Transmission occurs from person to person, through respiratory secretions, within four to six

days. Among the clinical signs, Koplik's spot is evident, which affects the oral mucosa.^{3,4,5}

After contracting the virus, there is an infection located in the airways, which then spreads to the lymphatic region. In a primary viremia, replication occurs at the inoculation site and in reticuloendothelial tissues, and in secondary viremia, the virus infects and replicates in the skin, respiratory tract, and other distant organs. The main symptoms of the disease include: fever accompanied by cough, intense malaise, nasal congestion and eye irritation.^{3,4}

With the resurgence of the disease, there was a need to verify its possible causes and the role of the dentist to

help fight it. It should be noted that in some states the progression was exacerbated, characterizing outbreaks across the country. The Dental Surgeon (DC), responsible for promoting the oral health of the population, has the role of assisting in the early diagnosis of the pathology, considering that the first clinical signs of the disease are present in the oral cavity.^{1,6}

This study aims to identify the importance of dental care for clinical signs of Measles. Taking into account that through a dental appointment, a premature diagnosis of the pathology can be made, thus avoiding the worsening of the clinical picture and interrupting the transmission chain. The CD, being a professional

qualified to recognize clinical signs of the disease present in the oral mucosa and qualified to advise on the importance of vaccination, should contribute to the eradication of measles.

METHOD

The present study consists of a bibliographic review elaborated through books with the theme of oral pathology and through articles available in electronic and informative databases of the Ministry of Health. The articles used were obtained through search sites such as the National Library of Medicine (PubMed), ScienceDirect, Scientific Electronic Library Online (SciELO) and Google Scholar.

Articles published between 2009-2020, in Portuguese, English and Spanish were included. Articles published in years prior to the one mentioned or in other languages were excluded. In addition, the articles included had as exclusion criteria the relevance of the title and its abstract. The descriptors in health sciences (DeCS) were applied: Measles, Prevention and Dentistry, using "AND" as a Boolean operator.

As this is a literature review, not involving research on humans or animals, it was not necessary to be submitted for evaluation by the Research Ethics Committee.

Measles is an infection caused by a virus of the genus Morbillivirus, in the family Paramyxoviridae. It is an acute viral infection considered to be extremely contagious. Its incidence is quite common in childhood, and it can progress to serious complications such as pneumonia and progress to death.

RESULT

This study observed, through books and articles, the importance of dental care for the clinical signs of Measles, considering that the disease characterized epidemic outbreaks across the country.

By inserting the descriptors in the research databases, it was possible to verify 475 articles published with the theme. After excluding duplicate articles, 435 works were obtained. The inclusion criteria were then applied, namely year of publication, language (Portuguese, English and Spanish) and full text available. Then, the exclusion criteria were added, where the titles and abstracts of the articles were analyzed, resulting in 28 papers considered relevant and pertinent to the topic.

After a thorough reading of the 28 articles, only 20 were included in this research due to the relevance of their content and similarity with the objective of this research.

DISCUSSION

Decline in the vaccination rate and its relationship to the increase in measles cases

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Chart 1: Synthesis of bibliographies found in databases

Nº	YEAR	TITLE	OBJECTIVE	METHODOLOGIC OUTLINE
5	2010	Mouth as a mirror of systemic diseases	Emphasize that the mouth is a part of the body and not just a gateway to pathologies	Analyzes were performed through articles of the main pathologies found in the oral region
7	2020	Understanding the Resurgence and Control of Measles in Brazil	Understanding why measles resurfaced in Brazil	Research was conducted through articles and informative periodicals of the Ministry of Health about the return of Measles
18	2010	Exanthematic diseases in childhood with oral manifestations	Describe the main characteristics and oral manifestations of childhood exanthematic diseases, in order to elucidate the dentist about the importance of their role in the control of outbreaks and provide means for the preparation of a competent differential diagnosis	Twenty-six articles were analyzed and a book and documents published by the National Vaccination Program, the Portuguese Society of Pediatric Infectious Diseases and the World Health Organization were also used.

childhood, and it can progress to serious complications such as pneumonia and progress to death.^{3,6,7,8}

The numbers of measles cases are related to the degree of use of the vaccine. In the 1970s, measles affected an average of 2 to 3 million children, which marked this period as an epidemic of the disease. In 1990, considering the epidemiological characteristics of measles and the availability of the highly effective vaccine, a regional elimination strategy for this disease was carried out – starting with a vaccination campaign, which was successful in 1992 by presenting a high rate of immunization.^{3,6,8}

