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Original Article

Dental Health, Periodontal and Buccal Hygiene Condition of a Group of Brazilian Women with Breast Cancer

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Abstract

Introduction: The condition of buccal health of patients with cancer may adversely affect the course of treatment, demanding well established conducts of buccal pretreatment through dental evaluations and stabilization of buccal problems. **Objective:** To evaluate the condition of buccal health prior to chemotherapy, in a group of women with breast cancer assisted in a hospital of the public system of Campinas, São Paulo. **Subjects and methods:** In the period 2005-2007, informative lectures were carried out on indications of preventive and curative odontological treatment. Among women interested, 43 having breast cancer were referred to the Service of Dentistry of the institution and evaluated according to the dental condition and need of dental treatment index (DMFT); Community Periodontal Index of Treatment Needs (CPI) and Oral Hygiene Index Simplified. **Results and discussion:** The mean age of assisted women was 52.5 years, and 70% had tumors in clinical stages II and III. In odontological evaluation, 9.5% of the participants had deep periodontal pockets and 60% showed a regular level of oral hygiene; DMFT was 23.5 teeth and 51% belonged to the women who had their last consultation more than 3 years ago. Due to the scarce number of teeth, there was a reduced volume of odontological procedures to be done. **Conclusion:** Subjects presented low predominance of dental caries and advanced periodontal disease due to the great number of absent teeth, demanding only low complexity odontological control procedures. Oral hygiene condition was regular.

Keywords: Dental caries. Breast Neoplasms. Chemotherapy. Hygiene. Mouth.

Introduction

Breast cancer is the second most prevalent neoplasia affecting Brazilian women and is more incident in the South-East region. The National Institute of Cancer estimates 48.930 new cases in the year 2006, with an estimated risk of 52 cases for each 100 thousand women.[1] At present, this growing number of cases is treated with an association of local-regional surgical treatment, radiotherapy, chemotherapy and hormonetherapy.[2]

From the knowledge acquired in the last decades about the biological behavior of breast neoplasias, most affected patients receive chemotherapy in some moment of the treatment, demanding the caring team aptitude to deal with the adverse effects of antineoplasic values.

Chemotherapy schemes more used in the treatment of breast cancer are CMF (cyclofosfamide, methotrexate and 5-fluorouracil) and AC (adriablastine and cyclofosfamide). The application of these drugs increased significantly the total and disease-free survival, but the scientific literature is profuse as to their adverse effects.[3] Nausea, vomiting, gastritis, diarrhea, cystitis and alopecia are the most frequent complaints.[4] Alterations of the buccal cavity, highly sensitive to direct and indirect effects of chemotherapy

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are also commonly referred.[5]

Mucositis is the most frequent direct stomatotoxicity, beginning with complaints of higher sensibility to acid foods and intolerance to very hot or cold ones. It is characterized for hyperemia, edema, ulceration, pain, sialorrhea, a burning sensation and sometimes hemorrhage and secondary infections. Direct stomatotoxicities also include alterations such as xerostomia and neurotoxicity.[6-9]

Although the direct toxic effects constitute the most frequent buccal complications, indirect effects can be potentially more serious. In indirect stomatotoxicity, the main problems are infections and hemorrhage, resulting both of myelossuppression. Since they are more frequent in patients with acute or chronic buccal diseases, buccal pretreatment, dental evaluations and the stabilization of problems become important requisites to reduce the adverse effects of antiblastic treatment.[6,10]

Pulpar and periapical infections, isolated or associated, can have strong negative impact on the patient, particularly when they take place during the period of immunossupression. The effective prevention and control of these complications reduce pain, suffering, incapacities and the risk of complications that affect the rates of morbimortality.[6,11]

The bacterial plaque may increase the risk of local and systemic infection, and justify the efforts to reduce to the utmost its accumulation on teeth, prostheses or any surface of the buccal cavity.[6] The elimination or control of defective buccal hygiene, of periodontal diseases or diseases associated to the third molar and the periapex, of extensive caries, unsatisfactory dental restorations, badly adapted prostheses, threads and orthodontic brackets and other sources of gingival and mucous membrane irritation must be done before the application of chemotherapy or the period of myelossuppression.[10,11]

The treatment of women with breast cancer carried out in the Center of Integral Assistance to Women's Health (CAISM) of State University of Campinas (UNICAMP) has the support of a multidisciplinary team in which dentistry service was recently included. The present study was developed to evaluate the buccal problems of a group of women treated in the unity, aiming at the formulation of strategies for its approach and treatment.

