ORIGINAL ARTICLE

Epidemiology of Vascular Risk Factors in Climacteric Women. Experience of a Multidisciplinary Climacteric Clinic at a Public Hospital in Buenos Aires

HORACIO M. ZYLBERSZTEJN[MTSAC 1], SILVIA G. KUSZNIER[2], GRACIELA B OLIVARES[2], GLADYS A OVIEDO [† 3], LUCIANA G KANTEREWICZ [2], ROBERTO J. ELIZALDE [2]

Received: 05/22/2013
Accepted: 06/12/2013

Address for reprints:
Dr. Horacio M. Zylbersztejn
Av. Monroe 3555, (1428) CABA
Tel: (011) 4542-6809
e-mail: hzylber@intramed.net

ABSTRACT

Background
Vascular events in women increase after menopause. In order to reduce their impact on morbidity and mortality, vascular risk factors should be detected and controlled.

Objective
The aim of the study was to analyze vascular risk factors in climacteric women comparing differences between premenopausal and postmenopausal women, and to evaluate the presence of hypertension, diabetes mellitus and/or dyslipidemia in association with age and/or postmenopause.

Methods
This cross-sectional study included all the women who consecutively attended the Multidisciplinary Climacteric Clinic for symptoms related to alterations and/or cessation of menstruation between 2004 and 2009. Age, blood pressure, waist circumference (WC), body mass index (BMI), blood glucose levels, total cholesterol, HDL-C, LDL-C, triglycerides, metabolic syndrome (MS), sedentarism, smoking (SMK) and depression symptoms were evaluated.

Results
Of the 440 women analyzed in the study, with mean age 51.4 ± 5.2 years and median age 51.0 years, 62.5% were postmenopausal. Hypertension was found in 22.1% of women, diabetes mellitus in 4.2%, total cholesterol ≥ 200 mg/dL in 67.7%, HDL-C < 50 mg/dL in 20.6%, hypertriglyceridemia in 28.5%, WC > 88 cm in 45.0%, WC > 80 cm in 75.1%, BMI > 25 in 64.5%, MS in 19.4%, sedentarism in 51.7%, smoking in 22.5% and depression symptoms in 69.8%. Postmenopausal women had higher total cholesterol levels and lower weight. Those with more than 5 years of amenorrhea had both higher total cholesterol and weight. Smokers were younger. Hypertension, diabetes and dyslipidemia were associated with older age but not with postmenopause.

Conclusions
Dyslipidemia, overweight, sedentarism and depression symptoms were prevalent across all groups. Hypertension, diabetes mellitus and dyslipidemia were associated with aging.

Rev Argent Cardiol 2013;81:315-322. http://dx.doi.org/10.7775/rac.v81.i4.2610

Key words > Menopause - Vascular Risk Factors - Metabolic Syndrome - Aging.

Abbreviations >

ATP III	Adult Treatment Panel III	**HT**	Hypertension
AMI	Acute myocardial infarction	**HDL-C**	Cholesterol carried by high-density lipoproteins
BMI	Body mass index	**IDF**	International Diabetes Federation
BP	Blood pressure	**LDL-C**	Cholesterol carried by low-density lipoproteins
VRF	Vascular risk factors	**MS**	Metabolic syndrome
CVD	Cardiovascular disease	**SMK**	Smoking
DBP	Diastolic blood pressure	**SBP**	Systolic blood pressure
DM	Diabetes mellitus	**WC**	Waist circumference

[MTSAC] Full Member of the Argentine Society of Cardiology
[1] Cardiology Division, Hospital Ignacio Pirovano. CABA.
[2] Climacteric Section, Gynecology Division, Hospital Ignacio Pirovano. CABA.
[3] Endocrinology Section, Central Laboratory. Hospital Ignacio Pirovano. CABA.
[†] Deceased

INTRODUCTION

Cardiovascular diseases (CVD) are currently the leading cause of death. (1) The INTERHEART study showed that nine factors may relate to 90% risk of acute myocardial infarction (AMI). Dyslipidemia, hypertension (HT), smoking (SMK), obesity, diabetes mellitus (DM) and stress were the most important risk factors, whereas physical activity, regular fruit and vegetable intake and limited amounts of alcohol consumption could have a protective effect. (2)

In women, SMK increases the risk of developing CVD from two-fold to six-fold in heavy smokers. Diabetic women have a three-fold higher CVD risk, similar to that of obesity. Hypertension could double and dyslipidemia could triple the risk of AMI. (3, 4)

In Argentine women, CVD cause about 31% of deaths, higher than those caused by gynecological cancer. (5) Cardiovascular events begin to appear about 10 years later than in men. (6-8) Delayed onset of these events has been associated with loss of the protection afforded by estrogens, as a result of their sharp decline after menopause. However, several studies have shown conflicting results with this hypothesis and might primarily associate the presence of these events with age progression. (9-11)

In order to lessen the impact of morbidity, disability and death from CVD, preventive intervention must be taken by detecting and controlling vascular risk factors (VRF). (12)

The objectives of this study were: 1) To analyze the epidemiology of VRF in climacteric women; 2) To investigate differences in the prevalence of these factors between premenopausal and postmenopausal women; 3) To compare VRF ratio in postmenopausal women with less and more than five years since the last menstrual period, and 4), To assess whether age or postmenopause could determine the presence of HT, DM and/or dyslipidemia.

