

Poor Oral Health Increases the Physical Pain, Psychological Discomfort and Social Incapacity of Individuals with Oncohaematological Diseases

La Mala Salud Oral Aumenta el Dolor Físico, el Malestar Psicológico y la Incapacidad Social de las Personas con Enfermedades Oncohematológicas

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ABSTRACT: The objective of this study was to evaluate the relationship between oral health status and its impact on quality of life, and to suggest dental management strategies in patients undergoing antineoplastic therapy for onco-hematological diseases. A retrospective study including 33 individuals (age 9-79 yr) was conducted. It was observed that the dimensions related to physical pain, psychological discomfort, and social incapacity had statistically significant values. The most frequently performed dental treatments were periodontal treatment (45.45 %), dental restoration (36.36 %), tooth extraction (33.33 %), and endodontic treatment (24.24 %). Thus, poor oral health directly affects the quality of life. Dental management should consider the aspects of the disease and antineoplastic treatment while aiming for safe and effective dental care.

KEY WORDS: onco-hematologic disease, quality of life, oral health, OHIP-14.

INTRODUCTION

The onco-hematological diseases (OHDs) encompass the lymphoid, myeloid, and plasmacytic neoplasms that affect the production of white blood cells in the bone marrow through the clonal mutations in the hematopoietic cells or in the lymphoid organs. OHDs are classified according to their clinical and cytomorphological aspects and represent approximately 12 % of all cancers (Santos & Soares-Júnior, 2012). Chemotherapy treatment may lead to some side effects in the oral cavity, such as oral mucositis, xerostomia, and dysgeusia. These collateral manifestations, associated with preexisting oral health conditions and socioeconomic factors, may interfere with the quality of life of these patients (Vieira *et al.*, 2012; Lima & Minetto, 2014; Gandhi *et al.*, 2017; Quispe *et al.*, 2018).

The term quality of life is directly related to the physical, psychological, social, and spiritual well-being of the individual. Health-related quality of life

assessment is measured by using generic or disease-specific questionnaires in order to describe the functional status and provide an overall measure of the quality of life (Barrios *et al.*, 2015a,b). The Oral Health Impact Profile-14 (OHIP-14) questionnaire is considered a reliable source that aims to evaluate the self-perception of patients regarding discomfort, incapacity, and impact caused by oral complications on their life, well-being, and social welfare. This allows the professional to understand the impact of the disease on the patient's life through the perception in different aspects (Slade, 1997; Dholam *et al.*, 2016).

The aim of this study was to evaluate the relationship between oral health status and its impact on quality of life, as well as to suggest dental management strategies for patients with onco-hematological diseases undergoing antineoplastic therapy.

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MATERIAL AND METHOD

A retrospective study was carried out by analyzing 847 records of individuals who underwent treatment and/or dental follow-up at a clinical research center from 2013 to 2018, and 45 individuals with OHD were selected. This study was conducted in strict conformity with ethical principles, and was approved by the institutional ethical committee for conducting research on human subjects (CAAE:44525921.3.0000.5417).

Demographic data collected from the selected OHD patients included name, age, type of onco-hematologic disease, type of antineoplastic treatment, oral changes, dental treatments performed, and impact of oral health on quality of life. The OHIP-14 questionnaire was used to evaluate the quality of life, which was validated in Portuguese (de Oliveira & Nadanovsky, 2005), and includes seven dimensions with 14 items. The patient had to allocate a score (0 to 4) to quantify the impact on their quality of life, and the scale of responses were multiplied by the corresponding weight to calculate the impact of each dimension. These dimensions are classified as functional limitations, physical pain, psychological discomfort, physical incapacity, psychological incapacity, social incapacity, and disability. The impact of each dimension and the overall/general impact were calculated according to the OHIP-14, and characterized as low (0-1.33), medium (1.33-2.68), or high impact (> 2.68). The higher the mean value of the seven dimensions, the more negative was the impact of oral health on the individual's quality of life.

The data obtained were statistically analyzed through the Friedman test to establish the correlation between oral condition and quality of life. Differences were considered significant when $p < 0.05$.