Methods

After the approval of the study by the Committee of Ethics of the institution, a cycle of educative lectures on buccal health was carried out from October 2005 to January 2007, to a total of 350 women assisted in the center of rehabilitation of CAISM. From those, 43 were interested in participating in the study and signed the Term of Informed Consent. We explained that the service was not offering a complete odontological treatment, but a procedure especially adapted to their health condition, and examined the patients' buccal cavity, identifying the infections focuses that could represent risk of complications during oncologic treatment. The general health condition of subjects was evaluated through the consultation of medical registries and anamneses.

In odontological evaluation, we applied the following indexes, and obtained specific rates according to variables consideted:

- Index of Dental Condition and Need of Treatment (DMFT): evaluates dental caries through specific codes attributed to the crown and the root of each tooth, and the necessity of treatment of each tooth, according to the recommendations of World Health Organization[12]
- Community Periodontal Index of Treatment Needs (CPI): it evaluates the degree of compromising periodontal through codes attributed to each sextant of the mouth, according to WHO.[12]
- Oral Hygiene Index Simplified (OHI-S): it measures the area covered by residues (RI-S) and calculus scores (CI-S) in six specific dental surfaces according to Spolky (1997).[13]

Periapical and panoramic X-rays were taken when intra-bone infectious focuses or other bone pathologies were suspected. When the problems were identified, we carried out preventive measures comprised by the study: instructions for oral hygiene, tartar removal with ultrasound, extraction of teeth that could be a source of infection during chemotherapy cycles, caries removal and cavities sealing with glass-ionomer cement, removal of the cutting edges of prostheses and/or defective restorations, cleaning and polishing of total prostheses. Procedures indicated for each case were carried out in an urgency character and in accordance to the seriousness were carried out in one or more consultations.

Data were analyzed through descriptive statistics considering the following variables: mean age of patients, tumor stage, mean time elapsed between the last odontological treatment and the first consultation for pre-chemotherapy buccal adaptation, mean number of consultations necessary for the adaptation of the buccal environment. Central trend and dispersal measures were

taken accompanied by their 95% confidence intervals for describing them.

Results

The age of patients assisted varied from 31 to 76 years, and 70% had breast tumors in clinical stages II and III, indicating the high predominance of advanced disease at the first odontological consultation (Table 1).

Table 1 - Description of sample by subject´s age and clinical stage of disease.

Variable	N	%
Age (years)		
< 35	1	2.5
35-44	9	21.0
44-65	28	65.0
>65	5	11.5
Clinical Stage		
EcO/EcI	13	30.0
EcII	15	35.0
EcIII	15	35.0
Total	43	100.0

In the evaluation of DMFT, 14.3% of women had all teeth attacked by dental caries, both as a past and a current condition. The distribution of DMFT values (decayed, lost or filled teeth) in the sample is in Figure 1, and we observe a great percentage (81%) of women with more than a maxilla attacked by caries (more than 16 teeth). In this sense, the mean number of decayed, filled or lost teeth was respectively, 3.1; 7.9 and 16.5, showing the great number of lost teeth. The percentages of participation of each condition in the composition of DMFT mean value of the sample is in Figure 2.

When evaluating the need of odontological treatment due to dental caries, 92.7% of teeth did not require any procedure, probably due to the high percentage of dental mutilation in the sample. The most appropriate odontological treatments were restorations of small and medium complexity (4.7 %) and extractions (2%), and in less than 1% of the teeth there was a need for more complex treatments (Table 2).

