Blood Pressure Findings in Spanish Dyslipidemic Primary-Care Patients. LIPICAP–PA Study

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Background and objectives. Despite the well-known significant relationship between blood pressure and cardiovascular mortality, few data are available on the blood pressure characteristics of dyslipidemic patients. The aims of this study were to determine the blood pressure characteristics of dyslipidemic patients being treated in primary care, and to identify factors associated with poor blood pressure control.

Methods. This multicentre cross-sectional study involved patients of both sexes aged ≥18 years who were diagnosed with dyslipidemia (ie, hypercholesterolemia, hypertriglyceridemia, mixed dyslipidemia, or a low high-density lipoprotein cholesterol level) in the 17 Spanish autonomous regions. Blood pressure was measured according to standard procedures, and was considered well-controlled if it was <140/90 mm Hg (or <130/80 mm Hg in patients with diabetes, nephropathy, or cardiovascular disease).

Results. In total, 7054 patients were studied (mean age, 61.3 [11.2] years, 50.8% male). Mean systolic and diastolic blood pressures were 134.6 [14.2]/79.8 [8.9] mm Hg, with significant differences (*P*<.001) between hypertensives (140.8 [14.6]/82.8 [9.0] mm Hg) and normotensives (128.5 [10.7]/76.9 [7.7] mm Hg). Good blood pressure control was observed in 47.4% (95% confidence interval, 46.3-48.5) of subjects overall, in 29.3% of hypertensives, and in 12.8% of hypertensive diabetics. Poor control was associated with an increased cardiovascular disease risk (hazard ratio [HR]=2.89), poor control of low-density lipoprotein cholesterol (HR=1.43), a higher body mass index (HR=1.06), and older age (HR=1.02).

Conclusions. Fewer than half of dyslipidemic primary-care patients in Spain had good blood pressure control. Poor control was associated, in particular, with increased cardiovascular risk and poor control of the low-density lipoprotein cholesterol level.

Key words: *Dyslipidemia. Blood pressure. Cardiovascular risk. Primary care.*

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Características de la presión arterial en una población dislipémica española asistida en atención primaria. Estudio LIPICAP-PA

Introducción y objetivos. Aunque la presión arterial se ha relacionado significativamente con la mortalidad cardiovascular, se dispone de escasa información sobre sus características en los pacientes dislipémicos. Los objetivos de este estudio fueron conocer las características de la presión arterial en una población dislipémica asistida en atención primaria y los factores que se asocian con el mal control tensional.

Métodos. Estudio transversal multicéntrico en el que se analizó a individuos ≥ 18 años de ambos sexos diagnosticados de dislipemia (hipercolesterolemia, hipertrigliceridemia, dislipemia mixta o bajas concentraciones de colesterol unido a lipoproteínas de alta densidad) en las

*Promoters of the study: Working Groups on Cardiovascular Risk and Hypertension of the SEMERGEN. A total of 1454 practising primary care family physicians participated in the study from 17 autonomous regions in Spain.

This study was undertaken with the unconditioned collaboration of Laboratorios Almirall, S.A.

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17 comunidades autónomas de España. La presión arterial se midió siguiendo normas estandarizadas y se consideró bien controlada cuando era < 140/90 mmHg (< 130/80 mmHg en pacientes con diabetes, nefropatía o enfermedad cardiovascular).

Resultados. Se analizó a 7.054 pacientes (edad media 61,3 ± 11,2 años; 50,8% varones). Los valores medios de presión arterial sistólica/diastólica fueron de 134,6 ± 14,2/79,8 ± 8,9 mmHg, con diferencias significativas (p < 0,001) entre hipertensos (140,8 ± 14,6/82,8 ± 9,0 mmHg) y normotensos (128,5 ± 10,7/76,9 ± 7,7 mmHg). Se halló buen control de la presión arterial en el 47,4% (intervalo de confianza [IC] del 95%, 46,3-48,5) del total de sujetos, en el 29,3% de los hipertensos y en el 12,8% de los hipertensos diabéticos. El mal control tensional se asoció con la elevación del riesgo cardiovascular (*odds ratio* [OR] = 2,89), el mal control del colesterol unido a lipoproteínas de baja densidad (cLDL) (OR = 1,43) y los incrementos del índice de masa corporal (OR = 1,06) y la edad (OR = 1,02).