Resurgence of infection occurred, in most cases, in preschool-age children who were not vaccinated. In 2019, the Ministry of Health confirmed more than 10.000 new cases of measles in Brazil, 16 states were registered with the disease. Some states, such as Minas Gerais, Rio Grande do Sul and Mato Grosso do Sul, have joined the list of federative units with an outbreak of the disease. However, measles is not restricted to Brazil: all over the world, new cases of the disease were registered, with a 300% increase in occurrences in 2019, compared to 2018.^{1,6,7}

The resurgence of measles cases in the country and in the world is also associated with “fake news”. Antivaccine groups are emerging with greater evidence, acting through social networks spreading panic, with photos or cases of people who have suffered serious adverse effects resulting from vaccination, influencing people not to be vaccinated or vaccinated their children.^{7,9}

In order to stop the resurgence of measles, which began in 1989, the vaccination program was changed and unvaccinated young people and children became targets of the campaign. The complete eradication of the infection is technically feasible with the availability of vaccines, but it needs universal cooperation and commitment. In Brazil, immunization is done through the triple viral vaccine, divided into two doses for measles and

The Ministry of Health, together with municipal and state public health entities, has been carrying out actions in more susceptible groups, carrying out vaccinations in hospitals, schools, institutions and communities. This type of vaccination has proven to be efficient and, for best results, every suspected case of measles must be notified by SINAN – Information System for Notifiable Diseases (Sistema de Informação de Agravos de Notificação).

associated with protection against other diseases (mumps and rubella).^{6,7,10}

The Ministry of Health acquired 114% more than the number of triple viral vaccine doses for 2019 and 2020 compared to 2018, increasing from 30,6 million to 65,4 million doses. For this, 47,4 million doses of the vaccine were recently purchased, representing the largest distribution of the MMR in Brazil in the last ten years. The measure aims to guarantee the vaccination of 39 million Brazilians, aged between 1 and 49 years, who are currently susceptible to the disease, because they did not take the vaccine or the number of doses necessary.^{7,11}

Dissemination of information regarding vaccination

In the last days of 2019, Brazil registered 2.753 admitted episodes of measles in 13 national states. The increase was 18% in analogy to the last bulletin published (08/28/2019), when there was confirmation of previously investigated measles cases. According to the recent epidemiological bulletin of the disease, between June 9th and August 31st, 2019, Brazil notified over 20.000 cases, with approximately 15.000 being investigated, and more than 2.000 rejected.

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The computerized immunization system (SII - sistema informatizado de imunização) is a data network that secretly contains records and information on vaccinations for the Brazilian population. This information is essential for the control and monitoring of people who are immunized. In this way, effective defense is guaranteed, bearing in mind

that, for the success of measles prevention, vaccination in more than one dose is necessary. With this tool, it becomes possible for the Ministry of Health and its collaborators to have access to missing patients and those who need a second dose. The control of patients is done through phone calls, sending letters and home visits.^{13,14}

The Ministry of Health, in partnership with state and municipal health secretariats, mobilized a national measles vaccination campaign, called “D-Day”, which took place on October 19th, 2019. The action focused on children aged 6+ months of life, in order to reinforce the importance of vaccination against measles in this age group, which is the most affected.^{7,15}

Manifestations of measles in the oral cavity

Oral manifestations are usually the first signs or the most significant sign of a systemic disease. Therefore, intraoral clinical exams often warn early if the individual has a healthy life, or if he suffers from any systemic disease. These manifestations usually present in the oral mucosa, tongue, gums and salivary glands. One of the main oral manifestations of measles is Koplik's spots, its transmission is propagated through saliva and droplets contained in the breath, with its greatest prevalence in the spring season. The vi-

rus, measlesmorbilivirus, has an incubation period of ten to twelve days. The infected person becomes a transmitter from the second day on which the eruptions appear on the body.^{2,5,6}

The clinical manifestations of measles consist of fever, reaching 39°C to 40°C, malaise, cough that is usually dry, high and continuous, runny nose, conjunctivitis, headache, vomiting, diarrhea, enlarged nodes and abdominal pain, this rarer. In the oral manifestation, Koplik's spots appear in the region of the second molar, just before the skin spots. Skin patches appear in the ear region and are usually flat and red; after a period, they reach the face and spread to the rest of the body. Because the clinical manifestations of the virus are similar to those of other diseases, differential diagnoses are recommended with: childhood respiratory diseases, such as rhinoviruses, influenza and adenoviruses, and other acute exanthematic febrile diseases, such as rubella, dengue and the varicella. Also, oral lesions can look like candidosis, oral lichen planus, and leukoplakia.^{2,6,7,16}