The evaluation of periodontal disease degree showed the most frequent problem to be bleeding, that

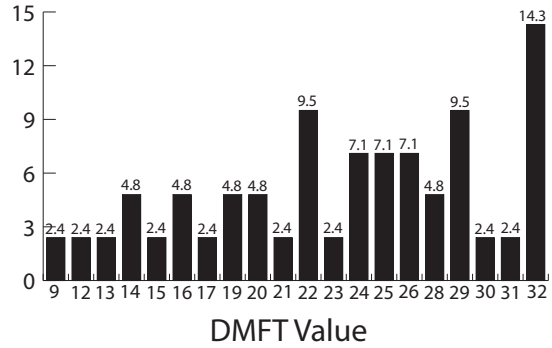

Figure 1 - Distribution of decayed, lost and restored teeth in the sample

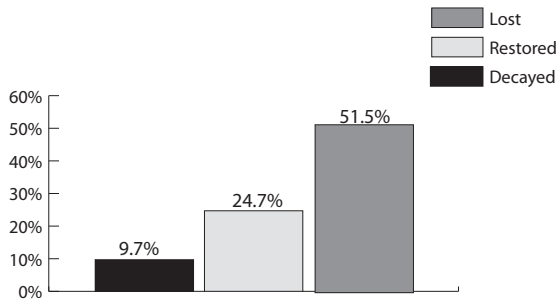

Figure 2 - Percentages of each dental condition in the mean DMFT value of the sample

Table 2 - Description of sample by number of teeth needing caries treatment, with their respective componentes

Treatment needed	N	%
None	1245	92.7
One face restoration	26	1.9
Two or more faces restoration	37	2.8
Crown used due to some problem	1	0.1
Faceted or laminated crown	1	0.1
Pulpar treatment with restoration	6	0.4
Exodonty	27	2.0
No register	33	-
Total	1343	100.0

affected an average of 3.38 sextants for patient and 96 (26.4%) of the total number of evaluated sextants (Table 3). We emphasize that 41.3% of sextants were excluded, in other words, they were not evaluated for lack of indicative teeth (two or more teeth not indicated for extraction). In parallel, 20 women (47.7%) presented bleeding and calculus as higher scores, pointing to the low predominance of advanced periodontal disease (Table 3).

Table 3 - Periodontal condition calculated by Community Periodontal Index. Description of the number of women and sextants affected

	Women affected		Sextants		Mean
Higher score	**N**	**%**	**N**	**%**	
No periodontal disease (0)	8	19.0	6	1.7	0.14
Bleeding (1)	2	4.8	96	26.4	3.38
Calculus (2)	18	42.9	77	21.2	2.62
Shallow pockets (3)	10	23.8	25	6.9	0.81
Deep pockets (4)	4	9.5	9	2.5	0.21
Excluded	-	-	150	41.3	2.48
Total	-	-	363	100.0	

Table 4 - Description of sample according to residues, calculus e oral hygiene simplified indexes

Characteristics	N	%
Residues		
Good	10	28.6
Regular	21	60.0
Poor	4	11.4
No teeth	8	-
Calculus		
Good	11	31.4
Regular	20	57.1
Poor	4	11.4
No teeth	8	-
Oral hygiene		
Good	9	25.7
Regular	21	60.0
Poor	5	14.3
No teeth	8	-

The values for Oral Hygiene Index Simplified (OHI-S) oscillated between the extremes of 0.0 and 6.0 (PD=1.3), turning out to be regular in 60% of the sample, and the same holds for the rates of plate and calculus (Table 4).

Regarding total procedures carried out in the buccal adaptation of the sample, the data of Table 5 show that tartars removal with ultrasound was the most demanded, carried out in 66,7% of subjects, followed by restorations and extractions - procedures included in most of recommendations of buccal care in oncologic patients.[10,11] In 28.8% of subjects extractions were carried out and in 57,3% restoring treatments that demanded, on average, three consultations to be done (Table 5).

The mean time from the last odontological treatment to the first consultation for pre-chemotherapy buccal adaptation was 36 months. In this sense, data showed great variation among participants, and 51.4% had the last odontological consultation more than 3 years ago (Table 6), indicating defective access to this type of service. The reasons for this were not evaluated.

