



Characterization of subprosthetic stomatitis in older adults

Caracterización de la estomatitis subprótesis en adultos mayores

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Received: June 7, 2022

Accepted: January 24, 2023

Published: June 12, 2023

Citar como: Coste-Reyes J, Carmona-Concepción JA, Guerra-Pando JA, López-Rodríguez B, Labrador-Falero DM. Caracterización de la estomatitis subprótesis en adultos mayores. Rev Ciencias Médicas [Internet]. Año [citado: fecha de acceso]; 27(2023): e5672. Disponible en: <http://revcmpinar.sld.cu/index.php/publicaciones/article/view/5672>

ABSTRACT

Introduction: the adaptation of dental prostheses in the older adult is a problem, due to the changes that occur in the oral cavity. Subprosthetic stomatitis in older adults represents an inflammatory disease of the oral cavity that can degenerate into a hyperplastic lesion if not treated in a timely manner.

Objective: to characterize the behavior of subprosthetic stomatitis in older adults. Methods: observational, descriptive and transversal study in older adults belonging to the "Ormani Arenado" Teaching Stomatological Clinic of the municipality of Pinar del Río, during the period 2019 - 2020. The universe was constituted by 159 patients older than 60 years old. Using the simple random method, the sample was made up of 88 patients of both sexes, carriers of dental prostheses, diagnosed with subprosthetic stomatitis, following inclusion and exclusion criteria.

Results: subprosthetic stomatitis grade II predominated in 62,5 %, the 60-69 years age group in 45,5 % and female sex (63,6 %). Grade II subprosthetic stomatitis was detected in 62,5 %, 56,8 % used prosthesis for more than ten years, 65,9 % of those affected were acrylic prosthesis wearers, and 84,1 % presented deficient oral hygiene.

Conclusions: The behavior of subprosthetic stomatitis in older adults was related to the use of total prostheses for more than 10 years, especially in patients with acrylic-based prostheses and poor oral hygiene.

Keywords: Aged; Oral Health; Dental Prosthesis; Mouth Diseases; Risk Factors; Vulnerable Groups; Aging; Comprehensive Health Care.

RESUMEN

Introducción: la adaptación de las prótesis dentales en el adulto mayor es un problema, debido a los cambios que ocurren en la cavidad bucal. La estomatitis subprótesis en adultos mayores representa una enfermedad inflamatoria de la cavidad bucal que puede degenerar en una lesión hiperplásica si no se trata de manera oportuna.

Objetivo: caracterizar el comportamiento de la estomatitis subprótesis en adultos mayores.

Métodos: estudio observacional, descriptivo y transversal en adultos mayores pertenecientes a la Clínica Estomatológica Docente "Ormani Arenado" del municipio Pinar del Río, durante el período 2019 - 2020. El universo estuvo constituido por 159 pacientes mayores de 60 años. Utilizando el método aleatorio simple, la muestra la conformaron 88 pacientes de ambos sexos, portadores de prótesis dental, diagnosticados con estomatitis subprótesis, siguiendo criterios de inclusión y exclusión.

Resultados: predominó la estomatitis subprótesis grado II en 62,5 %, el grupo de 60-69 años en 45,5 % y el sexo femenino (63,6 %). Se detectó estomatitis subprótesis grado II en el 62,5 %, usaban prótesis por más de diez años el 56,8 %, el 65,9 % de los afectados eran portadores de prótesis acrílicas, y 84,1 % presentaba higiene bucal deficiente.

Conclusiones: el comportamiento de la estomatitis subprótesis en adultos mayores estuvo relacionado con el uso de prótesis totales por más de 10 años, especialmente en pacientes con prótesis de base acrílica e higiene bucal deficiente.

Palabras clave: Adulto Mayor; Salud Bucal; Prótesis Dental; Enfermedades Bucales; Factores de Riesgo; Grupos Vulnerables; Envejecimiento; Atención Integral de Salud.