Conclusiones. Menos de la mitad de los dislipémicos españoles asistidos en atención primaria tiene bien controlada la presión arterial. El mal control tensional se asocia especialmente con el aumento del riesgo cardiovascular y el mal control del cLDL.

Palabras clave: *Dislipemia. Presión arterial. Riesgo cardiovascular. Atención primaria.*

ABBREVIATIONS

BP: blood pressure
CVR: cardiovascular risk
CVRF: cardiovascular risk factors

INTRODUCTION

Cardiovascular disease is the leading cause of death in Spain and its main causes are ischemic cardiopathy in men and stroke in women.[1] Dyslipidemia and hypertension are very prevalent cardiovascular risk factors (CVRF) in the primary care setting. These CVRF are usually poorly controlled, especially in patients with coronary disease or similar risk factors.[2-9]

Good control of dyslipidemia and blood pressure (BP) is essential in prevention of cardiovascular disease.[10-12] The National Cholesterol Education Program-Adult Treatment Panel III (NCEP-ATP III)[13,14] recommends low density lipoprotein cholesterol (LDL-C) levels of <160 mg/dL in patients with fewer than 2 CVRF, <130 mg/dL in patients with 2 or more CVRF, and <100 mg/dL in persons who have a history of coronary disease or similar risk factors. The hypertension guidelines recommend a systolic BP (SBP) <140 mm Hg and diastolic BP (DBP) <90 mm Hg in general, and <130 and <80 mm Hg, respectively, if the person has diabetes mellitus, kidney, or cardiovascular disease.[5,15,16] BP has been significantly associated with cardiovascular mortality,[17-19] but little information is available concerning its characteristics in patients with dyslipidemia seen in primary care, an ideal health care setting to carry out follow-up of patients.[4]

The aims of the LIPICAP–PA (a substudy of the LIPICAP[20]) were to determine the blood pressure characteristics in a Spanish dyslipidemic population seen in primary care and assess the factors associated with poor BP control.

METHODS

The LIPICAP[20] was an epidemiological, cross-sectional, multicenter study carried out in dyslipidemic patients in the 17 autonomous regions of Spain. Dyslipidemia was considered to be present if the patient had a history of total cholesterolemia >240 mg/dL, triglyceridemia >200 mg/dL, high density lipoprotein cholesterol (HDL-C) <40 mg/dL, or mixed dyslipidemia on the results of 2 blood tests at least 3 months previously, a prior diagnosis of dyslipidemia or was receiving lipid-lowering treatment.[4]

The study was approved by 2 independent clinical research ethics committees and the patients all gave informed consent. A total of 1454 physicians provided 7181 patients by consecutive sampling (first 5 patients who presented to the office during the week of 4 to 8 October 2004). Of these, 127 were excluded (75 due to lack of a diagnosis or time of dyslipidemia, 50 because their diagnosis was made <3 months previously, and 2 who were younger than 18 years of age). The analyses were therefore done with a definitive sample of 7054 persons[20] (Table 1).

Patient Data

The study included male and female normotensive and hypertensive dyslipidemic patients ≥18 years of age of any race. Patients were excluded if the type or duration of the dyslipidemia were unknown, or if they refused to participate. Data were recorded on age, sex, habitat,[21] weight, height, BP, type, and duration of the dyslipidemia,[4] family history of premature cardiovascular disease (women <65 years; men <55 years), and personal history of hypertension for 3 or more months (average SBP ≥140 or DBP ≥90 mm Hg for 2 or more measurements carried out at 2 or more visits after the first, or receiving treatment with anti-hypertensive drugs),[15,16] smoking (≥1 cigarette per day per month),[22] overweight and obesity (body mass indices 25-29.9 and ≥30 kg/m^2, respectively), life style (exercise <30 min 3 times per week),[16] high intake of alcohol (≥4 beers, ≥4 glasses of wine or ≥2 whiskies, or similar drinks per