Discussion

In the literature, evidences are constant that the buccal cavity can convert in a source for the dissemination of pathogenic microorganisms or their products capable of producing systemic morbid effects. Besides producing the known list of problems such as pain, suffering, loss of work productivity and incapacity in more vulnerable subjects, producing a group of toothless people with severe functional and social limitations, buccal diseases may give rise to several morbid conditions that go beyond the buccal cavity.[14]

The finding of higher relevance observed in women with breast cancer participants of this study was the high number of absent teeth, which produced a great impact in the prevalence and severity of the evaluated buccal problems. The mean value for DMFT was high (23.5 teeth). Nevertheless, 51.7% corresponded to lost teeth (Figure 2), extracted teeth or having to be extracted,

Table 5 - Pre-chemotherapy procedures for buccal adaptation

Procedures	N	%
Restored faces		
0	19	42.9
1-7	20	50.1
More than 7	3	7.2
Extractions		
0	30	71.4
1-3	8	19.2
More than 4	4	9.6
Ultrasound (tartar removal)		
0	14	33.3
1	28	66.7
Gengivoplasty		
0	37	88.1
1	5	11.9
Prostheses		
0	39	92.9
1	1	2.4
2	2	4.8
Endodontic treatment		
0	40	95.2
1-2	2	4.8

causing a low demand of odontological procedures of higher complexity (Table 2). Likewise, the high rate of dental mutilation influenced the prevalence of advanced periodontal problems, present in only 9.5% of the women (Table 3). Most sextants excluded from the evaluation of Periodontal Index Simplified due to a lack of teeth were from the posterior region of the mouth, a region where dental hygiene is more difficult and, consequently, connected diseases are more prevalent. Thus, the clinical levels of oral hygiene were also favored by the lack of posterior teeth.

Epidemiological knowledge of buccal conditions in oncologic patients is scarce in the literature. The studies

Table 6 - Number of consults needed to buccal adaptation of the sample, number and percentage of women according to time passed from the last odontologic consultation

Number of consultations	N	%	Time since last consultation	N	%
1	8	18.6	<1 year	7	20.0
2	17	39.5	1-2 years	7	20.0
3-5	15	34.9	2-3 years	3	8.6
More than 5	3	14.0	More than 3 years	18	51.4

compare, in general, different neoplasias, in different stages, introducing variables that make difficult the comparison of information. Nevertheless, oncology centers around the world are increasing concerned with the buccal condition of patients before, during and after oncologic treatment. Due to the absence of studies carried out exclusively with breast cancer, data from the present study were compared with the available literature up to now, generally dedicated to cases of hematological or head and neck tumors.

Dental, periodontal and hygiene conditions were evaluated at a group of 88 patients with cancer in different sites, except in the buccal cavity, and compared to a control group of 90 healthy individuals in the University of Valencia.[15] Oncologic patients evaluated presented a DMFT mean value of 12 teeth and an average of 7.5 absent teeth, which contrasts with values obtained in the group of patients of CAISM, which were 23.5 and 16.0, respectively. The same occurred with the mean number of restored and decayed teeth, considerably inferior to those observed in our study. Despite the difference of magnitude of the attack of dental caries, probably resulting from economical and social differences among between the countries, the participation of lost teeth was obvious in the composition of DMFT index. Nevertheless, the design of Galindo's study[15] introduced alterations in Community Periodontal Index proposed by WHO[12] and in the scale of Silness e Löe,[15] used to evaluate the condition of buccal hygiene, making difficult other comparisons.

A comparison of our data with the Brazilian population as a whole reduces discrepancies. In the report of Project SB Brazil 2003,[16] the most recent epidemiological study in Buccal Health of national character carried out in the country, the average of teeth

attacked by caries was 20.1 in the population between 35 to 44 years old. In the present study, despite the reduced number of participants, the predominance of dental caries in breast cancer patients was apparently equivalent, with a DMFT mean value of 18.9 teeth.

A similar proposal to that of our study, using indexes recommended by WHO[12] was applied to 49 Italian patients, nine with acute leukemia and 40 with chronic leukemia, with ages from 24 to 83 years old.[17] The first, being in a sterile environment, were submitted to a simplified clinical examination, whereas the others passed by the total oral protocol. The evaluations revealed a high presence of tartar (44.87%), shallow periodontal pockets (23.72%) and a mean DMFT of 22.6 teeth, being this index due to the high number of lost teeth. In our sample, 42.9% of the patients presented tartar, 23.8% shallow pockets and a mean DMFT of 23.5. A great similarity is observed in the data of the two studies, similar conditions of attacks by caries, periodontal disease and a high number of lost teeth.