INTRODUCTION

Aging is a dynamic, progressive and irreversible process in which there are morphological, functional and biochemical alterations that progressively alter the state of the organism, but even so we should consider old age as a special stage in people's lives.⁽¹⁾

In the past, the image of the elderly was related to that of the totally edentulous, but nowadays, the elderly person is associated with the person who wears prostheses. The dental image of the elderly should only be related to the darkening and wear of the teeth themselves.⁽²⁾

Tooth loss must be resolved through prosthetic rehabilitation. The purpose of stomatological prosthetics is to adequately replace the crown portions of the teeth and associated parts by artificial means. The adaptation of an artificial denture in the mouth is achieved if the biomechanical principles and appropriate technical procedures are taken into account in its design and construction, thus achieving a balance between the mucosa and the artificial element.⁽³⁾

Old, maladjusted, incorrectly made or in poor condition prostheses cause damage to the oral cavity and affect the health of people, especially the elderly. The pathophysiological processes of the oral mucosa can be due to circulatory, necrotic and inflammatory alterations. Inflammatory alterations of the mucosa can be acute, chronic and progressive; chronic alterations include subprosthetic stomatitis, among others.⁽⁴⁾

Subprosthetic stomatitis is the term generally used to describe the inflammatory changes of the mucosa in the palatal vault covered by the prosthesis. It is one of the most frequent alterations of the hard palate mucosa. It is characterized by fibroepithelial proliferation, caused by the misaligned acrylic or metallic base, it is generally associated with poor oral hygiene and incorrect use habits of the prosthesis.⁽⁵⁾

Among the different proposals for classifying the disease, Newton's,⁽⁶⁾ has been one of the most widely used. As grades or stages of subprosthetic stomatitis, the following are indicated:

Grade I: Hyperemic spots: Inflammatory lesion of bright red appearance, generally asymptomatic, where hyperemic spots may appear. The mucosa may be thin, smooth and shiny. It is the minimal lesion visible on inspection.

Grade II: Diffuse erythema: well-defined erythematous area, outlining the outline of the prosthesis; it may be constituted by a finely granular background and sometimes appears covered by a grayish-white exudate.

Grade III: Granular inflammation: More defined lesion, composed of a thick mucosa with irregular granules that rise superficially, resembling papillary forms.⁽⁶⁾

Subprosthetic stomatitis is asymptomatic, little known by the population and inadequately treated in many occasions. From the etiological point of view, a multifactorial model is proposed: it is related to multiple systemic and local factors such as deficiency of folic acid, vitamin B12, iron and proteins. Other systemic conditions such as diabetes mellitus, leukemia, as well as alterations of the immune system may be involved.⁽⁷⁾

Traumatic factors are mentioned due to irritation from the rubbing of maladapted bases to the maxilla, unbalanced central occlusion, ingestion of hot food, age of the patient, lack of patient-professional communication, unbalanced articulation and premature contacts. Also cited are poor oral hygiene, which contributes to fungal infection (*Candida albicans*), hypersensitivity to the monomer (poor processing of acrylic resins used as prosthetic base), patient's own habits and continuous use of prostheses.^(5,6)

The treatment of this condition is aimed at eliminating local factors, for which several authors recommend removing the prosthesis for long periods, brushing, as well as the use of mouthwashes and antifungal therapy.⁽⁸⁾

The subprosthetic stomatitis has a high percentage in rehabilitated patients at international level, such is the case of Denmark, where it has been described between 40 % and 60 %; in Chile 53 %; in Japan 43 %; Brazil 56 %, Finland 52 % and Germany 70 %.⁽⁹⁾

In Cuba, in spite of the efforts made for the correct attention to the population, subprosthetic stomatitis constitutes a problem in these patients, reaching 46,8 % of affected patients.⁽¹⁰⁾

Cuba and other countries report very low numbers of patients with prostheses who regularly visit the stomatologist, this may be associated with the erroneous belief that with the placement of the prosthesis the work has been completed, and many times they only visit the dentist when they need to repair them, or in case of pain or evident injuries that affect the individual's wellbeing. It is necessary to instruct people to go for periodic check-ups of their oral cavity and prostheses.^(4,11)

For all these reasons, it was decided to carry out this research with the objective of characterizing the behavior of subprosthetic stomatitis in older adults belonging to the "Ormani Arenado" Teaching Stomatology Clinic in the municipality of Pinar del Río, which will allow for personalized guidance to patients, thus preventing the appearance of lesions such as subprosthetic stomatitis.

METHODS

An observational, descriptive and transversal research was carried out with the objective of characterizing the behavior of subprosthetic stomatitis in older adults, belonging to the office #31 of the "Ormani Arenado" Teaching Stomatological Clinic of the municipality Pinar del Río during the period January 2019 to March 2020.

Universe: 159 patients older than 60 years old, carriers of stomatological prosthesis.

Sample (intentional non-probabilistic): 88 patients of both sexes, over 60 years of age, prosthesis carriers with presence of subprosthetic stomatitis and willingness to participate in the study. Patients with mental disability or any psychiatric disorder and rehabilitated patients who were not using the appliance were excluded.