Another symptom is lymphoid hyperplasia, which is associated with the virus and usually involves sites such as tonsils, adenoids, lymph nodes, and Peyer's patches located in the ileum. Vasculitis is associated with giant cell infiltration in various tissues, which is responsible for

the rash – a characteristic that causes red spots throughout the body, starting in the retro auricular region and spreading to the face, trunk and limbs, known as craniocaudal distribution.^{6,7}

Koplik's spots are a pathognomonic sign of measles. About 2-3 mm in diameter, they are whitish, gray, or bluish bumps with an erythematous base (ie, “grains of salt on a reddish bottom”), usually found around the height of second molars; the eruptions last around 3 to 5 days and gradually disappear. These patches should be distinguished from Fordyce's granules, which are small yellowish-white granules that form on the vestibular mucosa and lips: these are benign ectopic sebaceous glands.^{7,17,18}

In addition to Koplik's spots, there are other oral manifestations related to measles, including candidiasis, necrotizing ulcerative gingivitis and necrotizing stomatitis, which can occur if the individual has poor nutrition. In early childhood, severe measles can affect ontogenesis and follow on from crater-shaped enamel hypoplasia in the developing permanent elements. An increase in accessory lymphoid tissues, such as the lingual or pharyngeal tonsils, can also be observed.^{3,6}

Early diagnosis of measles in the dental field

Measles has three stages of clinical manifestations, namely:

MEASLES HAS THREE STAGES OF CLINICAL MANIFESTATIONS, NAMELY:

Early stage, also known as the prodromal period	The most characteristic oral manifestation of the disease is Koplik's spots. Several areas of erythema are noted in the buccal and labial mucosa and less frequently in the soft palate, in these regions abundant white-blue macules are noted. In addition, these macules can be seen, in rare cases, in other parts of the body, such as the fold of the internal conjunctiva of the eye or the vaginal mucosa. These pathognomonic patches constitute foci of epithelial necrosis.
Second stage, also known as exanthematic period	Koplik's spots disappear, and other symptoms worsen, fever, and maculopapular and erythematous rash begin. The initial involvement occurs on the face and spreads to the trunk and extremities. Finally, a diffuse erythematous maculopapular eruption develops, which under pressure disappears. Some patients have, not infrequently, abdominal pain that persists for 5 to 6 days.
Third stage, also known as the period of convalescence	The fever ceases. The eruption starts to disappear and shows a downward progression, the spots are changing to a brownish color. Finally, epithelial desquamation occurs in spaces previously affected by the eruption.

Source: NEVILLE⁵; CARVALHO³

artigo

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Dental surgeons must acquire familiarity with the systemic conditions that can affect the oral cavity in order to be able to correctly diagnose and make an adequate referral. Diagnosis of measles is based on its clinical manifestations and on the history reported by the patient.^{5,6}

In case of atypical manifestations, as reported in immunocompromised patients, laboratory tests can be performed, such as the plaque reduction neutralization immunoassay (PRNT), to detect class G virus-specific immunoglobulin (IgG). An enzyme-linked immunosorbent assay (ELISA), which detects virus-specific immunoglobulin (IgM) in plasma, can also be performed. In the acute phase, the detection of antibodies (IgM) can be done through direct immunofluorescence and hemagglutination inhibition techniques.^{5,6,16}

The mouth is a mirror of health or di-

sease and the dentist, by working in the region where the first symptoms of measles manifest themselves, has the differential to carry out an early diagnosis - in addition to being able to alert the patient about the importance and benefits of vaccination. In this way, he can recommend the patient to medical help in cases of aggravation or complications resulting from measles.^{5,7,19}

In addition, the dentist, upon noting that the patient has Klopik spots or other symptoms of measles, should inquire about the patient's vaccinations and notify the health department of the suspicion of the case, so that measles blocking measures can be taken before the spread of infection occurs.

It is up to the dentist, in addition to respectfully approaching the patient affected by the disease, to postpone dental treatment, as it is a highly transmissible

virus, which can affect approximately 90% of people who come into contact with the agent without being immunized. When necessary, it should also guide the patient about the importance of vaccination and/or refer him to a medical appointment.^{7,20}

CONCLUSION

Due to the aforementioned facts, it was possible to verify that currently diseases previously eradicated, such as measles, are re-emerging as a result of the lack of vaccination. Thus, the need for help from the DC in the early diagnosis and prevention of measles was highlighted. In addition, it was found that the DC can help combat measles by carrying out an early diagnosis and providing guidance to patients on the importance of vaccination. ■

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