METHODS

A transverse study was performed analyzing women consecutively consulting for menstrual alterations or cessation and related symptoms at the Climacteric Section of the Hospital Ignacio Pirovano in Buenos Aires, between 2004 and 2009. Menopause was defined by the occurrence of the last menstrual period 12 months before presentation followed by amenorrhea during that period. These women were referred to as postmenopausal.

Prevalence of VRFs and their differences were examined between climacteric women in association with the presence or definite absence of menstrual periods, as well as between postmenopausal women with less and more than five years since the last menstrual period.

The following variables were analyzed: age, systolic blood pressure (SBP), diastolic blood pressure (DBP), waist circumference (WC), body mass index (BMI), blood glucose, total cholesterol, HDL-C, LDL-C, and triglycerides. Prevalences of HT, DM, total cholesterol ≥ 200 mg/dL, HDL-C < 50 mg/dL, triglycerides ≥ 150 mg/dL, WC > 88cm (acco rding to the ATP III definition), WC >80 (according to the IDF definition), overweight and obesity, metabolic syndrome (MS), sedentarism, SMK and depression symptoms were also assessed.

Blood pressure (BP), weight, height and WC were measured during the first visit. Blood pressure was measured after 5 minute of rest, using a calibrated aneroid sphygmomanometer. The inflatable cuff was placed on the humeral artery 2 cm above the elbow crease, and two measurements were made with a 60-second interval. Presence of HT was defined according to the European Society of Hypertension and the European Society of Cardiology, as BP ≥ 140/90 mm Hg, when the patient referred having this diagnosis and/or was receiving treatment for its control.

Weight and height were measured with the patients in their underwear and without shoes, using a weighing scale with altimeter. The Quetelet equation was used to calculate BMI (weight/square of height: kg/m2). Three levels were considered: BMI < 25 (normal), from 25 to 29.9 (overweight) and BMI ≥ 30 (obesity). A non-extensible measuring tape was used to measure WC in the midpoint between the lower border of the rib cage and the superior border of both iliac crests. Associations with WC values considered to be normal up to 88 cm (ATPIII) and up to 80 cm (IDF) were analyzed.

During the following days, ≥12-hour fasting blood samples were taken to analyze complete blood count, blood glucose, urea, creatinine, uric acid, hepatogram and lipid profile (total cholesterol, HDL-C, LDL-C and triglycerides) with an Automated Siemens ADVIA 1650 equipment. The glucose oxidase method was used to test glucose, colorimetric methods to analyze total cholesterol and triglycerides and direct methods to measure HDL-C and LDL-C. Patients with the following combination of values: total cholesterol > 200 mg/dL, LDL-C > 140 mg/dL, triglycerides > 150 mg/dL and/or HDL-C < 50 mg/dL were considered dyslipidemic. Women were defined as diabetic when they presented fasting blood glucose > 126 mg/dL, or with previous diagnosis and/or treatment for this disease.

Prevalence of MS, defined according to ATP III criteria as presence of three out of five factors: WC > 88 cm, BP > 135/90 mm Hg, blood glucose > 110 mg/dL, HDL < 50 mg/dL and/or triglycerides > 150 mg/dL, was analyzed.

Sedentarism and smoking ratios were assessed. Sedentarism was defined as absence of physical activity or workout less than three times a week for less than thirty minutes walking or sports each time. Current smoker was the woman who smoked one or more cigarettes daily, at least for one year and during the last twelve months. Ex- smoker was defined as the woman who having been a smoker, had abandoned the addiction for a year or more and non-smoker as the one who had never smoked regularly.

Depression symptoms were assessed using the validated Beck scale. A Beck score ≥ 9 indicated presence of these symptoms.

Statistical analysis

Data were analyzed using Epi-Info 3.5 and Statistix 7 softwares. Numerical variables were evaluated using Student´s t test, and results were expressed as mean and standard deviation. In case of non-parametric distribution, results were analyzed with the Mann Whitney-Wilcoxon test and expressed as median. Categorical variables were expressed as percentages and compared using the chi-square test. The odds ratio (OR) with its corresponding 95% confidence interval (95% CI) was used to assess the strength of association between variables. A univariate logistic regression analysis analyzed the relationship between the dependent variables: HT, hypercholesterolemia, low HDL-C, hypertriglyceridemia and DM with independent variables such as age, weight, BMI > 25, WC > 88 cm, sedentarism and postmenopause. Signifi-

cant relationships by univariate analysis were studied with multivariate logistic regression to assess the probability of association independently of other factors. The probability of type I error ≤ 0.05 was considered statistically significant.

RESULTS

From a total of 440 women analyzed, 62.5% were postmenopausal.