Each patient underwent interrogation and thorough clinical examination in a dental chair with direct light through the methods of observation, palpation and exploration, using gloves, flat oral mirror, forceps and explorer to identify the disease, type and location.

Methods used:

The dialectical-materialist provided the philosophical foundations that support the care of the older adult patient with subprosthetic stomatitis, as well as the theories that support such care at the primary level, such as theoretical, empirical and statistical methods.

The historical-logical theoretical method allowed determining the history of the disease, the main clinical variables, and the evolution of the processes for its prevention.

The systemic-structural method allowed to support the importance of the control of subprosthetic stomatitis in older adult patients in stomatological care, as well as preventive actions aimed at minimizing these oral diseases.

The Individual Clinical History of Stomatology was prepared according to the established instructions. This document contained most of the epidemiological clinical information necessary for the research.

The data of interest for the development of the research were collected from the Individual Clinical History of Stomatology and the patient's information collection form.

The analysis of the data was carried out in frequency distribution tables. The following variables were studied: age, sex, degrees of subprosthetic stomatitis, time of use of the prosthesis, material used to make the prosthesis and risk factors for the appearance of these lesions.

The study was approved by the Scientific Research Ethics Committee and Scientific Council of the institution. Patients and family members were informed of the purpose of the study and their acceptance was obtained through the informed consent form.

RESULTS

Table 1 shows the distribution of patients with subprosthetic stomatitis, according to assumed age groups, the most affected age group was 60-69 years with 45,5 %. Grade II was the most frequent form found in the sample with 62,5 %.

Table 1. Distribution of the population according to age and grade of the lesion. Ormani Arenado" Teaching Stomatology Clinic, Pinar del Río, 2019-2020.

Age groups (years)	Grade of severity of the lesion							
	Grade I		Grade II		Grade III		Total	
	No.	%	No.	%	No.	%	No.	%
60-69	15	17,0	20	22,7	5	5,7	40	45,5
70-79	5	5,7	16	18,2	2	2,3	23	26,1
80-89	3	3,4	11	12,5	1	1,1	15	17,0
90 and +	1	1,1	8	9,1	1	1,1	10	11,4
Total	27	27,3	49	62,5	9	10,2	88	100

Table 2 shows the distribution of the population studied according to sex, with a female predominance of 63,6 %. There was also a predominance of females (40,9 %) in patients presenting grade II subprosthetic stomatitis.

Table 2. Distribution of the population according to sex and degree of injury.

Sex	Degree of severity of the lesion							
	Grade I		Grade II		Grade III		Total	
	No.	%	No.	%	No.	%	No.	%
Male	10	11,4	19	21,6	3	3,4	32	36,4
Female	14	15,9	36	40,9	6	6,8	56	63,6
Total	24	27,3	55	62,5	9	10,2	88	100

Table 3 relates the time of use of dental prostheses with the degrees in which subprosthetic stomatitis occurs. The table shows that, as the time of use of the dental prosthesis increases, the number of patients with subprosthetic stomatitis increases. The highest values were observed in patients who used the prosthesis for 10 years or more (56,8 %), coinciding with the fact that 35,2 % of the patients with grade II subprosthetic stomatitis correspond to this group.

Table 3. Distribution of the sample according to time of use of the prostheses and degrees of subprosthetic stomatitis.

Time of use of the prostheses	Degree of severity of the lesion							
	Grade I		Grade II		Grade III		Total	
	No.	%	No.	%	No.	%	No.	%
≤ 5 years	3	3,4	3	3,4	1	1,1	7	8,0
6 - 9 years	8	9,1	21	23,9	2	2,3	31	35,2
≥ 10 years	13	14,8	31	35,2	6	6,8	50	56,8
Total	24	27,3	55	62,5	9	10,2	88	100

As described in Table 4, 58 patients had an acrylic base, for 65,9 %. In those with metallic and mixed bases, 14,8 % and 19,3 %, respectively, were observed. Grade II was present in 62,5 % of the patients, of which 38,6 % had the prosthesis with acrylic base material.

Table 4. Distribution of degrees of severity of the lesion according to prosthetic base material.

Base material	Grade of severity of the lesion							
	Grade I		Grade II		Grade III		Total	
	No.	%	No.	%	No.	%	No.	%
Metallic	2	2,3	10	11,4	1	1,1	13	14,8
Acrylic	17	19,3	34	38,6	7	8,0	58	65,9
Mixed	5	5,7	11	12,5	1	1,1	17	19,3
Total	24	27,3	55	62,5	9	10,2	88	100

In Table 5, the most frequent risk factors for the appearance of subprosthetic stomatitis in the patients studied were poor oral hygiene (84,1 %) and continuous use of prostheses (76,1 %).

