

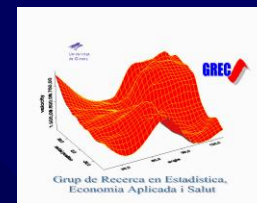
I Fòrum de Recerca de la CAMFiC

Estudi VAMPAHICA: principals resultats i aplicació pràctica en el diagnòstic de la hipertensió arterial

Gabriel Coll de Tuero (Unitat Recerca IAS, Girona)

MORBIMORTALITAT CARDIOVASCULAR EN UNA COHORT DE PACIENTS DIAGNOSTICATS D'HIPERTENSIÓ DE BATA BLANCA MITJANÇANT AMPA DOMICILIÀRIA. ESTUDI VAMPAHICA-2 (VAMPAHICA i AMPA-AP)

Gabriel Coll de Tuero, Antonio Rodríguez Poncelas,
Joan Bayó Llibre, Narcís Salleras Marcó, Antoni
Dalfó Baqué, Quintí Foguet Boreu, Carme Roca
Saumell i Marc Sáez Zafra en representació dels Grups
VAMPAHICA i AMPAAP.



PROJECTE VAMPAHICA 1 i 2

- 3 Tesi Doctorals llegides
- 1 Tesi Doctoral en curs
- 3 projectes FIS 2003, 2007 i 2010
- 1 projectes ETES-FIS 2009

- Situació:
 - Recollint morbi-mortalitat total i específica 2014 (10 anys)

PROJECTE VAMPAHICA 1 i 2

- Multicèntric: ABS de Girona i Barcelona
- Pacients: 644 hipertensos i 250 normotensos
- Publicacions:
 - 3 Am J Hypertens Q1
 - 1 Journal American Society of Hypertension Q2
 - 1 J Human Hypertens Q2
 - 1 Journal of Clinical Hypertension Q2
 - 5 Blood Pressure Q3
 - 1 Blood Press Monit Q3
 - 1 Medicina Clínica Q2
 - 1 Atención Primaria Q4

IF total: 26,8

Estudio multicéntrico

EAP Anglès
EAP Can Gibert del Pla
EAP Cassà de la Selva
EAP Celrà
EAP Hostalrich-Breda
EAP La Bisbal
EAP La Jonquera
EAP Llançà
EAP Montilivi
EAP Palafrugell
EAP Peralada
EAP Salt
EAP Sarrià de Ter
EAP Sils

14 CAP

140
investigadores



Coll de Tuero et al. Aten Primaria 2006;37:355-9.

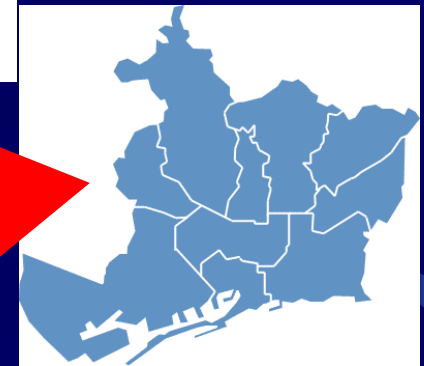


Estudio multicéntrico

EAP El Clot
EAP Gòtic
EAP Sant Martí (2)
EAP El Fondo

5 CAP

Bayó et al. Aten Primaria 2005; 35: 208-212



33 investigadores

Fonament

No hi ha estudis que avaluïn morbimortalitat cardiovascular en pacients amb hipertensió clínic aïllada (HCA) o hipertensió de bata blanca (HBB) amb AutoMesura de la Pressió Arterial domiciliària (AMPAd)

Objectiu

Conèixer la morbimortalitat en pacients diagnosticats d'HBB, d'HTAD i de NT mitjançant AMPAd i MAPA als 10 anys de seguiment

Objectius secundaris

- Averiguar si la AMPAd y la MAPA tienen el mismo valor pronóstico sobre la incidencia de morbilidad cardiovascular y total.
- Determinar qué cifras de AMPAd definen el umbral de normalidad con un mejor valor predictivo de morbilidad cardiovascular.
- Conocer como evoluciona la morbilidad cardiovascular de los pacientes con HBB con diferentes umbrales de normalidad para AMPAd y MAPA.
- Conocer el porcentaje de pacientes con HBB que evolucionan a HTAD a partir de determinaciones de AMPAd y MAPA.
- Conocer la incidencia de la afectación de órganos diana (renal, cardíaca y funduscópica) en los pacientes del estudio tras el periodo de seguimiento.