TABLE 1. **Patients Included in the LIPICAP Study According to Spanish Autonomous Region**

Autonomous Region	Patients, % (n)
Andalusia	17.3 (1217)
Catalonia	15.9 (1123)
Community of Madrid	11.6 (821)
Community of Valencia	11.3 (795)
Galicia	7.4 (524)
Basque Country	5.1 (362)
Castille and Leon	4.2 (295)
Canary Isles	4.5 (315)
Castille-La Mancha	4.6 (322)
Aragon	3.5 (247)
Principality of Asturias	2.9 (207)
Balearic Isles	2.3 (159)
Extremadura	2.7 (189)
Cantabria	1.1 (79)
Region of Murcia	3.1 (220)
La Rioja	1.0 (69)
Navarre	1.6 (110)
Total	100 (7054)

day),[23] hyperuricemia (≥7 mg/dL), coronary disease (angina, myocardial infarction, or revascularization), or similar risk factors (microalbuminuria 30-299 mg/24 h, proteinuria ≥300 mg/24 h or creatinine >1.3 mg/dL in men, or >1.2 mg/dL in women),[16] stroke, peripheral arterial disease, or diabetes (diagnosed from the clinical history).[4,5,7-9]

Cardiovascular Risk and Dyslipidemia Data

Cardiovascular risk (CVR) was considered to be low (<10%) if there were fewer than 2 CVRF, moderate (10%-20%) if there were 2 or more CVRF, and high (≥20%) when there was a history of coronary disease, or similar risk factors.[4,10,11,13,14] Negative CVRF were considered to be age ≥45 years in men and ≥55 years in women, a personal history of hypertension, smoking, HDL-C <40 mg/dL, and a family history of premature cardiovascular disease. HDL-C ≥60 mg/dL was considered to be a positive CVRF (subtract 1 CVRF from the general count).[16]

The dyslipidemia was assumed to be well-controlled if the LDL-C was <160 mg/dL when the CVR was low, <130 mm/dL when it was moderate, and <100 mg/dL when it was high.[4,10,13]

Blood Pressure Data

The BP was measured on 2 separate occasions for 2 min in a seated position with recently calibrated mercury, aneroid, or automatic devices, after 5 min rest.[15] Good BP control was considered to be a SBP <140 mm Hg and DBP <90 mm Hg (<130 and <80 mm Hg if the patient had diabetes, kidney, or cardiovascular disease).[5,15,16]

Data on Lipid Lowering and Antihypertensive Treatment

Data were recorded on whether the patient was taking any lipid-lowering drugs (statins, fibrates, resins, combinations, others) or antihypertensive agents (angiotensin converting enzyme inhibitors, angiotensin II receptor antagonists, calcium antagonists, diuretics, beta-blockers, alpha-blockers, or aldosterone blockers), duration of treatment, whether the treatment was modified or not at the visit, and the reason for modification, or maintenance of the treatment.

Statistical Analysis

Considering that 10% of the persons included initially would not be valid for the final analysis, the sample size was estimated to be 7203 patients (4-5 per researcher) to calculate (alpha error: 1%; precision: 1.5%) the prevalence of good control of the dyslipidemia found in other studies.[24]

The 95% confidence interval (CI) was calculated for the variables of interest, assuming normality and using the exact method for small proportions.[25] Quantitative variables were analyzed with measures of central trend (mean, median) and dispersion (standard deviation, 25th percentile, 75th percentile, minimum, and maximum). Qualitative variables were studied with frequencies and percentages of each of the possible responses. The means were compared with the Student *t* test for independent data. Quantitative data that did not follow a normal distribution were analyzed with the Mann-Whitney non-parametric test, and possible associations between the qualitative variables were studied with the χ^2 test. A *P* value less than .05 was considered significant.

Variables associated with poor BP control (SBP ≥140 mm Hg or DBP ≥90 mm Hg in general, and ≥130 or ≥80 mm Hg, respectively, if the patient had diabetes, kidney, or cardiovascular disease[5,15,16]) were studied by backward stepwise unconditional logistic regression analysis, including in the model those variables that were significant in the univariate analysis, as well as by calculating the odds ratio (OR). The analyses were carried out with the SPSS program (version 12.0.1).