Table 5. Risk factors present in the patients studied.

Risk factors	Total	
	No.	%
Poor oral hygiene	74	84,1
Continuous use of prostheses	67	76,1
Dentures misaligned	65	73,9
Smoking	46	52,3

DISCUSSION

It is known that, as age increases, the use of prostheses in the population studied becomes more frequent. In this sense, the marked interrelation between the frequency of the appearance of subprosthetic stomatitis in wearers of artificial dentures and the increase of age has been recurrently exposed (Table 1), being considered an important general factor altered by the discontinuous use of this.⁽¹²⁾

In this regard, Estrada Pereira, refers that these oral lesions have a higher incidence in the adult population of advanced age and more than 95% occur in people over 40 years, the average age at diagnosis is around 60 years.⁽¹³⁾

In the study of Vázquez Veja,⁽¹²⁾ there was similarity with the predominance in the most affected ages of this lesion in the group of 60-74 years with 50,8 %. However, it was different from our study, the predominance of grade I of the disease in 32,2 % of patients.

According to Rodríguez Pimienta,⁽¹⁴⁾ between 25 and 65 % of patients with removable dental prostheses present subprosthetic stomatitis, although the proportion of affected individuals can sometimes be higher than 65 %, since this will depend in part on the type of population selected. This condition is more frequently observed in subjects between 25 and 90 years of age.

These results correspond with the criteria of Cuban authors such as Ramírez Carballo,⁽⁵⁾ Rodríguez Estévez,⁽⁶⁾ Ayala Báez,⁽⁸⁾ and Granado Martínez,⁽¹⁵⁾ who have studied the disease and corroborate that subprosthetic stomatitis is associated with the advance of age, due to the normal degenerative changes that occur throughout life. The regenerative capacity of oral tissues decreases with age; these tissues suffer collagen alterations, affecting the support area necessary for the prosthesis due to alveolar destruction and decreased salivary secretion.

In the study carried out in Cienfuegos by Vázquez Veja,⁽¹²⁾ the female sex was predominant (57,6 %), which was mostly affected by subprosthetic stomatitis grade I, this last data being different from ours (Table 2).

The female predominance is shown with identical condition at the population level, which is consistent with the demographic statistics of Cuba, described in the 2019 yearbook where the older adult population comprised 21,6 % with respect to the total and predominance of the group 60-69 years (49,5 %). Life expectancy at birth in Cuba is 78 years, with better prognoses in women who live longer than men due to physiological differences between both sexes and the role they assume in society.^(16,17)

The results of Diaz Sanchez,⁽¹⁸⁾ coincide in part, where the female sex and the group of 70-74 years old predominated, these results show similarity in the sex variable, and differ from the predominant age group.

The female sex suffers more frequently from subprosthetic stomatitis. The causes are attributed to the fact that women have characteristics such as the frequent increase of capillary fragility from the third decade of life and psychosomatic alterations, both those produced by stress and those that appear during and after the menopausal period, with influence on oral tissues, by altering irrigation, salivation flow and circulating antibodies.⁽⁵⁾

There was no coincidence with our results in the studies of Rodríguez Pimienta,⁽¹⁴⁾ Camdepadrós Agusti,⁽¹⁹⁾ and Cardentey García,⁽²⁰⁾ in which the male sex prevailed as the most affected; however, in these studies, grade II stomatitis was the most frequent, in line with our results.

It was corroborated that the frequency of occurrence of subprosthetic stomatitis in older adults with prostheses was directly proportional to the time of use of the prostheses (Table 3). This finding coincided with Rodríguez Calzadilla,⁽¹¹⁾ who obtained a predominance of oral lesions in patients who had used the prosthetic device for more than 10 years. The 43,6 % thought that they could use the prosthesis until it broke and only 25,5 % stated that they went to the stomatologist when it was loose. Likewise, Estrada,⁽¹³⁾ obtained in his research 40 % of the affected patients who used their prosthetic appliances for more than 20 years.

According to Vázquez,⁽¹⁰⁾ the greatest number of lesions were found between 11 and 20 years of prosthesis use (51,4 %) and the highest percentage of patients (54,1 %) had maladjusted prostheses.

Cardentey García and colls,⁽²⁰⁾ reported a predominance of grade II subprosthetic stomatitis in patients using the prosthesis for more than 10 years. Similar results are found in the report by Piña Odio and colls,⁽²¹⁾ who point out that the probability of prosthesis maladjustment in the mouth is greater the longer the prosthesis has been used, leading to a reduction in its usefulness and the appearance of oral lesions.

