

DOI: <https://doi.org/10.36489/saudecoletiva.2021v11i65p6208-6217>

# The role of the dentistry professional in care of oral manifestations in patients with leukemia

El papel del profesional de odontología en el cuidado de las manifestaciones orales en pacientes con leucemia

O papel do profissional de odontologia no atendimento de manifestações bucais em pacientes com leucemia

## ABSTRACT

**Objective:** to review articles available in scientific journals that exemplify the role of the dental professional in the care of oral manifestations in patients with Leukemia. **Method:** it was a narrative bibliographic review using selected articles from the years 2008 to 2018. **Results:** Oral manifestations of leukemia are more frequent in acute forms, than in chronic forms. The health professional must always be attentive to any type of sign or symptom, as well as the constant updating of medical history. With the emergence of new techniques that promote the maintenance of oral health in patients with some type of neoplasia, today it is possible to prevent a disease without it being installed. **Conclusion:** It is concluded that the presence of the dental professional in the oncology team can reduce the morbidity and mortality related to oral complications, as well as increase the comfort and quality of life of patients during therapy.

**DESCRIPTORS:** Dentistry; Leukemia; Oral manifestations.

## RESUMEN

**Objetivo:** revisar artículos disponibles en revistas científicas que ejemplifiquen el papel del profesional odontológico en el cuidado de las manifestaciones bucales en pacientes con leucemia. **Método:** se realizó una revisión bibliográfica narrativa utilizando artículos seleccionados de los años 2008 a 2018. **Resultados:** Las manifestaciones orales de leucemia son más frecuentes en las formas agudas que en las crónicas. El profesional de la salud debe estar siempre atento a cualquier tipo de signo o síntoma, así como a la actualización constante de la historia clínica. Con la aparición de nuevas técnicas que favorecen el mantenimiento de la salud bucal en pacientes con algún tipo de neoplasia, hoy es posible prevenir una enfermedad sin que se instale. **Conclusión:** Se concluye que la presencia del profesional odontológico en el equipo de oncología puede reducir la morbimortalidad relacionada con las complicaciones bucales, así como incrementar la comodidad y calidad de vida de los pacientes durante la terapia.

**DESCRIPTORES:** Odontología; Leucemia; Manifestaciones orales.

## RESUMO

**Objetivo:** revisar artigos disponíveis em periódicos científicos que exemplificassem o papel do profissional de odontologia no atendimento de manifestações bucais em pacientes com Leucemia. **Método:** tratou-se de uma revisão bibliográfica narrativa utilizando artigos selecionados datados dos anos de 2008 a 2018. **Resultados:** As manifestações bucais das leucemias são mais frequentes nas formas agudas, do que nas formas crônicas. O profissional da saúde deve estar sempre atento a qualquer tipo de sinal ou sintoma, assim como à constante atualização da história médica. Com o surgimento de novas técnicas que propiciem a manutenção da saúde bucal nos pacientes com algum tipo de neoplasia, hoje é possível prevenir uma doença sem que ela já esteja instalada. **Conclusão:** Conclui-se que a presença do profissional de odontologia na equipe oncológica pode diminuir a morbidade e a mortalidade relacionadas a complicações bucais, assim como aumentar o conforto e qualidade de vida dos pacientes durante a terapia.

**DESCRITORES:** Odontologia; Leucemia; Manifestações bucais.

RECEIVED ON: 30/07/2020 APPROVED ON: 23/09/2020

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## **INTRODUCTION**

**L**eukemia is a group of malignant diseases, complex and different from each other, characterized by the excessive and progressive production of leukocytes, which appear in the blood in immature forms, in the light of the literature. This disease affects about 13 in 100.000 people every year, with the chronic lymphocytic type being the most common. In leukemia, the growth of leukocytes is disordered and independent, and they lose their functions, often leading the patient to death. The etiology of most leukemias is uncertain, but some authors cite viral infection, exposure to ionizing radiation and other types of electromagnetic radiation, in addition to chemical exposure.<sup>1,2</sup>

Still in relation to Leukemia, there are oral complications resulting from cancer therapy that affect some patients, but which can be reduced when certain measures in the field of dentistry are established to balance the oral cavity before the start of chemotherapy, minimizing the effects that it causes and also in possible systemic complications, according to the literature. Thus, the main objective of the dentist is to promote dental treatment where there is balance

and prevention of complications from chemotherapy.<sup>3</sup>

Preventive measures, such as instruction on oral hygiene and early detection of oral lesions, are highly effective when established at the beginning of treatment. The oral examination allows the dental surgeon to determine oral conditions and establish the interventions necessary to reduce complications during and after therapy. For the treatment to be successful, the responsible physician must inform the dental surgeon about the patient's health status and the treatment plan instituted for the same, and at the same time must be informed which measures should be taken for oral care before, during and after chemotherapy.<sup>1,4</sup>