Criteris d'inclusió

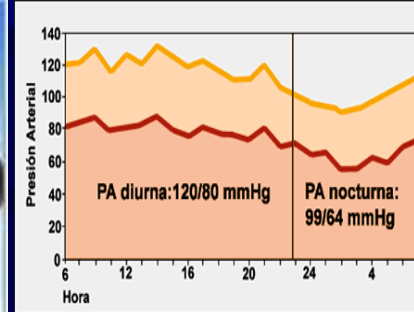
- Pacientes hipertensos de nou diagnòstic o ja diagnosticats en els que es tinguin dubtes sobre l'inici de tractament farmacològic
- Sense tractament farmacològic
- Edat: 15-75 anys

Criteris d'exclusió

- Pacients amb AMPAd o MAPA no vàlides
- Pacients no controlats als centres participants
- Pacients amb DM2 o HTA secundària
- Pacients amb malaltia cardiovascular clínica prèvia

Variables a recollir

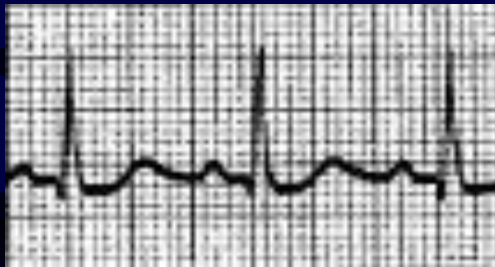
- anamnesi dirigida HTA (tots)
- PA clínica (tots)
- AMPA, MAPA
- Avaluació LOD (tots)



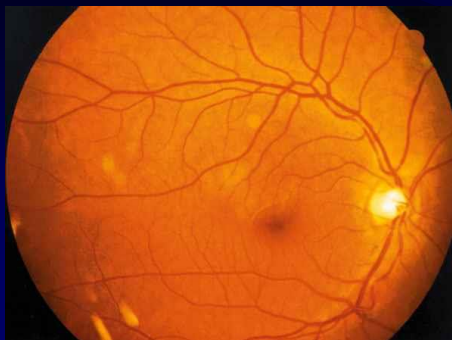
PAC, AMPA y MAPA (TRIENAL)



**Creatinina (més analítica HTA)
ratio albúmina/creatinina (ANUAL)**



**ECG de 12 derivaciones (ANUAL o
BIANUAL)**



Retinografía (BIANUAL)

Altres coses.....

- Comitè per avaluar esdeveniments cardiovasculars que hagin succeït. Cal notificar-ho als investigadors principals.
- Cal que el pacient signi el consentiment informat per iniciar totes les proves complementàries de l'estudi

VALORACIÓN DE LESIONES DE ÓRGANO DIANA

Función renal:

- Creatinina sérica >107 $\mu\text{mol/L}$ (M)
 > 115 $\mu\text{mol/L}$ (V)
- Filtrado glomerular (Cockcroft o Levey) < 60 mL/min
- Microalbuminuria (2 determinaciones de 3, positivas)
 < 2.5 mg/mmol (V)
 < 3.5 mg/mmol (M)

VALORACIÓ DE LESIONS D'ÒRGAN DIANA

Hipertròfia del ventricle esquerra

criteris de Sokolow-Lyon $> 3.5 \text{ mV}$

criteris de Cornell (Dalfó)

$> 1.4 \text{ mV (M)}$

$> 1.6 \text{ mV (V)}$

VALORACIÓ DE LESIONS D'ÒRGAN DIANA

Lesions del Fons d'ull observades per retinografia

Exudados y FIPT's (Focal intraretinal periarteriolar
transudates)

Hemorragias

Edema de papila

Aportacions sobre els valors de normalitat de la AMPA

n=100

ORIGINAL ARTICLE

Assessment of self-monitoring of blood pressure in the diagnosis of isolated clinic hypertension

GABRIEL COLL DE TUERO¹, QUINTÍ FOGUET BOREU²,
ANTONIO RODRÍGUEZ-PONCELAS¹, RAMON CREUS³, MARIA SANMARTÍN¹,
NARCIS SALLERAS⁴, MARC SAEZ⁵, MARIA ANTÒNIA BARCELÓ⁵ &
ON BEHALF OF THE VAMPAHICA STUDY GROUP

¹*Basic Health Area Anglès, Institut d'Assistència Sanitària, Spain,* ²*Basic Health Area Camprodon, Institut Català de la Salut, Universitat Autònoma de Barcelona, Spain,* ³*Basic Health Area Sarrià de Ter, Institut Català de la Salut, Spain,* ⁴*Basic Health Area Montilivi, Institut Català de la Salut, Spain,* and ⁵*Research Group on Statistics, Applied Economics and Health (GRECS), University of Girona, Spain*

Table II. Hypertensive patients included in the study; patients with isolated clinical hypertension and sustained hypertension (cut-off point 135/85 mmHg).

