ORIGINAL

Oral injuries associated with the use and care of dentures in the elderly

Lesiones bucales asociadas al uso y cuidado de las prótesis de las prótesis en el adulto mayor

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ABSTRACT

Introduction: Oral lesions are more common in older individuals with old or damaged dentures.
Objective: To characterize oral lesions associated with the use and care of dentures in older adults.
Methods: A descriptive, cross-sectional study was conducted on patients from the "Antonio Briones Montoto" Provincial Teaching Stomatological Clinic, Pinar del Río, during the period 2019-2021. Universe: 3886 patients aged 60 or over, rehabilitated with prostheses. Sample (non-probabilistic intentional): 250 elderly individuals with oral paraprosthetic lesions. Data were processed using absolute and relative frequencies and non-parametric Chi-square tests.
Results: oral lesions associated with denture use remain a highly prevalent health problem in the elderly, with the main causes being the absence of preventive measures, inadequate oral hygiene, and lack of knowledge about denture use and care.
Conclusions: the study population was characterized by the presence of subprosthetic stomatitis and poor oral hygiene, caused by total acrylic prosthetic appliances; most of which were in poor condition and had been used for more than 5 years. The predominance of nighttime use of the prosthetic appliance conditioned the presence of the detected oral lesions.

Keywords: Elderly; Associated Conditions; Dental Prosthesis; Maintenance.

RESUMEN

Introducción: las lesiones bucales son más comunes en personas mayores con dentaduras postizas viejas o deterioradas.
Objetivo: caracterizar lesiones bucales asociadas al uso y cuidado de las prótesis en adultos mayores.
Método: estudio descriptivo y transversal en pacientes pertenecientes a la Clínica Estomatológica Provincial Docente "Antonio Briones Montoto", Pinar del Río, en el período 2019-2021. Universo: 3886 pacientes de 60 años o más, rehabilitados protésicamente. Muestra, (intencional no probabilística): 250 gerontes con lesiones orales paraprotésicas. Los datos fueron procesados mediante frecuencias absolutas y relativas y pruebas estadísticas no paramétricas Chi-cuadrado de Pearson.
Resultados: las lesiones bucales asociadas al uso de prótesis siguen siendo un problema de salud de alta prevalencia en el adulto mayor, coexistiendo entre sus principales causas la ausencia de medidas preventivas,

inadecuada higiene bucal y falta de conocimientos sobre uso y cuidado de las prótesis dentales.
Conclusiones: la población estudiada se caracterizó por presencia de estomatitis subprótesis y mala higiene oral, provocadas por aparatos protésicos totales acrílicos; la mayoría de ellos en mal estado y tiempo de uso por más de 5 años. El predominio del uso nocturno del aparato protésico condicionó la presencia de las lesiones bucales detectadas.

Palabras clave: Adulto Mayor; Afecciones Asociadas; Prótesis Dental; Mantenimiento.

INTRODUCTION

The aging of the population is a demographic event with important repercussions on all levels of civilization and the health of this population.[1]

Multiple programs are implemented in the country aimed at improving the quality of life of the elderly, who, in turn, are a priority group in the comprehensive program of dental care for the entire population.[2]

Although all organs and tissues of the human body change and degenerate over the years, this does not occur at the same time. Neither is aging of the stomatognathic system an exception.[1]

An individual is not considered healthy in the presence of any oral disease because oral health is part of general health. The elderly do not usually value oral health as important, nor do they associate it as part of the general state of health.[3]

Problems such as caries, periodontal diseases, and tooth loss are associated with old age, which greatly compromises oral health, causing various consequences, not only medical but also psychological, such as self-esteem, validity, and social and affective interaction that considerably affect the quality of life of older adults.[4]

Oral health is defined as the absence of diseases or disorders that hinder occlusion, chewing, esthetics, and phonation, affecting psychosocial health.[5]

In spite of the oral health programs that stomatological institutions have established, edentulism has remained a recurrent health problem in the population.[1]

The solution to tooth loss is the restoration of the dentition with a prosthetic appliance with the purpose of correctly replacing the crowns and associated parts of the teeth with artificial resources that allow for restoring the masticatory, phonetic, and esthetic activity.[6]

When the prosthesis has been well made, it provides better stability and retention; in this way, the actions exerted by the prosthesis can be tolerated by the supporting tissues. Success depends on correctly assimilating the indications of its use, care, and hygiene.[3]

In addition to enabling dental rehabilitation, the correct installation of the prosthetic appliance provides family and social integration of the elderly, facilitating better and more comprehensive nutrition.[7]

The patient must face an adaptation process when a prosthetic appliance is installed. During the process or at the end, some inconveniences of various kinds may occur: difficulty in chewing, maladjusted prosthesis, and oral mucosal lesions, among others.[6]

Artificial dentures on the buccal mucosa expose to acute lesions such as traumatic ulcers and inflammatory states, as well as chronic lesions such as subprosthetic stomatitis, marginal hypertrophies, fissured epulis, hypermobile crest, papillary hyperplasia and angular cheilitis.[8,9]

Time of use, poor hygiene, and instability of removable prosthetic appliances are risk factors that trigger oral lesions in their wearers.[9]

It is considered of great importance to investigate the presence of oral affections related to the maintenance, handling, and care of stomatological prostheses in the elderly; therefore, a study was carried out to characterize oral lesions associated with the use and care of prostheses in the elderly.