In agreement with the literature, the dental surgeon has a fundamental role in helping the early diagnosis and in the intervention to improve the oral health of these patients. In chemotherapy, mucositis, xerostomia and immunodepression emerge, causing dental and opportunistic infections. This therapy has an antitumor effect that destroys or slows down the division of cells with accelerated proliferation, as well as tumor cells. Therefore, this treatment does not differentiate neoplas-

tic cells from normal cells with high mitotic activity as is the case with cells of the oral mucosa, making this region susceptible to the appearance of lesions due to the difficulty of cell renewal caused by drugs.<sup>5,6,7</sup>

The care protocol aims to highlight the necessary care to be taken, as well as the measures that must be taken in the complications caused by chemotherapy. These patients have compromised immunity and therefore need more effective care to maintain their oral health.<sup>5</sup>

Bearing in mind that these patients have compromised immunity, and for this reason, they need more effective care to maintain their oral health, the question is asked about the role of the dental professional with these patients. This question guided the creation of this study. Note the value of dental procedures for the treatment of oral manifestations of leukemia, despite being a hotly debated topic, it is necessary to create new studies in order to provide important information to these patients. For this, the objective of this study was to review articles available in scientific journals that exemplify the role of the dental professional in the care of oral manifestations in patients with Leukemia.

## METHOD

This study constitutes a descriptive bibliographic review of a descriptive character regarding the role of the dental professional in the care of oral manifestations in patients with Leukemia. Data collection was carried out between the intervals from 2008 to 2018, and the databases used were Brazilian Digital Library of Theses and Dissertations (BDTD), Coordination for the Improvement of Higher Education Personnel (CAPES) and Google Scholar. The analysis for selecting the studies was carried out in two phases. In the first phase, the articles were selected according to the inclusion and exclusion criteria. As a general search in the BDTD database, two hundred and forty-seven (147) studies were found in their entirety, filtering them, available in their entirety, published between 2008 and 2018, in Portuguese and English. a total of one hundred and forty-three (43) publications. In the Google Scholar databases, eight thousand, three hundred and sixty (360) articles were obtained, when applying the free full text filters, five thousand one hundred and eighty (180) articles were obtained. In the CAPES database, a total of three thousand two hundred and sixty-seven (267) articles were obtained in the general search, when applying the filter of articles published in the last ten years, forty-one (41) articles were obtained.

In the second phase, the titles and abstracts of the articles were independently analyzed, to verify whether they were consistent with the theme addressed in the present study, with data such as: name of the author or authors, year of realization, objectives, study methodology, results and discussion. At the end, seven (7) articles were selected for analysis in the BDTD database, five (5) articles in the Google Scholar database and three (3) articles in the CAPES database, totaling 15 works. Finally, the following steps were taken: exploratory reading, selective reading and choice of

material that contemplated the objectives of this study, analysis of the texts and, finally, the performance of interpretive reading and writing.

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## RESULTS AND DISCUSSION

The studies selected in this review analyzed the role of the dental professional in the care of oral manifestations in patients with leukemia. Leukemias are malignant and heterogeneous hematological neoplasms, which have their origin in bone marrow cells. According to the study by Carneiro, Silva and Cruz (2008)<sup>6</sup>, the first cases were reported in the 19th century with the observation of bone marrow alteration in patients who died. For Lowal and collaborators (2015)<sup>8</sup>, hematopoiesis consists of the cascade maturation process of the hematopoietic lineage, initiated by pluripotent cells that reside in the bone marrow. Leukemia results from a gene-

tic error that compromises this maturation process. Depending on the type of the compromised lineage, leukemia is classified as myeloid or lymphoid. The lymphoid or lymphoblastic form can be divided according to the affected cells into: B cells or T cells.<sup>8</sup>

According to Menezes and Rao (2012)<sup>10</sup>, oral manifestations of leukemias are more frequent in the acute forms, than in the chronic forms. The findings may appear as the first signs and symptoms of the disease. Its rapid detection leads to early diagnosis and treatment, improving the patient's chances of achieving remission and reducing the frequency and severity of complications.

Thus, complete anamnesis is characterized as the most important stage for the promotion of oral health. Costa, Silva and Macedo (2011)<sup>13</sup>, portray in their publication that the health professional must always be attentive to any type of sign or symptom, as well as to the constant updating of medical history. In acute leukemia, the oral cavity is subject to complications ranging from mucosal lesions and infections, to the exacerbation of pre-existing pathological conditions.<sup>11,12</sup>

Systemic infections can arise from oral complications, putting the patient's life at risk. However, oral complications often cause severe discomfort, which can interfere with nutrition and hinder the completion of therapy. Deliverksa and Krasteva (2013)<sup>9</sup> affirm that the impairment of the oral cavity can appear in the initial stage of leukemia, increasing its intensity, with the induction of myelosuppression by antileukemic therapy, tending to regress with the remission of the disease. The frequency and type of signs and symptoms found at the time of diagnosis vary widely from individual to individual and depend on the type of leukemia.<sup>5,13</sup>

The authors Moucherek and Trovão (2010)<sup>7</sup> describe in their article that among the initial stomatological manifestations of acute leukemias frequently

observed are: bleeding, presence of petechiae and ecchymosis, ulcers, gingival hyperplasia and pallor of the mucosa. The number of patients, with Leukemia, who first went to the dentist has been constantly increasing, thus, this professional has been responsible for the first steps to arrive at the diagnosis of leukemia. Primary lesions result from the direct infiltration of oral tissues by leukemic cells. Zimmermann and collaborators (2015)<sup>11</sup> portray that secondary lesions are associated with anemia, thrombocytopenia and granulocytopenia, being the result of bone marrow invasion and replacement of healthy cells by neoplastic cells. Tertiary lesions are related to the therapy adopted and include effects of direct and indirect cytotoxicity.

