

Periodontal disease in patients with ischemic heart disease

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ABSTRACT

Introduction: periodontal disease is a pathogenic and inflammatory aggression, which continues at a systemic level, due to the passage of bacteria and their products into the body, which constitutes a risk factor for cardiovascular diseases, especially ischemic heart disease. **Objective:** to characterize periodontal disease in patients with ischemic heart disease who belong to the "Manuel Angulo Farrán" Stomatological Clinic, from July 2019 to July 2020. **Method:** an observational, descriptive, cross-sectional study was carried out with a universe represented by 80 patients over 35 years of age, diagnosed with ischemic heart disease, who attended the primary care consultation. Descriptive statistics were used. **Results:** the most affected age group was 60 years and over (68,7 %) and males predominated (66,3 %). 45 % of the patients had periodontal disease. Smoking was the most frequent risk factor (78,7 %); oral hygiene was poor (82,5 %). Patients who did not receive periodontal treatment (67,5 %) predominated. **Conclusions:** in patients with ischemic heart disease, a high percentage of patients with periodontal disease was found, especially in the age group of 60 years and over, with a predominance in males. Most of them had not received periodontal treatment, and presented poor oral hygiene and smoking as the main risk factor.

Keywords: Periodontal diseases; Risk factor for Heart Disease; Myocardial Ischemia.

Periodontal disease is a global health problem that affects industrialized countries and, with increasing frequency, developing countries, especially the poorest communities¹.

When announcing the findings of the world report about oral health, the World Health Organization (WHO) stated that an estimated 4 million people on the planet have suffered from periodontal disease. The general prevalence in Latin America is 90 to 100 %¹.

In Cuba, the prevalence in people under 20 years of age ranges between 60 and 80 % and in adults it is estimated around 90 %, which is why it is suggested that all individuals at some point in life have presented gingivitis, with mild gingivitis being the most frequent. In Holguín, figures higher than 80 % are reported².

The oral cavity cannot be interpreted in an iso-

lated way and independently from the rest of the body, since morbid states that alter oral health also compromise general health. The association between oral microbial infections such as periodontal disease and systemic disorders is not a new concept; it was first raised by the Syrians in the 7th century BC³.

Periodontal disease is a pathogenic and inflammatory aggression, which continues at a systemic level, due to the passage of bacteria and their products into the organism, which constitutes a risk factor for cardiovascular diseases among which are: bacterial endocarditis, myocardial infarction, ischemic heart disease, thrombosis, coronary insufficiency and varicose veins^{4,5}.

According to the WHO, cardiovascular disease is the cause of 20 % of deaths in the population worldwide. With regard to ischemic heart disease, it is one of the main causes of death after 40 years in men and 64 years in women⁶.

Although the causes of this disease have not been specified, there are some conditions that can act as risk factors and cause the appearance of such illness, among them are: smoking, high cholesterol and triglyceride levels, high blood pressure, obesity, sedentary lifestyle, among others that have not been well defined yet, among which periodontal disease may be found⁶.

Despite the fact that several investigations have been carried out around the world on the subject in question, there are few studies published in Cuba in order to relate periodontal disease with ischemic

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Conflict of interests

The authors declare no conflict of interest.

heart disease, and doubts in this regard still appear in the specialized medical literature.

For this reason, the present study was carried out with the aim of characterizing periodontal disease in patients with ischemic heart disease belonging to the "Manuel Angulo Farrán" Stomatological Clinic, from July 2019 to July 2020.

METHOD

Type of study: an observational, descriptive, cross-sectional study was carried out in patients treated at the "Manuel Angulo Farrán" Stomatological Clinic in the municipality of Holguín in the period from July 2019 to July 2020.

Universe and sample: the universe consisted of 80 patients over 35 years of age diagnosed with ischemic heart disease who attended the primary care consultation between July 2019 and July 2020 and expressed their informed consent. Patients for whom all study variables could not be collected due to incomplete medical records were excluded. The investigation was made with the totality of the universe.