RESULTS

The data of 45 individuals diagnosed with OHD were analyzed, and 33 subjects presenting the completed OHIP-14 questionnaire were selected. Of the selected dental records, the majority (18, 54.54 %) were male and remaining were females (15, 45.45 %), with median age of 55 yr (range, 9-79 yr). The prevalence of different OHDs in this group is listed in Figure 1.

Prevalence of Onco-hematological diseases

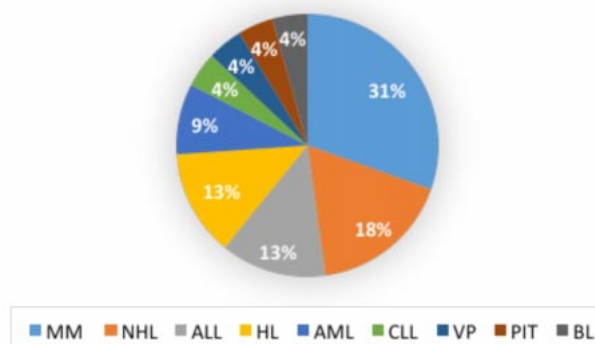


Fig. 1. Prevalence of Onco-hematological diseases. MM = Multiple myeloma; NHL = Non-Hodking lymphoma; ALL = Acute lymphoid leukemia; HL = Hodking lymphoma; AML = Acute myeloid leukemia; CLL = Chronic lymphoma leukemia; VP = Vera polycytemics; PIT = Primary immune trombocytopenia; BL = Burkitt lymphoma.

Non-parametric statistical analysis was performed using the Friedman test, where it was observed that the dimensions related to physical pain ($p = 0.010$), psychological discomfort ($p = 0.002$), and social incapacity ($p = 0.040$) presented statistically significant values. On the other hand, the other dimensions presented non-significant p-values. The OHIP-14 values found in the charts are listed in Table I, highlighting the statistically significant values.

With respect to the commonly performed dental treatments in this group of patients, periodontal treatment was most commonly performed (15 cases, 45.45 %), followed by dental restoration (12 cases, 36.36 %), dental extraction (11 cases, 33.33 %), and endodontic treatment (8 cases, 24.24 %).

DISCUSSION

The resolution of oral complications resulting from the OHD treatment is indispensable, because these complications can aggravate the individual's systemic conditions and increase the risk of morbidity and mortality (Santos & Soares-Júnior; Zimmermann *et al.*, 2015). The results of this study revealed that the most frequent dental procedures are associated with the neglect of oral health of those individuals who often prioritize the treatment of OHD due to the physical and psychological impact on their life.

Table I. Oral Health Impact Profile scores presented by patients.

Patient	Total	D1 (FL)	D2 (PP)	D3 (PD)	D4 (PHI)	D5 (PSI)	D6 (SI)	D7 (DI)
1	2,25	0	0	1,65	0	0,6	0	0
2	3,25	0	0,34	0,9	0	0,8	0,62	0,59
3	11,87	1,96	2,64	1,65	1,56	0	3,24	0,82
4	15,08	0,98	2,64	2	3	2,4	1,24	2,82
5	9,34	0	2	1,1	1,04	1,2	2	2
6	19,81	0	4	4	4	2,04	4	1,77
7	6,38	0	1,34	1	1,04	1	1	1
8	7,43	1,51	1,34	0,9	0	0,8	1,24	1,64
9	9,28	0	1,66	2	2,16	2	1,62	0
10	1,18	0	0	0	0	0	0	1,18
11	3,4	0	0	1,8	0	1,6	0	0
12	9,65	0	2,66	1,55	2,52	0,6	1,24	1,18
13	5,01	0	1,32	2,45	0	0	1,24	0
14	9,93	1,02	0	2,45	1,04	0	1,52	4
15	18,3	1,51	2,68	3,45	3,48	2	4	1,18
16	13,61	2,47	2,66	4	2,04	1,2	1,24	0
17	7,04	1,51	1,34	0,45	0,52	0,8	1,24	1,18
18	0,74	0	0,34	0	0	0,4	0	0
19	11,04	0	0,68	3,1	0	1,6	2,48	3,18
20	23,88	2,49	4	2,35	3,04	3,2	4	4
21	8,1	0	2,68	1,1	1,04	0,8	2,48	0
22	5,83	0	2,66	1,35	0	1,2	0,62	0
23	1,24	0	0,34	0,9	0	0	0	0
24	6,52	0	1,32	2	2	1,2	0	0
25	3,21	0	0,34	1,45	0	1,42	0	0
26	0,9	0	0	0,9	0	0	0	0
27	10,78	1,47	2,01	0,9	1,96	1,2	3,24	0
28	4	0	0	4	0	0	0	0
29	23,19	4,88	2,64	2,9	3,04	3,4	3,62	3,59
30	7,42	0	0	2,46	0,48	0,4	1,86	2,23
31	9,96	2	0,68	2	1,04	1,2	1,86	1,18
32	7,45	0	2	0,9	0	0,4	2,38	1,77
33	6,5	0	2	1,1	0,96	1,2	1,24	0