	Sustained hypertension	Isolated clinical hypertension	<i>p</i> -value
<i>n</i> (%)	61 (64.21)	29 (30.53)	
Men, <i>n</i> (%)	36 (59.0)	19 (65.5)	0.554
Age, years (TD ^a)	57.448 (9.863)	55.708 (9.738)	0.468
BMI ^b (TD)	28.860 (3.827)	28.836 (4.522)	0.979
Tobacco, <i>n</i> (%)	8 (13.1)	6 (20.7)	0.354
Alcohol, <i>n</i> (%)	18 (29.5)	5 (19.2)	0.320
Physical activity, <i>n</i> (%)	13 (21.3)	7 (26.9)	0.569
Clinical BP S, ^c mmHg (TD)	152.517 (13.220)	149.885 (7.206)	0.320
Clinical BP D, ^c mmHg (TD)	89.556 (9.393)	86.345 (8.018)	0.117
SBPM S, mmHg (TD)	147.898 (12.553)	128.177 (15.450)	<0.001
SBPM D, mmHg (TD)	88.939 (9.955)	79.776 (10.455)	<0.001
SBPM Cr ^d (TD)	72.112 (9.583)	69.598 (12.042)	0.053
ABPM day S, mmHg (TD)	141.729 (5.537)	131.667 (11.590)	0.132
ABPM day D, mmHg (TD)	88.221 (6.657)	80.000 (11.136)	0.759
LVH, <i>n</i> (%)	15 (24.6)	5 (19.2)	0.814
MA, mg/g (TD)	4.49	5.56	0.852
Non-normal ^e MA, <i>n</i> (%)	2 (4.4)	1 (5.6)	0.646
GF ^f Cockcroft–Gault, ml/min	110.844	100.910	0.560
GF Levey, ml/min	105.006	86.729	0.560
EF ^g MR ^h , <i>n</i> (%)	24 (39.34)	10 (38.46)	0.448
EF AR ⁱ , <i>n</i> (%)	6 (9.8)	2 (7.7)	0.560
EF some damage, <i>n</i> (%)	30 (49.18)	12 (46.15)	0.291

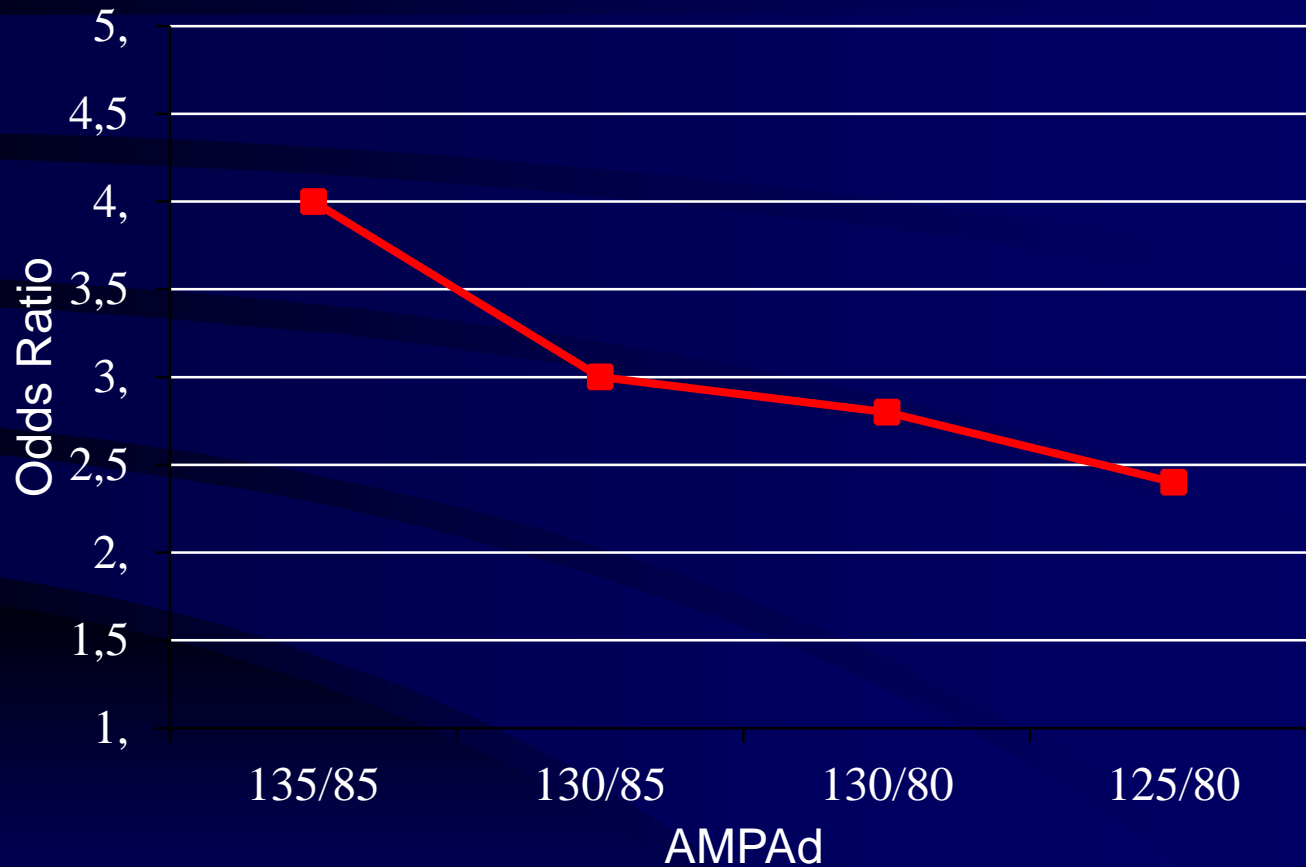
In bold type, statistically significant to 95%. ^aTD, typical deviation; ^bBMI, body mass index; ^cS, systolic, D, Diastolic; ^dCr, cardiac rate; ^enormal values, <22 mg/g in men and <31 mg/g in women; ^fGF, glomerular filtration; ^gEF, eye fundus; ^hMR, mild retinopathy; ⁱAR, advanced retinopathy.