In Brazil, most studies aiming at knowing and controlling the buccal condition in oncologic patients follow the world literature trend and have as subjects children or adults attacked by head and neck tumors, for which there are specific management procedures. In a retrospective study carried out by the Federal University of Minas Gerais (UFMG),[18] the dental condition of patients with head and neck cancer was evaluated by examining medical registries looking for information such as unrecoverable teeth, radicular roots, included teeth, the use of prostheses, caries and bone loss. Before radiotherapy, among 207 analyzed patients, 120 had oral alterations: 41% with periodontal disease, 22% with residual roots and 12% with caries. Restorations were indicated for 33 patients, and 50% of the patients needed at least 1 extraction.

Among women with breast cancer assisted by CAISM/UNICAMP, 70% had decayed teeth, 93% one or more teeth extracted due to caries and 47.7% presented bleeding and tartar as more pronounced periodontal problems. The most frequent procedure was tartar' removal with ultrasound (66.7%), while in about 29% it was indicated the extraction of 1 or more teeth (Table 5).

Both studies were carried out in public health units in users with similar economical and social characteristics. However, the unfavorable conditions of the buccal cavity and the recognized risk factors for buccal cancer made difficult comparisons of results. Besides, services' protocol for buccal cancer patients is much more aggressive, with higher rates of extractions of teeth with reserved prognostic, due to the risk of future complications resulting from radiation such as osteoradionecrosis. It is important to point out that buccal health and its management are very specific in oncologic patients who will probably have radiotherapy of head and neck.[18,19]

Before the necessity of defining clinical protocols including several relevant aspects in the care of oncologic patients the "Oral Care Study Section of the Multinational Association of Supportive Care in Cancer" (MASCC) and the "International Society for Oral Oncology" (ISOO) carried out a study evaluating the knowledge and practices of prevention and control of the adverse effects of chemotherapy, bone marrow transplants and radiotherapy of head and neck. About 75% of the health professionals of many countries included in the study said to refer patients to odontologic treatment in cases of intensive chemotherapy associated to a high risk of neutropenia. On the other hand, only 23% did so in least intensive schemes with a lesser degree of myelossuppression. Odontologic centers available to doctors existed in only 25% of the institutions, and most patients were sent to odontologic services in private clinics or public odontologic services.[20] Similar results were reported in Canada, where, given the many services given to oncologic patients, there were recommendation of developing protocols and establishing consensus on the procedures recommended before, during and after oncologic treatment.[21]

A prospective study by Toljanic et al.[22] evaluated a protocol proposing a minimum dental treatment before chemotherapy. 48 patients diagnosed with solid or hematological tumors passed by a dental examination that classified chronic pathologies identified as light or moderate and severe, according to the possibility of triggering an acute process during chemotherapy. Patients with acute pathologies received pre-chemotherapy dental treatments, and those diagnosed with chronic pathologies received no treatment. Results indicated that protocols with minimum intervention before chemotherapy are safe, causing only few complications, without logistic difficulties in patient management in cases where oncologic treatment was urgent.

When there is little time available for buccal adaptation before chemotherapy, the indication of more aggressive protocols must be rethought, since many teeth with advanced disease are sacrificed due to urgency, when they might receive a more conservative treatment and would remain for a longer time. If oral interventions were restricted to acute pathologies, odontologic treatment might be carried out in a safe and efficient way, with

better therapeutic benefits and reduced expenses, broadening the good results.

Prevention and management of oral complications of cancer and oncologic therapy are important to improve quality of life, reducing morbidity and costs of treatment.[21] Studies must be carried out aiming at identifying risk factors for buccal complications in patients attacked by the different types of tumors, allowing individualization of care and the proposal of more specific protocols.

In Brazil, no data are found on odontologic protocols for cancer patients, and we have only isolated studies and different practices adopted in the different institutions. The study of the buccal health condition of the group of women included in this study has given some information for developing strategies for approaching it. Despite unfavorable dental and buccal conditions due to a past history of dental mutilation, low complexity odontologic procedures carried out in few consultations were sufficient to prevent future complications and, according to the participants, to improve quality of life in a moment of great physical and emotional stress.

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