

Characterization of vascular risk factors in adult patients

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Este artículo también está disponible en español

ARTICLE INFORMATION

Received: 25 de octubre de 2012

Accepted: 27 de diciembre de 2012

Competing interests

The authors declare no competing interests

ABSTRACT

Introduction: The high prevalence of vascular risk factors in the population and its relationship to the development of ischemic heart disease represent a public health problem.

Objective: To characterize these risk factors in adults.

Method: An observational, descriptive, transversal study was conducted in patients who were treated at the outpatient vascular risk consultation in the municipality of Ranchuelo, Villa Clara, from April 2010 to April 2011. The information was processed using SPSS software, version 15.0. Measures of central tendency and dispersion were estimated for quantitative variables; and qualitative variables were summarized using frequencies and percentages.

Results: The main risk factors were: hypertension (85.7%), obesity (81.1%), diabetes mellitus (61.9%) and smoking (52.4%). At the time of diagnosis, 42.9% of patients had four associated risk factors. Smoking was the one that showed significant association with ischemic heart disease ($p = 0.04$).

Conclusions: The main risk factors identified were: hypertension, obesity, diabetes mellitus and smoking. There was a prevailing trend of association between them. The presence of several risk factors in the same patient was common. It was found a significant association between smoking and the presence of ischemic heart disease.

Key words: Vascular risk factors, Ischemic heart disease

Caracterización de los factores de riesgo vascular en pacientes adultos

RESUMEN

Introducción: La elevada prevalencia de factores de riesgo vascular en la población y su relación con el desarrollo de la cardiopatía isquémica representan un problema de salud pública.

Objetivo: Caracterizar estos factores en adultos.

Método: Se realizó un estudio observacional, descriptivo, transversal en pacientes que asistieron a la consulta de riesgo vascular del municipio de Ranchuelo, en Villa Clara, entre abril de 2010 y abril de 2011. La información se procesó con el programa

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SPSS versión 15.0. Se estimaron estadígrafos de tendencia central y dispersión para variables cuantitativas, y las cualitativas se resumieron mediante frecuencias absolutas y porcentajes.

Resultados: Los principales factores de riesgo identificados fueron: hipertensión arterial (85,7 %), obesidad (81,1 %), diabetes mellitus (61,9 %) y hábito de fumar (52,4 %). El 42,9 % presentó cuatro factores de riesgo asociados al momento del diagnóstico. El hábito de fumar fue el que mostró asociación significativa con la cardiopatía isquémica ($p=0.04$).

Conclusiones: Los principales factores de riesgo identificados fueron: hipertensión arterial, obesidad, diabetes mellitus y hábito de fumar. Predominó la tendencia de asociación entre ellos, y fue frecuente la presencia de varios factores en un mismo paciente. Se encontró una asociación significativa entre el hábito de fumar y la presencia de cardiopatía isquémica.

Palabras clave: Factores de riesgo vascular, Cardiopatía isquémica

INTRODUCTION

Cardiovascular diseases are currently a public health problem because of their high prevalence and because they are the leading cause of death in the adult population of most of the developed and developing countries. In the latter ones, their frequency is expected to continue increasing due to the occurrence of economic and demographic changes that may contribute to increased risk factors (FR)¹⁻³.

In Cuba, these diseases account for nearly 25% of total mortality in the country and are the leading cause of death. The magnitude of this problem is increasing, considering the increase in life expectancy at birth of Cubans and the declining birth rates, which leads to a gradual aging of the population^{4,5}.

The more risk factors a person has, the greater the chances of developing the disease. Some of them can be treated or modified, and some others cannot. However, the control of the greatest number of them, through changes in lifestyle and early treatment, can reduce the risk of cardiovascular disease. In this regard, it is important to identify individual characteristics that contribute to the subsequent development of ischemic cardiovascular disease⁴.

In many cases, smoking, hypertension, hypercholesterolemia, sedentary lifestyle and family history of coronary disease, give the possibility to predict within some limits an individual's risk of getting this disease. Several authors ensure that the vast majority of risk factors for cardiovascular disease is modifiable, that is, that they can be corrected, leading to a significant reduction in them^{6,7}.

From an epidemiological point of view, these vas-

cular risk factors are statistical predictors of the disease and have great clinical importance, especially for the additive effect, when several of them coincide in the same patient^{8,9}.

Quantification of risk factors in an adult population is especially relevant because it allows the identification of its vulnerability, and also helps to focus prevention strategies, as this group is capable of changing its behavior and establishing healthy lifestyle habits to delay or minimize the onset of chronic diseases^{10,11}.