RESULTS

Description of the Sample and Cardiovascular Risk of the Patients

Half the patients (50.8%) were male. The mean age of the study population was 61.3 (11.2) years, though this was older (*P*<.001) in the women (63.2 [10.9] years) than the men (59.4 [11.2] years). Most of the men (90.4%; 95% CI, 89.7-91.1) were aged 45 years or older and 79.8% (95% CI, 78.9-80.7) of the women were aged 55

TABLE 2. **Classification of Blood Pressure Values According to the Sixth Report of the Joint National Committee***

	%	95% CI
Blood pressure, mm Hg		
Optimal (SBP <120 and DBP <80)	7.8	7.5-8.1
Normal (SBP <130 and DBP <85)	31.3	30.8-31.8
Normal-high (SBP, 130-139 and/or DBP, 85-89)	51.6	50.0-52.2
Hypertension, mm Hg		
Grade 1 (SBP, 140-159 and/or DBP, 90-99)	30.3	29.7-30.8
Grade 2 (SBP, 160-179 and/or DBP, 100-109)	6.6	6.3-6.9
Grade 3 (SBP ≥180 and/or DBP ≥110)	0.7	NF
Isolated systolic hypertension (SBP ≥140 and DBP <90)	21.0	20.5-21.5

*CI indicates confidence interval; NF, application conditions not fulfilled; DBP, diastolic blood pressure; SBP, systolic blood pressure.
n=6941 evaluable patients (including dyslipidemic patients whose blood pressure readings, according to the Sixth Report of the Joint National Committee, could be classified as Grades 1, 2, or 3 hypertension, and those who had values that fulfilled the criteria for isolated systolic hypertension; the patients with optimal blood pressure are included in those with normal blood pressure, and those with isolated systolic hypertension in 1 of the 3 hypertension grades).

years or older; 40.4% (95% CI, 39.3-41.5) of the whole sample were aged 65 years or older.

Hypertension was present in 49.6% (95% CI, 48.0-51.2) of the sample, obesity in 29.1% (95% CI, 28.1-30.1), 26.1% (95% CI, 25.2-27.1) were smokers, 22.8% (95% CI, 21.9-23.7) had a family history of premature cardiovascular disease and 13.3% (95% CI, 12.5-14.1) had HDL-C levels <40 mg/dL; 67.3% (95% CI, 66.2-68.4) had a sedentary life style, 52.3% (95% CI, 51.2-53.4) were overweight, 18.1% (95% CI, 17.2-19.0) had hyperuricemia, and 13.0% (95% CI, 12.2-13.8) had a high consumption of alcohol. HDL-C levels ≥60 mg/dL were present in 29.8% (95% CI, 28.7-30.9) of the sample.

Forty point three percent (95% CI, 39.2-41.5) had a high CVR, 28.6% (95% CI, 27.6-29.7) a moderate risk and 31.1% (95% CI, 30.0-32.2) a low risk; 41.5% (95% CI, 40.4-42.6) had a history of coronary disease or similar risk factors, with coronary artery disease present in 21.4% (95% CI, 20.5-22.3), diabetes in 27.3% (95% CI, 26.3-28.3), peripheral arterial disease in 8.0% (95% CI, 7.4-8.6), and a history of stroke in 5.5% (95% CI, 4.98-6.02) of the patients.

Control of the Dyslipidemia

Hypercholesterolemia was present in 64.4% of the patients, mixed dyslipidemia in 26.7%, low HDL-C in 5.2%, and hypertriglyceridemia in 3.7%; 32.3% of the participants were found to have good control of their LDL-C.[20] LDL-C control fell (P<.001) with the increase in coronary risk (Figure 1) and was higher (P<.0001) in those patients with good BP control (43%; 95% CI, 41.2-44.8) than in those with poor BP control (22.4%; 95% CI, 21.0-23.8).