D: Dimension; FL: Functional limitation; PP: Physical pain; PD: Psychological discomfort; PHI: Physical incapacity; PSI: Psychological incapacity; SI: Social incapacity; DI: Disability.

The dental management of individuals with OHD should be based on the mechanisms and implications of the antineoplastic treatment in the preoperative, trans-operative, and postoperative periods, through preventive and safe strategies aimed at preventing infections, achieving pain control, and

maintaining oral function, thus resulting in improved quality of life of these individuals (Elad *et al.*, 2015; Baungarten, 2018).

Dental Restoration: The clinical and radiographic dental evaluation should be performed prior to starting

the antineoplastic treatment, with periodic and comparative consultations allowing the dental follow-up of the individual (Santos & Soares-Júnior), and should be divided into three phases: pre-, trans-, and post- antineoplastic treatment (Santos & Soares-Júnior; Zimmermann *et al.*). The importance of oral health should be explained to the patient and the respective family members, as well as orientation of oral hygiene using a soft bristle brush and chlorhexidine digluconate 0.12 % without alcohol, which is indicated during all the stages of treatment (Zimmermann *et al.*; Baungarten). All outbreaks with risk of infection should be eliminated prior to antineoplastic treatment, prioritizing the treatment of emergencies and/or acute inflammations. Dental ridges should be rounded, and infiltrated restorations and incipient caries should be restored. Gonçalves *et al.* (2015) stated that restorations with glass ionomer cement present a great benefit because of the availability of fluoride in the buccal environment, since the chemotherapeutic treatment alters salivary defense mechanisms and increases the risk of caries. Severe caries and/or pulp involvement should be treated as long as there is a guarantee of elimination of infectious foci, because depending on the patient's adherence to the treatment and the time prior to the initiation of chemotherapy, the procedures will be less conservative and these teeth may have to be extracted (Zimmermann *et al.*; Baungarten). After oral adjustment of the patient, periodic consultations should be performed during and after the end of the antineoplastic treatment.

Periodontal Treatment and dental extraction: The procedures of periodontal scaling and dental extraction are considered invasive interventions and the surgical risk defines the opportune time to approach these patients (Santos & Soares-Júnior; Baungarten). Teeth that present a periodontal pocket > 6 mm, with acute infection, significant bone loss, furcation involvement, and significant mobility should be extracted (Zimmermann *et al.*). In acute subjects post-chemotherapy, only emergency procedures should be performed, including acute infection, which can progress rapidly due to systemic dissemination during the peak myelosuppression period (i.e., nadir). Therefore, the dentist should interpret the parameters of the hemogram (erythrogram, leukogram, and plaque), coagulation profile, and discuss the case with a responsible medical team. Individuals with severe anemia (hemoglobin < 10 g/dL) present a higher risk of secondary bleeding,