Variables and data collection: the variables analyzed were: age, sex, periodontal disease (according to Russel's Periodontal Index form WHO⁷ revised with the following criteria: 0 when there are no signs of periodontal inflammation; 1 when gingival inflammation does not completely surround the tooth; 2 when the most serious sign found is gingival inflammation and completely surrounds a tooth; 6 when the greatest severity is due to the presence of a periodontal pocket and 8 when there's mobility in one of the observed tooth, pathological migration and loss of function), risk factors (smoking, alcohol ingestion, sedentary lifestyle), oral hygiene (according to the oral hygiene index revised by the WHO according to Love's criteria: poor when it presents more than 20 stained surfaces and efficient when it presents less than 20 stained surfaces)⁷ and periodontal treatment received during the course of the disease.

The sources of information were the statistical records of the Stomatology department, the individual stomatological medical records and a questionnaire (Available in Complementary Files to this article) that was applied to the patients in order to obtain information about the risk factors present. Such questionnaire was prepared by the authors of the present study and approved by the Scientific Council and Ethics Committee of the "Manuel Angulo Farrán" Stomatological Clinic.

Statistical processing: the data were registered using Microsoft Excel 2013 for Windows and their processing was carried out with the statistical program SPSS 21.0. Descriptive statistics were used: absolute and relative percentage frequencies.

Ethical standards: the approval of the Ethics Committee and Scientific Council of the "Manuel Angulo Farrán" Stomatological Clinic was obtained. All the information used was kept under the principles of maximum reliability and anonymity. The ethical principles dictated in the II Declaration of Helsinki were taken into account and the patients' informed consent was requested in writing.

RESULTS

The group of 60 years and over predominated with 55 patients (68,7 %), being the male sex more frequent with 53 patients (66,3 %).

Of the total of patients examined, only 14 had healthy gums (17,5 %); while 36 patients presented advanced osseous destruction, tooth mobility and deep periodontal pockets, signs characteristic of periodontal disease (45 %) (Table 1).

Table 1. Distribution of patients according to the presence of periodontal disease. "Manuel Angulo Farrán" Stomatological Clinic, Holguín. July 2019 - July 2020		
Criteria for Periodontal Disease	No.	%
Criterion 0	14	17,5
Criterion 1	2	2,5
Criterion 2	16	20
Criterion 6	12	15
Criterion 8	36	45
Total	80	100
Source: medical record.		

The main risk factor was smoking, which was present in 63 patients (78,7 %) (Table 2).

Table 2. Distribution of patients according to risk factors.		
Risk factors*	No.	%
Smoking habit	63	78,7
Ingestion of alcohol	34	42,5
Sedentary lifestyle	147	58,7
*Several patients presented more than one of the risk factors described. Source: applied questionnaire.		

A predominance of poor oral hygiene was observed in 66 patients (82,5 %). Patients who did not receive periodontal treatment predominated (67,5 %).

DISCUSSION

The population with ischemic heart disease most affected by periodontal disease figured from the sixth decade of life, similar to that obtained by Duque *et al.*⁸, which determines that as age increases there is a significant increase in both diseases; where multiple factors intervene such as a probable detriment of the immune system as a consequence of senescence and prolonged exposure over time to risk factors. .

The male sex presented a marked tendency to be the most affected by both pathologies, which is related to what was reported by Duque *et al.*⁸

In relation to the presence of risk factors, the largest number of patients present the habit of smoking, which coincided with the study carried out by Górska *et al.*⁹ that showed an increase in the incidence of ischemic heart disease, associated with tobacco consumption.

As Pardo *et al.*¹⁰ stated, despite the fact that periodontal disease is considered multifactorial, smoking constitutes one of the environmental factors that most influences the individual's susceptibility of developing the disease. They added that the importance of tobacco was proven, not only as one of the main risk factors for the onset and progression of periodontal disease, but also as an impediment to a normal response to treatment.

Smoking is a well-documented factor related to the severity of periodontal disease and response to treatment, with a five times greater chance of suffering it than non-smokers. It was also considered the most important of the modifiable factors after lipoproteinemias, since smokers have a five times greater risk of suffering from ischemic heart disease, according to Izumia *et al.*¹¹ in their study.