Table 1 shows social characteristics and prevalence of VRF. Mean age was 51.4±5.2 years and median age 51.0 years. Twenty four point six percent of patients were born abroad (Germany: 1; Austria: 1; Bolivia: 6; Colombia: 2; Chile: 5; Spain: 2; Italy: 7; Paraguay: 40; Peru: 25 and Uruguay: 13) and half of the patients lived in the City of Buenos Aires. There was a low rate of illiteracy; 52.2% had finished primary school, 35.8% secondary school and 11.6% had attained tertiary or university level. Twenty percent of evaluated women lived alone.

Hypertension was present in 22% of women; 67% had total cholesterol > 200 mg/dL, 21% low HDL-C levels and a third exhibited hypertriglyceridemia, indicating an important proportion of evaluated women with some type of dyslipidemia. Women with blood glucose levels between 110 and 125.9 mg/dL was 4%, similar to that of DM. Waist circumference > 88 cm and > 80 was measured in 45% and 75% of evaluated women, respectively. MS criteria were present in 19.5% of women. More than half were sedentary, 22.5% were current smokers and 14% ex-smokers. Depression symptoms were present in almost 70% of patients.

The association of average age with presence or absence of VRF is shown in Table 2. Patients presenting HT, cholesterol 200 > mg/dL, hypertriglyceridemia, diabetes and WC > 88 cm, were older; conversely, smokers were younger. No significant differences were found for the other variables.

No differences in demographic characteristics were found between premenopausal and postmenopausal women, except for age, postmenopausal patients being older than premenopausal ones [53.5 vs. 47.8 years (p< 0.00001)].

Table 3 shows that VRF-related data (LDL-C, total cholesterol and higher incidence of hypercholesterolemia) were more prevalent in postmenopausal than in premenopausal women. No significant differences were found in BP values or HT occurrence, and neither in HDL-C, triglyceride and blood glucose concentrations, nor in the proportion of patients with low HDL-C, hypertriglyceridemia or DM.

Postmenopausal women were thinner. They had lower prevalence of WC > 80 cm, showing no differences compared with WC > 88 cm. Postmenopausal patients presented reduced BMI (26.9 vs. 28.3, p = 0.01) and less than 46% probability of overweight and obesity. They also tended to be less sedentary, without differences in the occurrence of MS, SMK or depression symptoms.

The occurrence of VRF between postmenopausal women with less and more than five-year amenorrhea is shown in Table 4. The latter were older (p < 0.0001), and evidenced higher prevalence of hypercholesterolemia and elevated BMI (p = 0.01 and p = 0.003, respectively) without significant differences in the other variables.

The probability of HT, cholesterol 200 > mg/dL, HDL-C < 50 mg/dL, triglycerides > 150 mg/dL or DM

Table 1. Social characteristics and prevalence of cardiovascular risk factors in climacteric women, n= 440.

Variables	Frequency
Age, years (mean)	51.4 + 5.2
Age, years (median)	51.0
Age, years	
Minimal (1 case)	38.0
Maximal (2 cases)	67.0
Postmenopausal	62.5%
Place of birth	
CABA. GBA.	39.2 %
Provinces	36.2 %
Other countries	24.6 %
Place of residence	
CABA	50.3 %
GBA	49.7 %
Studies	
Illiterate	0.5 %
Primary education	52.2 %
Secondary education	35.8 %
Tertiary education	11.6 %
Living alone	20.4 %
HT	22.1 %
Total cholesterol ≥ 200 mg/dL	67.7 %
HDL-C < 50 mg/dL	20.6 %
Triglycerides ≥ 150 mg/dL	28.5 %
Glycemia:	
≤ 110 mg/dL	92.0 %
> 110 / < 126 mg/dL	3.8 %
≥ 126 mg/dL (Diabetes)	4.2 %
WC > 88 cm	45.0 %
WC > 80 cm	75.1 %
BMI	
< 25	35.5 %
25 - 29.9	37.9 %
≥ 30	26.6 %
MS	19.4 %
Sedentarism	51.7 %
Smoking:	
Current smokers	22.5 %
Ex smokers	13.8 %
Non smokers	63.7 %
Depression symptoms (Beck ≥ 9)	69.8 %

CABA: Autonomous City of Buenos Aires
GBA: Greater Buenos Aires. HT: Hypertension, HDL-C: Cholesterol carried by high-density lipoproteins. WC: Waist circumference. BMI: Body mass index. MS: Metabolic syndrome.

Table 2. Patient mean age according to presence or absence of vascular risk factors.

Variable	Age	p
HT		
No	50.9 ± 5.2	< 0.001
Yes	52.9 ± 5.0	
Cholesterol ≥ 200 mg/dL		
No	49.8 ± 5.1	< 0.0001
Yes	52.1 ± 5.1	
HDL-C < 50 mg/dL		
No	51.3 ± 5.3	0.43
Yes	51.8 ± 4.9	
Triglycerides ≥ 150 mg/dL		
No	51.0 ± 5.2	0.05
Yes	52.1 ± 5.3	
Diabetes		
No	51.2 ± 5.2	0.02
Yes	53.6 ± 5.7	
WC > 88 cm		
No	50.8 ± 5.5	0.01
Yes	52.0 ± 4.8	
BMI ≥ 25		
No	51.0 ± 5.4	0.37
Yes	51.5 ±5.1	
Sedentarism		
No	51.6 ± 5.4	0.38
Yes	51.2 + 5.0	
Smoking		
No	51.7 ± 5.4	0.01
Yes	50.3 ± 4.2	
Depression Symptoms		
No	51.1 ± 5.3	0.90
Yes	51.0 ± 5.1	