METHOD

It is a descriptive and transversal research in older adults, corresponding to the "Antonio Briones Montoto" Provincial Stomatological Teaching Clinic in Pinar del Río, from November/2019 to November/2021.

Universe: 3886 prosthetically rehabilitated patients. By means of non-probabilistic intentional sampling, the sample consisted of 250 patients aged 60 years and older with prosthetic appliances who presented oral manifestations related to the use of the same, and who gave their consent to be part of the study.

Patients who did not agree to participate in the study, those with mental disability or psychiatric disorders, and those who were not using the prosthetic appliance were excluded.

The group studied underwent a clinical oral examination, and lesions were diagnosed according to their characteristics. The temporomandibular joint (TMJ) was palpated in search of noises and mandibular movements; their expansion and particularities were analyzed to record signs and symptoms that helped in the diagnosis of a possible dysfunction. The prosthetic appliance was also examined to diagnose details corresponding to the

study.

The following variables were studied: oral lesions (subprosthetic stomatitis, traumatic ulcer, fissured epulis, TMJ dysfunction); oral hygiene (good, bad); type of prosthesis (total acrylic, partial acrylic, partial metallic); condition of the prosthesis (good, bad); time of use of the prosthesis (less than five years, more than five years) and night use (yes or no). For the variables of oral lesions and type of prosthesis, it was considered that each patient may have several lesions and more than one prosthetic appliance.

Almost all the lesions were remitted through the identification and elimination of traumatic agents with medication treatment and prosthetic rehabilitation; others were referred to the second level of maxillofacial care and later were followed up in prosthetic consultation.

Patient data were collected in a Microsoft Excel database. Descriptive statistics were applied using absolute and percentage figures, as well as Pearson's Chi-square nonparametric statistical test.

When this test showed an association between the variables analyzed, measures of association were calculated for nominal variables (contingency coefficient C) to determine the intensity of the association. All tests were performed at a 95 % confidence level using the EPIDAD 3.0 statistical analysis program.

Ethical aspects

Fundamental ethical principles such as autonomy, beneficence, non-maleficence, and the principle of justice were complied with.

Patients were informed that their participation was completely voluntary and that they could leave the research when they considered it pertinent without affecting the doctor-patient relationship or the need to give explanations.

They were also informed that the results obtained would only be published in scientific events and prestigious journals, maintaining the confidentiality of their data.

RESULTS

The statistical analysis in table 1 shows dependence between types of lesions and oral hygiene (p=0,0385), although the intensity of this statistical association is weak (contingency coefficient= 0,1703).

Table 1. Relationship between oral lesions and oral hygiene. Antonio Briones Montoto Stomatological Clinic. Pinar del Río, 2019-2021						
Types of injuries	Oral Hygiene					
	Good		Bad		Total	
	No.	%	No.	%	No.	%
Subprosthetic stomatitis	23	39,0	108	48,7	131	46,6
Traumatic Ulcer	12	20,3	52	23,4	64	22,8
Fissured Epulis	9	15,3	38	17,1	47	16,7
TMJ Dysfunction	15	25,4	24	10,8	39	13,9
Total	59	20,9	222	79,0	281	100

Chi-square: 8,3971 gl: 3 p-value: 0,0385
Contingency coefficient (CC): 80,1703

When analyzing the results of Pearson's Chi-square test, a statistical association was observed between both variables (p=0,0001). The intensity of this association is weak, as corroborated by the measure of association for nominal variables (Contingency coefficient = 0,2408). (table 2)

Table 2. Distribution of oral lesions according to type of prosthesis							
Types of injuries	Total (N)	Type of prosthesis					
		Acrylic				Metal (Partial)	
		Acrylic		Partial			
		No.	%	No.	%	No.	%
Subprosthetic stomatitis	131	98	74,8	29	22,1	4	3,0
Traumatic ulcer	64	25	39,0	29	45,3	10	15,6
Fissured Epulis	47	31	65,9	9	19,1	7	14,8
TMJ Dysfunction	39	30	53,5	22	39,2	4	7,1
Total	281	184	61,7	89	29,8	25	8,3

Chi-square: 288,081 gl: 6 p: 0,0001 CC: 0,2408

A statistical association was observed between the variable's time of use of the prosthesis and the condition of the prosthesis (p = 0). The medium intensity of this association is demonstrated by the measure of association for nominal variables (Contingency coefficient = 0,448).