Oral hygiene turned out to be deficient in most of the patients, which coincided with Xu *et al.*¹² who stated that if good oral hygiene is maintained, bacterial plaque is reduced, and this leads to a decrease in inflammation at the local level, in the gums, which in turn favors less inflammation at the systemic level and fewer cardiovascular events.

In the study, most of the patients with ischemic heart disease presented some sign of periodontal disease, many of them in advanced stages of the disease with evident periodontal pockets and great osseous loss, which is similar to that evidenced by Sen *et al.*¹³ who observed that patients with periodontitis have a 25 % higher risk of suffering from ischemic heart disease than in controls and if they are patients over 50 years of age, the risk increases up to 70 %; in the same way, they affirmed that individuals with great osseous loss showed a 50 % increase in the incidence of ische-

mic heart disease, which is why it coincided with the results of the present investigation.

According to Pineda *et al.*¹⁴, periodontal disease is related to an increased risk of coronary heart disease and the main mechanism of action between periodontitis and ischemic heart disease lies in the effect of high-risk pathogens and their endotoxins on the pathogenesis of atherosclerosis.

Authors such as Subha *et al.*¹⁵ and Pacios *et al.*¹⁶ also found a relationship between ischemic heart disease and periodontal disease, which is why they state that individuals with periodontal disease have twice the risk of suffering from a cardiovascular disease, when compared to healthy patients; so that in a cardiac patient it has been considered that perio periodontitis is as important as arterial hypertension, alterations in lipids or body mass.

Both are chronic, multifactorial diseases that share characteristics and etiological factors, which is why they can coexist as a complex or syndrome. Therefore; the early treatment of periodontal disease is of vital importance in the prevention of more serious diseases such as cardiovascular diseases.

Among the limitations of the present study are the small size of the universe studied and the non-application of analytical statistics that contribute substantially to the relationship between the diseases described. Therefore, it is necessary to delve into the subject in order to increase the arsenal of knowledge.

CONCLUSIONS

In patients with ischemic heart disease, a high percentage of patients with periodontal disease was found; fundamentally in the age group of 60 years and over with a predominance in males. Most of them had not received periodontal treatment; they presented poor oral hygiene as well as smoking habit as the main risk factor.

AUTHORSHIP

LCLF: conceptualization, data curation, formal analysis, research, project management, writing-review and editing. **RGGP:** formal analysis, research, original draft, writing-review and editing. **EMGM:** research, original draft, writing-review and editing. All approved the final version of the manuscript.

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Enfermedad periodontal en pacientes con cardiopatía isquémica

RESUMEN

Introducción: la enfermedad periodontal es una agresión patógena e inflamatoria, que continúa a nivel sistémico, debido al paso de bacterias y sus productos al organismo, lo cual constituye un factor de riesgo de las enfermedades cardiovasculares,

en especial la cardiopatía isquémica. **Objetivo:** caracterizar la enfermedad periodontal en pacientes con cardiopatía isquémica pertenecientes a la Clínica Estomatológica "Manuel Angulo Farrán" en el período comprendido entre julio de 2019 a julio de 2020. **Método:** se realizó un estudio observacional, descriptivo, transversal con un universo representado por 80 pacientes mayores de 35 años de edad, diagnosticados con cardiopatía isquémica, que acudieron a la consulta de atención primaria. Se empleó estadística descriptiva. **Resultados:** el grupo de edad más afectado fue de 60 años y más (68,7 %) y predominó el sexo masculino (66,3 %). El 45 % de los pacientes presentó enfermedad periodontal. El hábito de fumar fue el factor de riesgo más frecuente (78,7 %); la higiene bucal fue deficiente (82,5 %). Predominaron los pacientes que no recibieron tratamiento periodontal (67,5 %). **Conclusiones:** en los pacientes con cardiopatía isquémica se encontró un elevado porcentaje de pacientes con enfermedad periodontal; fundamentalmente en el grupo de edad de 60 años y más con predominio del sexo masculino. En su mayoría no habían recibido tratamiento periodontal; presentaron higiene bucal deficiente así como el hábito de fumar como principal factor de riesgo.

Palabras clave: Enfermedades periodontales; Factor de riesgo de Enfermedad Cardíaca; Isquemia miocárdica.



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