HT: Hypertension, HDL-C: Cholesterol carried by high-density lipoproteins. WC: Waist circumference. BMI: Body mass index.

were respectively related to other independent factors: postmenopause, age, weight, BMI > 25, WC > 88 cm and sedentarism, which are usually associated with dependent variables and the MS. (Table 5)

In the univariate analysis, HT was associated with all the factors, except postmenopause, while hypercholesterolemia was correlated with age and postmenopause. Low HDL-C was associated with weight, BMI > 25, WC > 88 cm and sedentarism. Hypertriglyceridemia correlated with age, weight, BMI > 25 and WC > 88 cm. On the other hand, DM was related with age, BMI > 25 and increased WC. With the exception of hypercholesterolemia, none was associated with postmenopause.

Multivariate regression analysis showed that HT would be determined by age, weight and sedentarism. The relationship of hypercholesterolemia with age and postmenopause showed it was only correlated with the former. Presence of low HDL-C would be associated with weight and sedentarism and hypertriglyceridemia only with weight and increased WC. Diabetes was only correlated with age.

DISCUSSION

Presence of VRFs was evaluated as part of a routine examination in a sample of women, with an average age of 51 years, who consulted for alterations or cessation of menstruation and related symptoms. A high proportion of VRFs was found in these patients: HT in 22%, hypercholesterolemia in 67.7%, hypertriglyceridemia in 30%, HDL-C <50 mg/dL in 20%, DM in 4%, MS in 19.4%, overweight and/or obesity in 65%, and SMK in 22.5%. Moreover, 50% were sedentary and there was high prevalence of depression symptoms. In a sample of climacteric patients of similar age, Pramparo et al found comparable prevalence of dyslipidemia, DM and SMK, but a higher HT ratio. (13).

In this registry, HT, hypercholesterolemia, hypertriglyceridemia, DM and WC > 88 cm, were associated with older age, whereas smokers were younger. Izumi et al. observed an increase in postmenopausal BP attributed to the age of menopause onset and the time elapsed since (14)

In our study, postmenopausal women were thinner and had higher concentrations of total cholesterol and LDL-C. Similar observations in relation to weight and lipid profile were obtained by Feng et al. and Halperin et al. (15, 16)

No major differences were observed in VRFs prevalence between those with more or less than five years amenorrhea, except that the former were older, and cholesterol ≥ 200 mg/dL and BMI ≥ 25 occurred in a greater proportion of women. Moreover, the association of postmenopause with hypercholesterolemia, HT or DM lost significance in the multivariate analysis which included age as covariate. Crawford also found no weight gain association in the transition to menopause in climacteric patients. (17) Cifkova et al. reported no major differences in HT, SBP and DBP in climacteric women associated to premenopausal or postmenopausal stages. (18) Nabeno et al. observed that triglyceride levels were correlated with age and not with menopause (19) Finally, although Casiglia et al. found higher BP and insulinemia values, increased ventricular mass, glucose intolerance, frequent dyslipidemia, more adiposity, and higher values of creatinine and microalbuminuria during postmenopause, these differences disappeared when analyzes were adjusted for age; consequently, they established that vascular effects attributed to postmenopause could be due to aging. (11, 20)

Obesity, especially the abdominal type, is associated with metabolic disorders contributing to increased mortality and cardiovascular disease. (21) Fat deposit increases with age in both sexes, accelerating during menopause, although before menopause, the risk profile may deteriorate due to fat accumulation. (10) In our sample, the prevalence of women with BMI ≥ 25 was high, 45% had WC > 88 cm and 75% had WC > 80 cm. Therefore, overweight and/or obesity detection

Table 3. Prevalence of vascular risk factors in premenopausal (n = 151; 37.5%) and postmenopausal women (n = 252; 62.5%).

Variables	Premenopausal %	Postmenopausal %	O.R.	p
HT	20.6	23.1	1.15 (0.69-1.92)	0.57
SBP, mm Hg	118.8±20.0	120.0±18.1		0.53
DBP, mm Hg	72.0±13.2	72.5±11.6		0.72
Total Cholesterol ≥ 200 mg/dL	60.7	72.9	1.74 (1.13-2.68)	0.01
Total Cholesterol, mg/dL	211.8±38.7	225.6±41.1		0.001
HDL-C< 50 mg/dL	23.1	19.4	0.80 (0.48-1.31)	0.38
HDL-C, mg/dL	61.7±16.2	63.7±18.5		0.26
LDL-C, mg/dL	129.8±37.3	141.27±40.5		0.005
Triglycerides ≥ 150 mg/dL	27.1	29.9	1.14 (0.72-1.81)	0.55
Triglycerides, mg/dL	123.5±65.2	128.5±66.6		0.47
Diabetes	4.2	5.0	1.21 (0.44-3.29)	0.70
Glycemia, mg/dL	97.2±31.4	98.5±33.4		0.70
Weight (average)	70.1±13.0	65.6±13.6		0.001
WC > 88 cm (ATP III)	45.2	44.9	0.98 (0.65-1.48)	0.94
WC > 80 cm (IDF)	83.0	70.0	0.47 (0.28-0.79)	0.004
WC, cm (average)	89.4±12.0	86.9±13.4		0.06
BMI ≥ 25	72.8	59.2	0.54 (0.34-0.84)	0.006
BMI (average)	28.3±5.4	26.9±5.3		0.01
MS	21.5	18.0	0.80 (0.47-1.34)	0.39
Sedentarism	55.7	48.0	0.73 (0.48-1.10)	0.13
Smoking	24.0	19.4	0.76 (0.46-1.25)	0.28
N° of cigarettes/day	9.2±8.2	11.8±11.9		0.29
Beck ≥ 9	69.9	68.9	0.95 (0.59-1.53)	0.85