All this was a motivation to conduct a study in order to identify the existence of vascular risk factors and their relation to the occurrence of coronary artery disease in the Cuban adult population of an urban health area in the municipality of Ranchuelo, in the province of Villa Clara; a territory in which previous studies on this subject have been focus mainly in characterizing this problem at municipal level and not disaggregated by villages, as proposed in the present investigation.

METHOD

An observational, descriptive and cross-sectional study was conducted in the town of Ranchuelo, located in the municipality of the same name, in the province of Villa Clara, Cuba, from April 2010 to April 2011.

Forty subjects were selected, the totality of patients that were treated at the vascular risk specialist consultation in the town of Ranchuelo during the study period.

Risk factors such as diabetes mellitus, dyslipidemia as a whole, isolated hypercholesterolemia and hyper-

triglyceridemia, hypertension, smoking, obesity, history of acute myocardial infarction and increased plasma creatinine and uric acid levels were considered.

The data from patient interviews were gathered in a database created in Excel and processed with SPSS software, version 15.0. Statistical measures such as central tendency and dispersion (mean, standard deviation, minimum and maximum values) were estimated for quantitative variables, and qualitative variables were summarized using frequencies and percentages.

Contingency tables were devised for each variable and Chi-square test of independence was calculated to test the relationship of association between variables. The information was shown in tables for better understanding.

RESULTADOS

The average age of patients who were treated at the outpatient vascular risk consultation in the town of Ranchuelo during the study period was 55 years. There were no patients with coronary artery disease and absence of vascular risk factors.

White subjects predominated in the study (82.5%).

Table 1 shows the three conditions in the patient's past medical history with the highest prevalence in the study population: hypertension, diabetes mellitus and dyslipidemia, all of them affecting mainly women, with rates equal to or greater than 60.0 %.

Of all patients included in the study, 21 (52.5%) had some form of coronary artery disease (Table 2). The most prevalent forms were angina pectoris (42.9%) and acute myocardial infarction (28.6%). The average age of these patients was 60 years, higher than the overall average. Females predominated (61.9%).

Table 1. Distribution of patients by sex and main condition in the past medical history.

Past Medical History	Sex				Total	
	Females		Males		Nº	%
	Nº	%	Nº	%		
Hypertension	22	66,7	11	33,3	33	100
Diabetes mellitus	15	60,0	10	40,0	25	100
Dyslipidemia	13	76,5	4	23,5	17	100

Table 2. Distribution of patients according to the type of coronary artery disease.

Forms of coronary artery disease	Nº	%
Angina pectoris	9	42,9
Acute myocardial infarction	6	28,6
Heart failure	3	14,3
Cardiac arrhythmias	3	14,3
Total	21	100

Table 3. Distribution of patients with coronary artery disease, by their risk factors (n=21).

Risk Factors	Nº	%
Hypertension	18	85,7
Obesity	17	81,1
Diabetes mellitus	13	61,9
Smoking	11	52,4
Dyslipidemia	8	38,1
High cholesterol levels	6	28,6
High uric acid levels	3	14,3
High creatinine levels	2	9,5
High triglycerides levels	1	4,8
Previous myocardial infarction	1	4,8

Of all patients included in the study, 21 (52.5%) had some form of coronary artery disease (Table 2). The most prevalent forms were angina pectoris (42.9%) and acute myocardial infarction (28.6%). The average age of these patients was 60 years, higher than the overall average. Females predominated (61.9%).

The risk factors present in more than half of the patients (Table 3) were hypertension (85.7%), obesity (81.1%), diabetes mellitus (61.9%) and smoking (52.4%), the latter was the only one showing a statistically significant association ($p = 0.04$) with the presence of coronary artery disease (Table 4).

Table 4. Relationship between smoking and the presence of coronary artery disease.

Smoking	Cardiopatía isquémica				Total	
	Yes		No		Nº	%
	Nº	%	Nº	%		
Yes	11	52,4	4	21,1	15	37,5
No	10	47,6	15	78,9	21	62,5
Total	21	100	19	100	40	100

P=0.04

All patients had at least one risk factor for the development of the disease. The largest percentage (42.9%) had four associated risk factors at the time of diagnosis, followed by those with two risk factors (23.8%). Only one patient (4.8%) had more than 5 risk factors.

Table 5. Distribution of patients with coronary artery disease, by number of risk factors.

Nº of risk factors	Nº	%
1	1	4,8
2	5	23,8
3	2	9,5
4	9	42,9
5	3	14,3
7	1	4,8
Total	21	100

DISCUSSION

There were no patients with coronary artery disease and absence of vascular risk factors. This fact is related to the consequent increase in the time of exposure to risk factors as age increases. Therefore, it has been considered the existence of a gradual, ongoing relationship between this variable and morbidity and mortality due to coronary disease¹⁻⁴.