Table 3. Condition of prosthetic devices according to time of use						
Condition of the prosthesis	Time of use of the prosthesis					
	< 5 years		> 5 years		Total	
	No.	%	No.	%	No.	%
Good	49	80,3	12	19,7	61	24,4
Bad	45	23,8	144	76,2	189	75,6
Total	94	37,6	156	62,4	250	100
Chi-square: 627,853 gl: 0 p: 0,0001 CC: 0,448						

Inferential analysis with Pearson's Chi-square test shows that there is no statistical relationship between the two variables (p>0,05). (table 4)

Table 4. Behavior of oral lesions according to nocturnal use						
Types of injuries	Night use				Total	
	Yes		No			
	No.	%	No.	%	No.	%
Subprosthetic stomatitis	99	49,0	32	40,5	131	46,6
Traumatic ulcer	42	20,7	22	27,8	64	22,7
Fissured Epulis	32	15,8	15	18,9	47	16,7
TMJ Dysfunction	29	14,3	10	12,6	39	13,8
Total	202	71,8	79	28,1	281	100
Chi-square: 73,376 gl: 3 p: 0,619						

DISCUSSION

Subprosthetic stomatitis is characterized by its high prevalence, so it has been studied quite frequently worldwide.

The most frequent lesion found in this study was subprosthetic stomatitis (46,6 %), with a predominance of poor oral hygiene (48,7 %).

In this regard, in Villa Clara, Cuba, Escanaverino Oliva et al.[9] developed a predictive model of risk for subprosthetic stomatitis. The most representative predictive factors were inadequate oral hygiene and poor prosthesis quality.

With homologous results, in Guantanamo, Cuba, Piña Odio et al.[10] reported a predominance of subprosthetic stomatitis in 52,7 % and the presence of poor oral hygiene (48,8 %).

A similar study carried out in Sancti Spíritus, Cuba, by Yero Mier et al.[8] on periprosthetic lesions in older adults highlighted the presence of subprosthetic stomatitis and traumatic ulcers in 55,6 % and 31,9 % of the population, respectively. Oral mucosal disorders are considered to affect between 25-50 % of people, depending on the demographic group studied.

The usefulness and fit of the prosthesis decrease with increasing years of use, which triggers changes in the shape of the supporting tissues and alterations in the vertical dimension.

In patients with prostheses in poor condition (maladjusted and worn), the presence of lesions is higher, which means higher risk in relation to those with prostheses in good condition.

A greater number of oral lesions is reflected in carriers of total acrylic prostheses (61,7 %), predominating in patients with subprosthetic stomatitis (74,8 %). Regarding the condition of the prosthesis according to time of use, 62,4 % of the patients used prostheses for more than five years, and 75,6 % had prostheses in poor condition.

Castro et al.[7] in Ecuador investigated the condition of dental prostheses in an urban population of older adults, showing a majority of prosthetic devices in poor condition 72 %, after evaluating mobility, plaque retention, gingival condition, and time of use of the prostheses.

In the research of Escanaverino Oliva et al.[9], similar results were obtained: predominance of the total prosthesis, prolonged use, and poor quality of the appliances.

The behavior of oral lesions associated with nocturnal use of the prosthesis showed a predominance of patients who sleep with the prosthetic appliance (71,8 %) with respect to the total number of lesions. This condition predominated in patients who presented subprosthetic stomatitis (49 %).

Piña Odio et al.[10] also obtained a prevalence of patients with a total acrylic prosthesis (91,4 %), prolonged time of use (90,8 %), and night use of the prosthesis (83,7 %), which was predominantly observed in individuals with subprosthetic stomatitis (52,7 %).

The etiology of subprosthetic stomatitis includes -among others- the habit of sleeping with the prosthesis in place; if it is also used 24 hours a day, it can cause the development of inflammatory oral lesions due to contact with the prosthesis, such as subprosthetic stomatitis, fissured epulis, traumatic ulcer, allergy to the prosthesis material, cheilitis, among others.[9]

It is concluded that the population studied was characterized by the presence of subprosthetic stomatitis, with a predominance of bad oral hygiene, associated with the use of total acrylic prosthesis; most of them were in bad condition and time of use for more than five years. The predominance of nocturnal use of the prosthetic appliance conditioned the presence of the detected oral lesions.

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CONFLICT OF INTEREST

This work presents no conflict of interest.

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