HT: Hypertension. SBP: Systolic blood pressure. DBP: Diastolic blood pressure. HDL-C: Cholesterol carried by high-density lipoproteins. LDL-C: Cholesterol carried by low-density lipoproteins. WC: Waist circumference. ATP III: Adult Treatment Panel III. IDF: International Diabetes Federation. BMI: Body mass index. MS: Metabolic syndrome.

Table 4. Prevalence of vascular risk factors in postmenopausal women with less than 5 years after menopause (n = 109; 43.3%) and with more than 5 years after menopause (n = 143; 56.7%).

Variables	< 5 y. after menopause %	> 5 y. after Menopause %	O.R.	p
Age, years (mean)	50.6±3.4	55.7±5.1		<0.0001
Weight, kg (mean)	66.2±12.8	65.1±14.2		0.53
HT	19.0	26.1	1.50 (0.80-2.83)	0.20
Total Cholesterol ≥ 200 mg/dL	65.1	78.9	1.99 (1.13-3.51)	0.01
HDL-C < 50 mg/dL	23.9	16.1	0.61 (0.32-1.14)	0.12
Triglycerides ≥ 150 mg/dL	26.7	32.4	1.31 (0.74-2.30)	0.33
Diabetes	3.9	5.8	1.53 (0.44-5.24)	0.49
WC > 88 cm (ATP III)	41.1	47.8	1.31 (0.78-2.18)	0.29
WC > 80 cm (IDF)	70.1	69.9	0.98 (0.56-1.71)	0.96
BMI > 25	48.6	67.4	2.18 (1.29-3.70)	0.003
MS	16.0	19.6	1.27 (0.65-2.48)	0.47
Sedentarism	48.6	47.6	0.95 (0.58-1.57)	0.86
Smoking	23.1	16.5	0.65 (0.34-1.23)	0.19
Beck ≥ 9	67.7	69.9	1.10 (0.61-2.00)	0.73

HT: Hypertension, HDL-C: Cholesterol carried by high-density lipoproteins. WC: Waist circumference. BMI: Body mass index. MS: Metabolic syndrome.

would be important in order to apply suitable preventive measures. (22)

The collection of risk factors in MS that increase the probability of developing CVD should be routinely assessed. Conflicting reports have associated variations of some VRFs in the MS with postmenopause or with age. (23-27) Epidemiological studies show different MS prevalence, which may be related to genetic, cultural and/or socioeconomic factors of different ethnic groups. In our sample, the incidence of MS was

Table 5. Univariate and multivariate logistic regression analysis of the association between HT, Cholesterol ≥ 200 mg/dL, HDL-C < 50 mg/dL, triglycerides ≥ 150 mg/dL and DM with Age, Weight, BMI ≥ 25, WC > 88 cm, sedentarism and postmenopause. In the multivariate analysis, the significant univariate regression variables were used.