Blood Pressure Findings

Of the 7054 dyslipidemic patients, SBP or DBP readings were unavailable for 113, so that the final study sample included 6941 patients. The mean values for SBP/DBP were 134.6 (14.2)/79.8 (8.9) mm Hg, with significant differences (P<.001) between the hypertensive (140.8 [14.6]/82.8 [9.0] mm Hg) and the normotensive (128.5 [10.7]/76.9 [7.7] mm Hg) patients, and between the patients with a low CVR (130.1 [11.9]/77.8 [7.9] mm

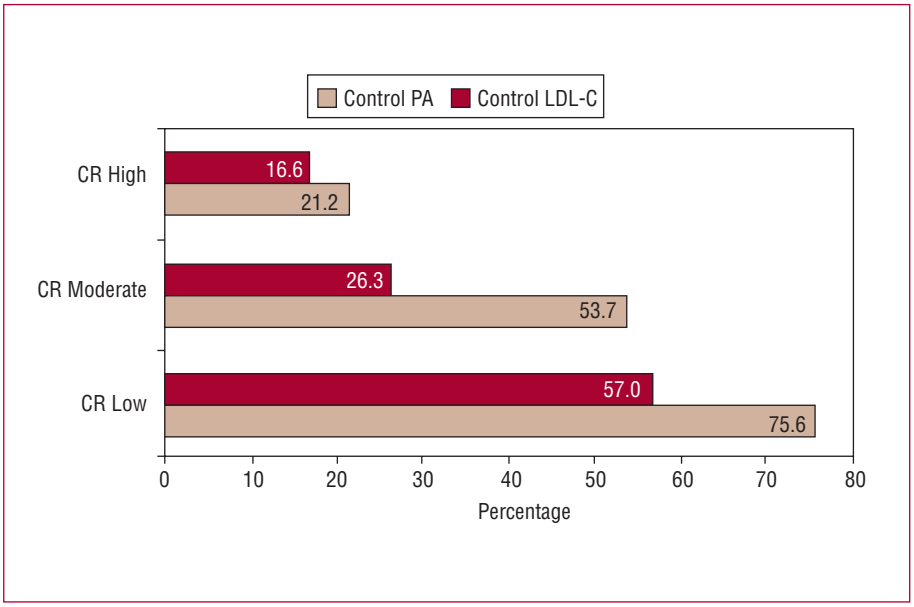

Figure 1. Good control of blood pressure and LDL-C according to the coronary risk of the patient*.
LDL-C indicates low density lipoprotein cholesterol; BP, blood pressure; CR, coronary risk.
*Good control of LDL-C: <160 mg/dL when the coronary risk was low, <130 mg/dL when the risk was moderate, and <100 mg/dL when it was high; good control of blood pressure: SBP <140 mm Hg and DBP <90 mm Hg in general, and SBP <130 mm Hg and DBP <80 mm Hg in the presence of coronary disease, kidney disease, stroke, or diabetes.

TABLE 3. **Clinical Characteristics of the Patients With Poor and Good Blood Pressure Control***

	Poor Control (n=3646)	Good Control (n=3295)	*P*
Age, mean (SD), years	63.2 (10.5)	59.1 (11.6)	.0001
Body mass index	29.9 (4.1)	27.6 (3.8)	.0001
Sex, M/F, %	53.6/46.4	47.7/52.3	.0001
SBP, mean (SD), mm Hg	143.4 (12.9)	125.4 (8.6)	.0001
DBP, mean (SD), mm Hg	83.9 (8.3)	75.4 (7.1)	.0001

*Good control indicates SBP <140 mm Hg and DBP <90 mm Hg; F, female; poor control, SBP ≥140 mm Hg and/or DBP ≥90 mm Hg; n, number of evaluable patients; DBP, diastolic blood pressure; SBP, systolic blood pressure; M, male. Results expressed as mean (standard deviation).

Hg), moderate CVR (137.2 [14.0]/81.7 [8.9] mm Hg) and high CVR (136.3 [15.2]/80.0 [9.3] mm Hg). The classification of the BP values (6th Report of the Joint National Committee)[15] is shown in Table 2.