The study by Hespanhol and collaborators (2010)<sup>12</sup> claims that cancer patients are part of the universe of patients with special needs and as such need a differentiated dental care, not only for routine care of the oral cavity, but for the implications caused by the treatment to which they are submitted. These patients need strict special care regarding dental treatment, mainly due to the complications resulting from the side effects of chemotherapy. It is evidenced in the study by Zerbinì (2011)<sup>14</sup> that it is essential to intervene in the oral complications of chemotherapy, because when they are present and depending on their severity, they can compromise medical treatment, affecting the patient's nutrition when his recovery.

In reference to cancer patients, Renesh, Munishwar and Rath (2012)<sup>15</sup>, report that these should be examined by the dentist as soon as their disease is diagnosed. Treatment should preferably be started before cancer treatment. These patients need priority in dental care to avoid delaying antineoplastic treatment.

The guidance previously given to parents on the control of oral conditions contributes to reducing the rate of oral complications resulting from antineo-

plastic treatment. Arul and collaborators (2012)<sup>16</sup> highlight the application of chemotherapy and radiotherapy have been very effective, however they are associated with significant side effects, including toxicity to hematopoietic and non-hematopoietic tissues.

**On the other hand, rough foods, which can cause abrasion of the mucosa, too thick for the minimum amount of saliva, foods that are very spicy, seasoned, or spicy, or foods that irritate or burn the oral mucosa, such as citrus juices and alcoholic beverages should be avoided.**

According to Silva and collaborators (2012)<sup>17</sup>, Among the side effects of the clinically important oral cavity is the interruption of the functions and integrity of the oral tissues, resulting in

mucositis, gingivitis, candidiasis, dry mouth, trismus, caries, osteoradionecrosis, cellulite and mucosal eruptions. The presence of the dental surgeon in the multidisciplinary oncology team is of fundamental importance in preventing complications.

To Grando et al.,(2015)<sup>18</sup> patients should undergo a thorough dental evaluation, including radiographs, before chemotherapy begins. If the patient's general state of health permits, teeth with no possibility of treatment should be extracted and the rest restored, to reduce the possibility of infection. Endodontic treatment should be considered as an alternative to extractions, in patients who have a high level of oral hygiene. However, endodontic therapy is not indicated in patients with granulocytopenia and thrombocytopenia.

There may be nutritional disorders due to the systemic and local effects of chemotherapy. To Caldas Junior et al (2015)<sup>19</sup>, one should consider a diet rich in sucrose, refined carbohydrates, cold and liquid foods. On the other hand, rough foods, which can cause abrasion of the mucosa, too thick for the minimum amount of saliva, foods that are very spicy, seasoned, or spicy, or foods that irritate or burn the oral mucosa, such as citrus juices and alcoholic beverages should be avoided. Reducing food intake, according to Gondim and collaborators (2010)<sup>20</sup>, it can cause damage such as stomatitis, mouth pain and general debilitation. Nausea and vomiting also impair food intake and increase the loss of proteins and vitamins necessary for the structure of epithelial cells.

With the emergence of new techniques and the use of means that promote the maintenance of oral health in patients with some type of neoplasia, today it is possible to prevent a disease without it already being installed. For this reason, it is extremely important to consider an adequate and thorough care protocol for these patients in order to improve their oral health condition in addition to improving their quality of life.

## CONCLUSION

Leukemia can have its first manifestations in the oral mucosa, which reaffirms the importance of the Dental Surgeon in attending to the disease. After diagnosis, the presence of this professional in the oncology team can decrease morbidity and mortality related to oral complications, as well as increasing the comfort and quality of life of patients during therapy.

All measures that have been repor-

ted require prior knowledge and skills acquired by the professional. This conduct is mainly due to the fact that individuals affected by some neoplasia have a rapid progression of the disease and failure to intervene in a short period of time can result in irreversible damage to their quality of life.

Based on the information obtained, we can conclude that further studies on the public addressed here are necessary, allowing a clinical and practical evaluation, which demonstrates possible ways

to improve the care of oral manifestations in patients with Leukemia.

Thus, it is suggested to encourage the publication of more scientific articles in the area. It is opportune to consider the works already described in the academic community, in order to strengthen future research on this topic. As the article reveals, there are several authors who seek to make clear the importance of the role of the dental professional in the care of oral manifestations in patients with Leukemia. ■

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