Univariate Analysis	HT OR	p	Cholesterol >200 OR	p	HDL-C < 50 OR	p	Triglycerides >150 OR	p	DM OR	p
Age	1.07 (1.03-1.12)	< 0.001	1.10 (1.05-1.15)	< 0.001	1.02 (0.97-1.06)	0.49	1.04 (1.00-1.08)	0.05	1.11 (1.02-1.20)	0.01
Weight	1.05 (1.03-1.07)	< 0.001	0.99 (0.98-1.01)	0.24	1.05 (1.03-1.07)	< 0.001	1.03 (1.02-1.05)	< 0.001	1.01 (0.97-1.04)	0.67
BMI ≥ 25	2.01 (1.18-3.41)	0.01	1.20 (0.79-1.83)	0.38	2.51 (1.43-4.40)	0.001	1.58 (0.99-2.53)	0.05	4.23 (0.98-18.17)	0.05
WC >88 cm	2.52 (1.55-4.09)	< 0.001	1.16 (0.84-1.90)	0.27	3.28 (2.00-5.36)	< 0.001	2.96 (1.90-4.62)	< 0.001	4.16 (1.34-12.84)	0.01
Sedentarism	1.70 (1.05-2.74)	0.03	1.42 (0.95-2.12)	0.08	1.86 (1.16-2.99)	0.01	1.09 (0.71-1.67)	0.68	0.94 (0.36-2.41)	0.89
Postmenopause	1.16 (0.70-1.93)	0.57	1.74 (1.14-2.68)	0.01	0.80 (0.49-1.31)	0.38	1.15 (0.72-1.82)	0.55	1.21 (0.45-3.26)	0.70
Multivariate analysis	**HT OR**	**p**	**Cholesterol >200 OR**	**p**	**HDL-C<50 OR**	**p**	**Triglycerides >150 OR**	**p**	**DM OR**	**p**
Age	1.10 (1.04-1.15)	< 0.001	1.09 (1.04-1.15)	0.001		0.01	1.03 (0.99-1.08)	0.12	1.10 (1.00-1.20)	0.04
Weight	1.06 (1.03-1.09)	< 0.001			1.03 (1.01-1.06)	0.94	1.03 (1.00-1.05)	0.04		
BMI≥ 25	0.63 (0.30-1.34)	0.23			0.98 (0.46-2.08)	0.20	0.60 (0.31-1.18)	0.13	2.31 (0.43-12.46)	0.32
WC > 88 cm	0.99 (0.48-2.03)	0.97			1.56 (0.78-3.14)	0.03	2.30 (1.21-4.38)	0.01	2.75 (0.76-10.00)	0.12
Sedentarism	1.75 (1.04-2.94)	0.03			1.72 (1.03-2.86)					
Postmenopause			1.11 (0.67-1.83)	0.68						

HT: Hypertension, HDL-C: Cholesterol carried by high-density lipoproteins. DM: Diabetes mellitus. WC: Waist circumference. BMI: Body mass index. MS: Metabolic syndrome.

19.4% and among postmenopausal women, 18.0%. Hidalgo et al. found MS in 41.5% of postmenopausal Ecuadorian women. (28) Another study of 3965 Latin-American women reported MS in 28.1% of women with ages between 40-44 years and in 42.9% with ages between 60-64 years, a finding that was attributed to MS increase with age and with time since menopause. (29) Janssen et al. observed 20-30% MS prevalence in middle-aged U.S. women. The incidence of MS increased in the interval comprised between 6 years before and 6 years after the last menstrual period, associated to progressive androgenicity. (23) Qader et al. found 11.6% MS prevalence in Swedish climacteric women. (30)

It is important to detect depression symptoms, as these may favor the occurrence of vascular events with worse clinical outcome. (31) In our sample, we found a high proportion of depression symptoms, possibly related to certain vital life issues during this stage (death of relatives, growth of children, separations, etc.). Raikkonen et al. reported a higher prevalence of MS and a greater progression of carotid lesions in postmenopausal women with depression disorders (32, 33)

The conflicting findings regarding the relationship of VRFs and CVD onset with post menopause or aging may result from differences between samples, their size, age range, time of amenorrhea, natural or surgical menopause, hormonal differences, or perhaps unsuitable designs for the study of postmenopause.

Moreover, Kok et al. propose that the presence of various VRFs could anticipate the age of menopause. They observed in 695 women of the Framingham cohort that those who had VRFs during premenopause had premature menopause compared to those without VRFs. (34) This could explain the contradictory results of CVD frequency in relation to age of menopause and hormone replacement therapy effects. Further research is needed to clarify these points.

Limitations

The limitations of this research are those typical of a cross-sectional study, in addition to a possibly not sufficiently large sample size. Moreover, these women might present some bias regarding undefined characteristics of those who consulted and which could determine their attendance at the hospital. External validation or inference is the extent to which the results of a study can be applied to individuals who have not been part of it. (35) Our study provides data for women in the metropolitan area of Buenos Aires and the results are consistent with other epidemiological Argentine and foreign studies.

CONCLUSIONS AND FINAL COMMENT

A high prevalence of dyslipidemia, sedentarism, depression symptoms, overweight and obesity was seen in this sample. Hypertension, DM and hypercholesterolemia were significantly associated with age, but not with postmenopause.

RESUMEN

Epidemiología de los factores de riesgo vascular en mujeres climatéricas. Experiencia de un consultorio multidisciplinario de climaterio en un hospital público de Buenos Aires

Introducción

En las mujeres, la aparición de eventos vasculares se incrementa luego de la menopausia. Para disminuir su impacto en relación con la morbimortalidad, se deben detectar y controlar los factores de riesgo vascular.

Objetivo

Analizar los factores de riesgo vascular en mujeres climatéricas. Investigar las diferencias de estos factores entre las premenopáusicas y las posmenopáusicas. Evaluar la presencia de hipertensión arterial, diabetes mellitus y/o dislipidemia en asociación con la edad y/o la posmenopausia.

Material y métodos

Estudio de corte transversal de mujeres que consultaron consecutivamente al Consultorio Multidisciplinario de Climaterio entre 2004 y 2009 por síntomas relacionados con alteraciones y/o cese de la menstruación. Se evaluaron: edad, presión arterial, perímetro de la cintura (PC), índice de masa corporal (IMC), glucemia, colesterol total, C-HDL, C-LDL, triglicéridos, síndrome metabólico (SM), sedentarismo, tabaquismo (TBQ) y síntomas depresivos.