Of the whole dyslipidemic population studied, 47.4% (95% CI, 46.3-48.5) had good BP control. Control of the BP was associated (*P*<.001) with control of the LDL-C and the degree of coronary risk (Figure 1). Poor control was more common (*P*<.0001) in men and in patients with a greater body mass index (Table 3), older age (Figure 2) or a history of diabetes, kidney, or cardiovascular disease (*P*<.001); the patients with hyperuricemia had worse control (36.8%; 95% CI, 35.7-37.9) than the normouricemic patients (50.4%; 95% CI, 49.2-51.6) (*P*<.0001).

Good BP control was found in 29.3% (95% CI, 28.8-29.8) of the dyslipidemic patients with hypertension (whether or not diabetic), 19.3% (95% CI, 17.5-21.1) of the dyslipidemic patients with diabetes (normotensive and hypertensive), and in 29.5% (95% CI, 27.5-31.5) of the normotensive dyslipidemic patients with diabetes. Significant differences (*P*<.001) were found between the good control in the dyslipidemic hypertensive patients with diabetes (12.8%; 95% CI, 12.4-13.2) and without diabetes (38.1%; 95% CI, 37.5-38.7) (Figure 3).

Data on Lipid-Lowering and Antihypertensive Therapy

Of the patients studied, 80.0% were receiving lipid-lowering drugs, with statins being the most common agents (90.8%).[20]

Fifty-two point five percent of the study subjects and 86.0% of those with hypertension were receiving some antihypertensive drug therapy, the most common of which were angiotensin-converting enzyme inhibitors (30.9%), angiotensin II receptor antagonists (20.7%), calcium antagonists (12.9%), thyazides (12.5%), beta-blockers (11.1%), loop diuretics (8.6%), alpha-blockers (2.4%), and aldosterone blockers (0.9%). The physician had maintained the same antihypertensive treatment plan in 94.9% of the visits.

Factors Associated With Poor Control of Blood Pressure

After the univariate analysis, the factors still remaining in the model, because their *P*<.05, were the degree of CVR, poor control of LDL-C, the body mass index, and age. Poor BP control was 2.9 times more likely when the CVR increased and 1.4 times more likely in the presence of poor LDL-C control (Table 4).

DISCUSSION

The LIPICAP–PA study was designed to determine the blood pressure characteristics in a Spanish population with dyslipidemia seen in the primary care setting. A wide sample of patients was examined, 49.6% of whom

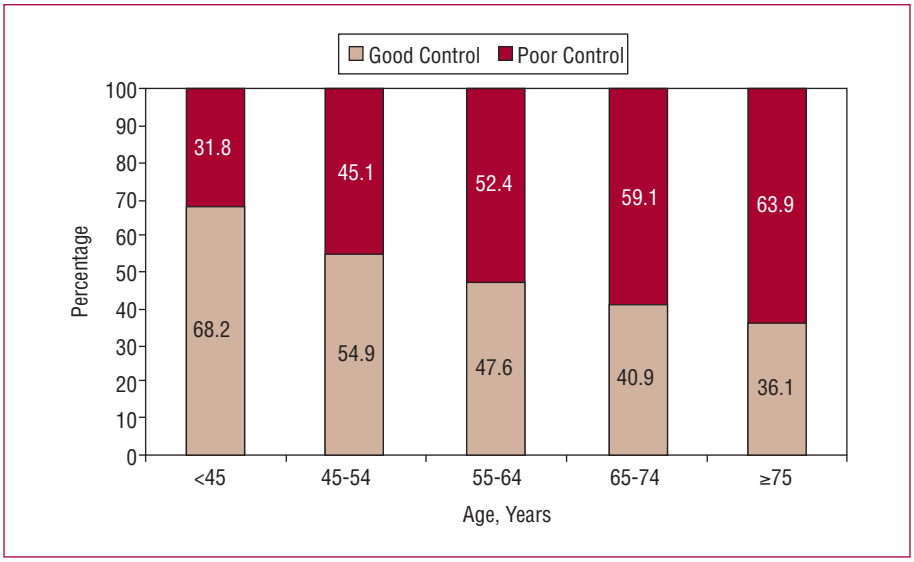

Figure 2. Percentages of patients with good and poor control of blood pressure by age interval*.
*n=6941 evaluable patients. Good control: SBP <140 mm Hg and DBP <90 mm Hg in general, and SBP <130 mm Hg and DBP <80 mm Hg in the presence of coronary disease, kidney disease, stroke, or diabetes.