Moreno *et al*², suggest that before 40 years of age the incidence of coronary artery disease is low, and virtually unknown in childhood and adolescence, so it

can be said that this is a condition that starts mainly from the fifth decade of life and its prevalence increases with age. However, there are different criteria resulting from the various population groups studied and the unequal distribution among of ethnicities and races.

Studies in patients, of both sexes, over 65 years of age shows that the risk of myocardial infarction has a closer relation to diabetes and advanced age in women, while in men, the ratio is

greater with higher body weight, age, previous cardiac disease and hypertension; which indicates that there may be different risk profiles for both sexes⁴.

Recent intervention studies have demonstrated that cardiovascular risk is the same for both sexes, except that the time of onset is earlier in males¹.

Vascular risk factors tend to associate with one another, so it is relatively common to find several risk factors in the same patient. Sometimes, this association occurs in a higher proportion than would be expected by mere statistical association. The presence of hypertension, although it was not significant in this study, can triple the relative risk of coronary disease. Therefore, its early detection and control are important to prevent the development of coronary artery disease, cerebrovascular disease and peripheral arterial disease^{2,6,7}.

In the case of Cuba, where the prevalence of this disease is high (approximately 30% of the population)⁵, these measures should be part of the everyday work of medical and paramedical staff. Diabetes mellitus deserves special consideration, as it is the vascular risk factor that shows the highest increased in prevalence in recent years. Individuals with diabetes die more frequently due to vascular complications than due to metabolic disorders, which are associated with a high rate of obesity, sedentary lifestyle, hypercholesterolemia, hypertension². The association of this disease with hypertension, hypercholesterolemia and smoking increases exponentially the risk of coronary disease. Hyperlipidemia, especially hypercholesterolemia, is considered a tremendously important vascular risk factor, mainly when associated with other risk factors such as hypertension and diabetes mellitus¹⁰.

CONCLUSIONS

The main risk factors identified were: hypertension, obesity, diabetes mellitus and smoking. There was a prevailing trend of association between them; and it was common the presence of several risk factors in the same patient. A significant association between smoking and coronary artery disease was found.

REFERENCES

1. López L. Comportamiento de los factores de riesgo coronario en la cardiopatía isquémica [Tesis]. Villa Clara: ISCM; 2007.
2. Moreno F, Escobar A, Díaz F, Alegret M, Rodríguez O, Navas M, González M. Factores de riesgo coronario y riesgo cardiovascular en personas adultas de un área de salud de Rancho Veloz (Cuba). *Clin Invest Arterioscl*. 2008;20(4):151-61.
3. Seuc AH, Domínguez E. Esperanza de vida ajustada por Cardiopatía Isquémica. *Rev Cubana Hig Epidemiol* [Internet]. 2006 [citado 4 Mar 2007];43(1): [aprox. 5 p.]. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1561-30032005000100003&lng=es&nrm=iso&tlng=es
4. Seuc AH, Domínguez E, Galán Y. Esperanza de vida ajustada por cáncer. *Rev Cubana Hig Epidemiol* [Internet] 2003 [citado 21 Abr 2011];41(1):[aprox. 3 p.]. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1561-30032003000100004
5. Organización Panamericana de la Salud. Informe Estrategia para el fortalecimiento de las estadísticas vitales y de salud de los países de las Américas. Cuba: Situación de las estadísticas vitales y de salud. Washington: OPS; 2007.
6. Laverdad.es. Las enfermedades cardiovasculares, primera causa de muerte de en España [Internet]. Murcia; © LA VERDAD DIGITAL, S. L [actualizado 22 Mar 2012; citado 19 Mayo 2011]. Disponible en: <http://salud.laverdad.es/cardiologia/tension-arterial/1644-las-enfermedades-cardiovascularesprimera-causa-de-muerte-en-espana>
7. Roses M. Prevenir muertes por enfermedades cardiovasculares [Internet]. 2011 [citado 19 Mayo 2011]. La Prensa.Com.Ni 29 Mar 2011. Disponible en: <http://www.laprensa.com.ni/2011/03/29/opinion/56239>
8. Texas Heart Institute. Factores de riesgo cardiovascular [Internet]. Estados Unidos: THI; © Copyright 1996-2013 [citado 19 Mayo 2011]. Disponible en: http://www.texasheartinstitute.org/hic/topics_esp/hsmart/riskspan.cfm
9. Ministerio de Salud Pública. Anuario estadístico de salud 2010. La Habana: MINSAP; 2011.
10. Organización Mundial de la Salud. Enfermedades cardiovasculares [Internet]. 2012 [19 Mayo de 2012]. Disponible en: <http://www.who.int/mediacentre/factsheets/fs317/es/index.html>
11. World Health Organization. The World Health Report 2009. Health systems: Improving Performance. Geneva: WHO; 2009.