Resultados

Se analizaron 440 mujeres, edad 51,4 ± 5,2 años, mediana 51,0 años; el 62,5% eran posmenopáusicas. Se halló hipertensión arterial en el 22,1%, diabetes mellitus en el 4,2%, colesterol total ≥ 200 mg/dl en el 67,7%, C-HDL < 50 mg/dl en el 20,6%, hipertrigliceridemia en el 28,5%, PC > 88 cm en el 45,0%, PC > 80 cm en el 75,1%, IMC ≥ 25 en el 64,5%, SM en el 19,4%, sedentarismo en el 51,7%, TBQ en el 22,5% y síntomas depresivos en el 69,8%. Las posmenopáusicas tuvieron más colesterol total y menor peso. Aquellas con más de 5 años de amenorrea presentaron mayor colesterol total y mayor peso. Las fumadoras fueron más jóvenes. La hipertensión arterial, la diabetes mellitus y la dislipidemia se asociaron con la mayor edad y no con la posmenopausia.

Conclusiones

Se observaron prevalencias elevadas de dislipidemia, sobrepeso, sedentarismo y síntomas depresivos. La hipertensión arterial, la diabetes mellitus y la dislipidemia se asociaron con el envejecimiento.

Palabras clave > Climaterio - Factores de riesgo vascular - Síndrome metabólico - Envejecimiento

Conflicts of interest

None declared.

REFERENCES

1. Wilson P, D´Agostino R, Levy D, Belanger AM, Silbershatz H, Kannel WB. Prediction of coronary heart disease using risk factor categories. Circulation 1998;97:1837-47. http://doi.org/m5c

2. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART STUDY): case-control study. Lancet 2004; 364: 937-52. http://doi.org/d557rz

3. Hennekens CH. Risk factors for coronary heart disease in women. Cardiol Clin 1998;16: 1-8. http://doi.org/bh3nvc

4. Ciruzzi M, Rozlosnik J, Pramparo P, Delmonte H, Paterno C, Soifer S y col. Estudio FRICAS, Factores de riesgo para infarto agudo de miocardio en Argentina. Rev Argent Cardiol 1996; 64:1-40.

5. Estadìsticas Vitales. Información Básica. Año 2011. Secretaría de Políticas, Regulación e Institutos. Dirección de Estadística e Información de Salud. Sistema Estadístico de Salud. Ministerio de Salud. Presidencia de la Nación. http://www.deis.gov.ar/Publicaciones/Archivos/Serie5Nro55.pdf.2012

6. Ciruzzi M, Soria P, Fortunato M, Zylberstejn H, Talamona S, Gagliardi E y col. Influencia del sexo, tabaquismo y antecedente familiar de enfermedad coronaria en la edad de aparición del primer infarto agudo de miocardio. Rev Argent Cardiol 1995;63:17-23.

7. Grace SL, Fry R, Cheung A, Stewart DE. Cardiovascular disease. BMC Women Health 2004;4:S15. http://doi.org/b6qb86

8. Sosa Liprandi M, Harwicz P, Sosa Liprandi A. Causas de muerte en la mujer y su tendencia en los últimos 23 años en la Argentina. Rev Argent Cardiol 2006;74:297-303.

9. Luoto R, Sharrett AR, Schreiner P, Sorlie P, Arnett D, Ephross S. Blood pressure and menopausal transition: the Atherosclerosis Risk in Communities Study (1987–95). J Hypertens 2000;18:27-33. http://doi.org/dhm57c

10. Pascot A, Lemieux S, Lemieux I, Prud'homme D, Tremblay A, Bouchard C et al. Age-related increase in visceral adipose tissue and body fat and the metabolic risk profile of premenopausal women. Diabetes Care 1999; 22:1471-78. http://doi.org/c8zvbq

11. Casiglia E, Tikhonoff V, Caffi S, Bascelli A, Schiavon L, Guidotti F et al. Menopause does not affect blood pressure and risk profle, and menopausal women do not become similar to men. J Hypertens 2008; 26:1983-92. http://doi.org/cdgndd

12. Kotseva K. Políticas preventivas globales. Estrategias a escala europea y mundial. Rev Esp Cardiol 2008;61 960-70. http://doi.org/fs97hs

13. Pramparo P, Urthiague M, Romera G, Lavorato M, Menzio A, Muraly J y col. La menopausia como factor de riesgo vascular: valoración del tratamiento de sustitución hormonal. Rev Argent Cardiol 1998;66:75-85.

14. Izumi Y, Matsumoto K, Ozawa Y, Kasamaki Y, Shinndo A, Ohta M et al. Effect of age at menopause on blood pressure in postmenopausal women. Am J Hypertens 2007;20:1045-50. http://doi.org/c54zh3

15. Feng Y, Hong X, Wilker E, Li Z, Zhang W, Jin D et al. Effects of age at menarche, reproductive years and menopause on metabolic risk factors for cardiovascular diseases. Atherosclerosis 2008;196:590-7. http://doi.org/bhb8q3

16. Halperin H, Berg G, Aisemberg L, Brites F, Siseles N, Wikinski R. Intermediate-density lipoproteins and liver lipase in postmenopausal women. Medicina. 1992;52:213-9.