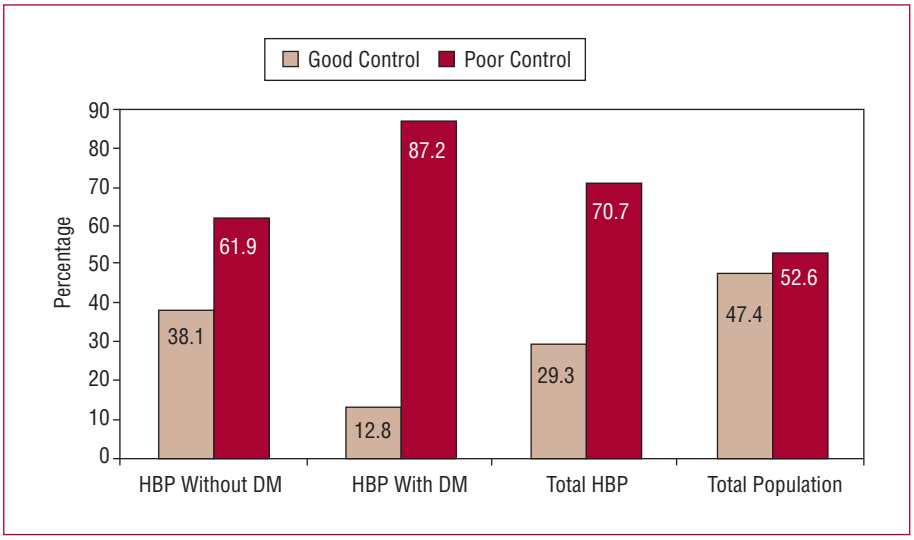

Figure 3. Percentages of patients with good and poor control of blood pressure in the overall study population, patients with hypertension, and diabetic, and non-diabetic hypertensive patients*.
DM indicates diabetes mellitus, HBP, high blood pressure.
*n=6941 evaluable patients. Good control: SBP <140 mm Hg and DBP <90 mm Hg in general, and SBP <130 mm Hg and DBP <80 mm Hg in the presence of coronary disease, kidney disease, stroke, or diabetes.

had hypertension. The blood pressure was poorly controlled in over half the patients (52.6%), associated with an increase in CVR, poor control of LDL-C, and an increase in body mass index or age (Table 4).

Possible Limitations of the Study

No random selection of physicians or patients was undertaken in this study and the results, therefore, may not be strictly applicable to the overall Spanish dyslipidemic population. Another limitation concerns the fact that the analysis was undertaken in a Spanish population using the NCEP-ATP-III criteria, which is based on a North American population,[13,14] to calculate the coronary risk. Nonetheless, this method seems reasonable as we were unable to apply the SCORE method for Mediterranean populations[10,11] to persons aged 65 years or older, who comprised 40.4% of our study sample, and because, as mentioned by other researchers, the main point in the clinical evaluation of a patient is to choose the cut-off level to identify a high risk.[20,26]

As our aim was to determine the blood pressure characteristics and the factors associated with its poor control in a Spanish population seen in the primary care setting, the sample size obtained was relatively large and the response was very high, (blood pressure data were available for 6941 of the 7054 persons), selecting consecutively just 5 persons per researcher over 1 working week. However, we consider that the results are reasonably representative of primary care dyslipidemic patients.

TABLE 4. **Main Factors Associated With Poor Blood Pressure Control***

	OR	95% CI	*P*
Cardiovascular risk	2.89	2.68-3.12	<.001
Poor control of LDL-C	1.43	1.26-1.63	<.001
Body mass index	1.06	1.04-1.07	<.001
Age	1.02	1.01-1.03	<.001

*LDL indicates low density lipoprotein; CI, confidence interval; OR, odds ratio; *P*, Wald test.
Multivariate logistic regression analysis, backward stepwise method (LR).