decreased tissue repair, and reduced lymphatic fluid due to decreased cerebral oxygenation. The surgical approach is not safe in these cases, and blood transfusion is necessary. Individuals with leukopenia have a higher chance of infection. Thus, in cases requiring periodontal scaling or tooth extraction, where white blood cell count is ≤ 500 cells/mm³, antibiotic prophylaxis/therapy should be performed (Santos & Soares-Júnior; Zimmermann *et al.*; Duarte *et al.*, 2018). Individuals with thrombocytopenia are at increased risk of bleeding and invasive approaches should be atraumatic, conservative, and with adequate sutures placed for first intention healing. Minor oral surgery may be safely performed in individuals with a platelet count > 30,000 cells/mm³, but may require the use of local hemostatics, such as fibrin sponge, tranexamic acid paste, etc. If there is a need for surgical/invasive procedures after completing the antineoplastic treatment, laboratory tests with stabilized parameters will guarantee the safety in performing these or other dental procedures without restrictions. This will allow the resolution of oral complications, which will significantly improve the quality of life of the individual (Santos & Soares-Júnior; Baungarten; Duarte *et al.*, 2018). Guidance regarding the importance of correct oral hygiene and periodic dental evaluations are essential for the control of periodontal disease and possible dental complications. The patient's systemic condition will be a *sine qua non* for the definition of approach in an outpatient or hospital environment (Santos & Soares-Júnior; Baungarten; Elad *et al.*).

Endodontic treatment: Termination of endodontic treatment of symptomatic non-vital teeth should occur at least one wk before the first chemotherapy session, which will allow the practitioner to evaluate the success of the treatment. In asymptomatic teeth and in cases of endodontically treated teeth with chronic periapical lesions (without signs and symptoms of infection), the procedure should be postponed until hematological indices are stable and within normal range. Single-session endodontic treatment is not indicated (Zimmermann *et al.*).

During chemotherapy in patients at high risk, endodontic treatment should be restricted to emergencies, as nadir usually occurs after 14 d of chemotherapy administration. Therefore, dental interventions should be performed preferably before or 21 d after initiation of chemotherapy. It is essential to evaluate hematological indices along with antibiotic prophylaxis before the endodontic

procedure. There are no restrictions for performing endodontic treatment after the end of the antineoplastic treatment, only if the patient is hemodynamically stable. Individuals who present teeth with endodontic impairment and have less time to initiate antineoplastic therapy should undergo dental extraction in order to prevent future complications (American Academy of Pediatric Dentistry, 2013; Zimmermann *et al.*).

The outpatient dental support in the onco-hematological scope will depend on several factors. The peculiarities of the diseases, as well as the antineoplastic protocol followed in each patient will not only determine the treatment to be followed, but also the time to perform the dental procedures. The correct interpretation of hematological indices and their understanding can guide dental surgeons during dental procedures, thus minimizing the risks to patients with OHD.

Therefore, we can conclude that poor oral health is associated with an increase in physical pain, psychological discomfort, and social incapacity of individuals with OHD, which directly affects the quality of life of these patients. Thus, dental management for restoring oral health should be performed in a judicious way and at the appropriate time of antineoplastic treatment, in order to provide safe and effective dental care.

FUNDING SOURCES AND DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

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RESUMEN: El objetivo de este estudio fue evaluar la relación entre el estado de salud oral y su impacto en la calidad de vida, y sugerir estrategias de manejo odontológico en pacientes sometidos a terapia antineoplásica por enfermedades onco-hematológicas. Se realizó un estudio retrospectivo que incluyó a 33 personas (de 9 a 79 años de edad). Se observó que las dimensiones relacionadas con dolor físico, malestar psicológico e incapacidad social tuvieron valores estadísticamente significativos. Los tratamientos dentales realizados con mayor frecuencia fueron el tratamiento periodontal (45,45 %), la restauración dental (36,36 %), la extracción dentaria (33,33 %) y el tratamiento endodóntico (24,24 %). Así, la mala salud oral afecta directamente la calidad de vida. El tratamiento dental debe tener en cuenta los aspectos de la enfermedad y el tratamiento antineoplásico mientras se busca una atención dental segura y eficaz.

PALABRAS CLAVE: enfermedad onco-hematológica, calidad de vida, salud bucal, OHIP-14.

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