17. Crawford SL, Casey VA, Avis NE, Mc Kinlay SM. A longitudinal study of weight and the menopause transition: results from the Massachusetts Women's Health Study. Menopause 2000;7:96-104. http://doi.org/bpx6g8

18. Cifkova R, Pitha J, Lejskova M, Lanska V, Zecova S. Blood pressure around the menopause: a population study. J Hypertens 2008;26:1976-82. http://doi.org/bnv7vr

19. Nabeno Y, Fukuchi Y, Matsutani Y, Naito M. Influence of aging and menopause on postprandial lipoprotein responses in healthy adult women. J Atheroscler Thromb 2007; 14: 142-50. http://doi.org/d56g78

20. Casiglia E, Tikhonoff V, Mormino P, Piccoli A, Pessina AC. Is menopause an independent cardiovascular risk factor? Evidence from population-based studies. J Hypertens Suppl 2002; 20: S17-22.

21. Kissebach A, Krakower GR. Regional adiposity and morbidity. Physiol Rev 1994; 74: 761-811.

22. Song YM, Ha M, Sung J. Body mass index and mortality in middle-aged Korean women. Ann Epidemiol 2007;17:556-63. http://doi.org/b4b5gk

23. Janssen I, Powell LH, Crawford S, Lasley B, Sutton-Tyrrell K. Menopause and the Metabolic Syndrome. The Study of Women's Health Across the Nation. Arch Intern Med 2008;168:1568-75. http://doi.org/brdf7g

24. Park YW, Zhu S, Palaniappan L, Carnethon MR, Heymsfield SB. The Metabolic Syndrome. Prevalence and Associated Risk Factor Findings in the US Population From the Third National Health and Nutrition Examination Survey, 1988-1994 Arch Intern Med 2003;

163:427-36. http://doi.org/fsg5z4
25. Kim HM, Park J, Ryu SY, Kim J. The effect of menopause on the metabolic síndrome among Korean women: the Korean National Health and Nutrition Examination Survey, 2001. Diabetes Care 2007;30:701-6. http://doi.org/dt5z24
26. Cho GJ, Lee JH, Park HT, Shin JH, Hong SC, Kim T et al. Postmenopausal status according to years since menopause as an independent risk factor for the metabolic syndrome. Menopause 2008;15:524-9. http://doi.org/bq8jzh
27. Rossi R, Nuzzo A, Origliani G, Modena MG. Metabolic syndrome affects cardiovascular risk profile and response to treatment in hypertensive postmenopausal women. Hypertension 2008;52:865-72. http://doi.org/dntn46
28. Hidalgo LA, Chedraui PA, Morocho N, Alvarado M, Chavez D, Huc A. The metabolic síndrome among postmenopuasial women in Ecuador. Gynecol Endocrinol 2006; 22:447-54. http://doi.org/bs5tjk
29. Royer M, Castelo-Branco C, Blümel JE, Chedraui PA, Danckers L, Bencosme A et al. The US National Cholesterol Programme Adult Treatment Panel III (NCEP III): prevalence of metabolc síndrome in postmenopausal Latin American Women. Climateric 2007;10:164-70. http://doi.org/db4k52
30. Qader SS, Shakir YA, Nyberg P, Samsioe G. Sociodemographic risk factors of metabolic síndrome in middle-aged women: results from a population-based study of Swedish women. The Women´s Health in the Lund Area (WHILA) Study. Climateric 2008;11:475-82. http://doi.org/bz88cz
31. Rutledge T, Reis SE, Olson MB, Owens J, Kelsey SF, Pepine CJ et al. Depression symptom severity and reported treatment history in the prediction of cardiac risk in women with suspected myocardial ischemia. The NHLBI-sponsered WISE Study. Arch Gen Psychiatry 2006;63:874-80. http://doi.org/b5n9z4
32. Räikkönen K, Matthews KA, Kuller LH. The relationship between psychological risk attributes and the metabolic syndrome in healthy women: antecedent or consequence? Metabolism 2002;51:1573-7. http://doi.org/d5sthh
33. Räikkönen K, Matthews KA, Sutton-Tyrrell K, Kuller LH. Trait anger and the metabolic syndrome predict progression of carotid atherosclerosis in healthy middle-aged women. Psychosom Med 2004;66:903-8. http://doi.org/fmdsf8
34. Kok HS, van Asselt KM, van der Schouw YT, van der Tweel I, Peeters PH, Wilson PW et al. Heart disease risk determines menopausal age rather than the reverse. J Am Coll Cardiol 2006;47:1976-83. http://doi.org/bfhftj
35. Beaglehole R, Bonita R, Kjellström T. Capítulo 3, Tipos de estudio. En Beaglehole R, Bonita R, Kjellström T (eds). Epidemiología básica. Traducción de la 1° reimpresión de la obra en inglés Basic Epidemiology. Organización Mundial de la Salud 1993. Organización Panamericana de la Salud. Washington DC. EEUU 1994, p 33-57.