Sample Description

We examined a homogenous sample of dyslipidemic patients. Their mean age was 61.3 (11.2) years, there were slightly more men (50.8%), and a high incidence of hypercholesterolemia (66.4%), overweight (52.3%), hypertension (49.6%), obesity (29.1%), and diabetes (27.3%). Four out of every 10 patients (40.4%) were aged 65 years or older and had a high CVR (40.3%). As this profile is similar to that found by others,[2,4,12,20,24,27-29] we consider that it corresponds approximately to the dyslipidemic population usually seen in primary care.

Dyslipidemia Data

We found good control of the LDL-C in 1 out of 3 patients,[20] and that this worsened significantly when the coronary risk increased (Figure 1). These results are in agreement with those reported by others who assessed the situation in a similar population.[24,30-32]

Blood Pressure Data

The mean SBP and DBP values in our sample population (134.6 [14.2]/79.8 [8.9] mm Hg) were slightly lower in the systolic component than those found in other studies carried out in Spain.[24,29] We found significant differences ($P<.001$) between these mean values in persons with a low CVR (130.1 [11.9]/77.8 [7.9] mm Hg), moderate CVR (137.2 [14.0]/81.7 [8.9] mm Hg), and high CVR (136.3 [15.2]/80.0 [9.3] mm Hg). The 3 degrees

of CVR showed BP values that could be considered to fall within the so-called "prehypertension" stage (120-139/80-89 mm Hg),[33] which appears to increase the risk for coronary disease.[34]

We found good BP control in almost half (47.4%) the study population. As reported by others in studies involving populations with similar characteristics,[7-9,29,35] control of the BP worsens when control of LDL-C worsens or there is a rise in CVR (Figure 1), body mass index or weight (Figure 2). This inverse relation between BP control and the CVR could account for the poor control found in hypertensive patients (29.3%), persons with a high CVR (21.2%), and, especially (Figure 3), in hypertensive diabetic patients (12.8%). This reduced control of the BP could thus warrant continued research along these lines in primary care.

We found poor BP control to be more common in men and older persons (Figure 2) or those with a greater body mass index (Table 3). Additionally, we especially noted that the higher CVR (OR=2.89) and poor control of LDL-C (OR=1.43) were associated (P<.001) with a greater likelihood of having poor BP control (Table 4). Other researchers in Spain have also found a direct association between these variables and the greater incidence of dyslipidemia[36] and poor control of hypertension.[7,8]

Although hyperuricemia failed to enter the regression model, probably due to the greater weight of other factors, 2 out of every 10 patients had hyperuricemia (18.1%) and it was associated (P<.0001) with a greater likelihood of finding poor control of the BP. These results agree with those of others finding that hyperuricemia is a predictive factor for hypertension and that it is associated with worse BP control and greater CVR.[37-39]

Antihypertensive Therapy and Therapeutic Behavior of the Physician

We found that over half (52.5%) the patients and almost 9 out of 10 (86.0%) of those with hypertension took some antihypertensive drug. The most common drugs were angiotensin converting enzyme inhibitors (30.9%) and angiotensin II receptor antagonists (20.7%). These results are again in agreement with those of other studies carried out in Spain.[6,7]

The physician did not modify the patient's antihypertensive therapy at 94.9% of the visits. This notable therapeutic inertia on behalf of the physician, much higher than in other studies,[6-8,32,40-42] may be due to the fact that we examined a dyslipidemic population. However, the high prevalence of hypertension (49.6%), diabetes (27.3%), and high CVR (40.3%) should have been reflected in a greater percentage of changes in antihypertensive drug therapy at the visit. This therapeutic inertia could also be attributed to the poor application of the clinical practice guidelines,[43] without underestimating other factors, such as the physician-patient relationship and the time available per patient visit. These arguments should also promote further research in primary care on the control of CVRF and the therapeutic behavior of the physicians.

CONCLUSIONS

Good BP control was found in just under half the Spanish dyslipidemic patients seen in the primary care setting, one third of the dyslipidemic patients with hypertension and barely 1 in 10 dyslipidemic patients with hypertension and diabetes. Poor control of the BP was specially associated with increased CVR and poor control of the LDL-C.

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