On the other hand, the study by Sánchez Quintero,⁽²²⁾ differs from our results, in his study the time of use of the prosthesis prevailed between five and nine years in 82,4 % of his patients.

The adaptation and good functioning of the prosthesis in the elderly, are factors considered by many authors of great importance not only to preserve their oral health, but also their general health, so it is not advisable to keep them for more than five years in use, although they have been made rigorously, due to the changes that occur in the support tissues of the wearers, however it is common to find elderly using appliances that exceed this time ^(19,20,21,23).

The results obtained in Table 4 coincide with Vázquez Veja,⁽¹²⁾ in Cienfuegos, who obtains predominance of use of acrylic based prosthesis (67,8 %) associated to the presence of subprosthetic stomatitis, in this research the difference with the present study consisted in the predominance of stomatitis grade I in most of the patients with acrylic based prosthesis.

According to a local study, within the multifactorial etiology of stomatitis: the misadjusted acrylic or metallic base, causes fibroepithelial proliferation generally associated to deficient oral hygiene and personal habits of use of the prosthesis.⁽²³⁾

The prosthetic rehabilitation of the patient in Cuba is fundamentally carried out with acrylic. The success or not of the treatment will depend on this adaptive process and on the local and systemic tissue changes that occur in the oral mucosa of each patient. The use of acrylic-based prostheses in greater proportion is due to the fact that metal-based and mixed prostheses are restricted due to limitations in the acquisition of the necessary resources for the manufacture of these types of prostheses.

In general, it was observed that the oral hygiene of these patients was not the most adequate (Table 5). Most of the patients reported that they never visit the stomatologist or only do so when they have discomfort. A regularity in these patients is that they resist the change of prosthesis for various reasons, being the economic factor the main one.

These results coincide with those obtained in Santiago de Cuba by Cruz Sixto,⁽²³⁾ Pérez Barrero,⁽²⁴⁾ and Ysla Cheé,⁽²⁵⁾ who obtained a preponderance of subprosthetic stomatitis associated to bad oral hygiene in more than 50 % of their population.

Vázquez Veja,⁽¹²⁾ concluded in his study that poor oral and prosthetic hygiene, continuous use of appliances, as well as the presence of maladjusted prostheses, were the main risk factors predisposing to the appearance and worsening of subprosthetic stomatitis.

Different results were obtained by Rodríguez Pimienta,⁽¹⁴⁾ with smoking (40,4 %) and maladjusted prostheses (38,2 %) among the most frequent risk factors. Cardentey García,⁽²⁰⁾ Sánchez Quintero,⁽²²⁾ and Pérez Peña,⁽²⁶⁾ obtained prevalence of continuous use of prostheses with 93 %, 79,1 % and 88,5 % respectively. Camdepadrós Agusti,⁽¹⁹⁾ observed maladjusted prostheses in 86,6 %.

Elderly people who use dental prostheses need very specific oral hygiene care and the prostheses should be washed in a sink or container with water to prevent them from breaking when they fall. After each meal, they must be removed and sanitized and at night they must be removed to rest the flange.⁽²⁴⁾

In the aggravation of subprosthetic stomatitis, habits such as the continuous use of the prosthesis and deficient oral hygiene play a decisive role. The practice of using the prosthesis during sleep causes degeneration of the salivary glands and mechanical blockage of their excretory ducts, decreases salivary secretion and its pH, the buffer function of saliva which becomes viscous, favors the accumulation of dentobacterial plaque and microorganisms such as *Candida Albicans*.^(8,24)

It is concluded that the population studied was characterized by a predominance of grade II subprosthetic stomatitis, the group aged 60 to 69 years and female sex. It was proved in the study that the behavior of subprosthetic stomatitis in older adults was related to the use of total prosthesis for more than 10 years, especially in patients with acrylic based prosthesis and deficient oral hygiene.

Conflict of Interest

The authors declare that there is no conflict of interest.

Funding

No funding was received for this study.

Contribution of the Authors

JCR and JACC: conceptualization, formal analysis, research, project management.

JAGP: conceptualization, data curation, formal analysis, research, supervision.

BLR: data curation, research, resources, supervision.

DMLF: research, methodology, critical review, data presentation.

All authors participated equally in the approval of the final version.

Additional material

Additional material to this article can be consulted in its electronic version available at: www.revcompinar.sld.cu/index.php/publicaciones/rt/suppFiles/5672

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