Table III. Variables according to the different cut-off points for isolated clinical hypertension.

	130/85 mmHg			130/80 mmHg			125/80 mmHg		
	SH	ICH	<i>p</i> -value	SH	ICH	<i>p</i> -value	SH	ICH	<i>p</i> -value
<i>n</i> (%)	70 (73.68)	20 (21.05)		74 (77.89)	16 (16.84)		83 (92.22)	7 (7.77)	
Men, <i>n</i> (%)	49 (57.10)	12 (60.0)	0.820	43 (58.10)	7 (43.80)	0.891	47 (56.6)	5 (71.5)	0.446
Age, years (TD ^a)	57.27 (9.69)	53.93 (10.66)	0.240	57.19 (9.76)	53.58 (10.49)	0.246	56.9 (9.8)	53.7 (11.2)	0.445
BMI ^b (TD)	29.27 (4.25)	28.47 (3.36)	0.454	29.21 (4.15)	28.54 (3.72)	0.567	29.1 (4.1)	28.5 (3.7)	0.692
LVH, <i>n</i> (%)	10 (26.5)	2 (13.3)	0.377	19 (26.4)	1 (9.1)	0.251	20 (25.0)	0	0.282
Non-normal ^c , MA, <i>n</i> (%)	3 (4.2)	0	0.476	3 (4.05)	0	0.344	3 (3.61)	0	0.053
EF ^d MR, ^e <i>n</i> (%)	29 (41.43)	4 (20.0)	0.079	30 (40.54)	3 (18.75)	0.101	33 (39.75)	0	0.036
EF AR, ^f <i>n</i> (%)	8 (11.43)	0	0.113	8 (10.81)	0	0.168	8 (9.64)	0	0.389
EF some damage, <i>n</i> (%)	37 (52.86)	4 (20.0)	0.009	38 (51.35)	3 (17.75)	0.018	41 (49.40)	0	0.012

In bold type, statistically significant to 95%. ^aTD, typical deviation; ^bBMI, body mass index; ^cnormal values, <22 mg/g in men and <31 mg/g in women; ^dEF, eye fundus; ^eMR, mild retinopathy; ^fAR, advanced retinopathy.

Riesgo de presentar lesión de órganos diana Hipertensos vs normotensos



Ajustado por edad, género, actividad física e IMC.

LOD: HVI por ECG y/o MAU positiva y/o creatinina elevada y/o lesión en el FO grado III/IV

ORIGINAL ARTICLE

n=200

Proportion of isolated clinical hypertension in primary care settings. Comparison of target organ damage in patients with isolated clinical hypertension and patients with sustained arterial hypertension

QUINTÍ FOGUET BOREU¹, GABRIEL COLL DE TUERO², ANTONIO RODRÍGUEZ-PONCELAS³, MARIA SANMARTÍN ALBERTOS³, MARC SAEZ ZAFRA⁴ & MARIA ANTONIA BARCELÓ RADÓ⁴, ON BEHALF OF THE VAMPAHICA STUDY GROUP

¹*Campdevàdol Hospital, Campdevàdol, Girona, Spain; Universitat Autònoma de Barcelona, Barcelona, Spain,* ²*Girona Region 4, Catalan Institute of Health, Girona, Spain,* ³*Primary Care Centre – Anglès, Institute of Healthcare, Girona, Spain,* and ⁴*Research Group on Statistics, Applied Economics and Health (GRECS), University of Girona, Spain*

Table III. Target organ damage and other characteristics at various cut-off points for isolated clinical hypertension (ICH) and sustained arterial hypertension.

	130/85 mmHg			130/80 mmHg			125/80 mmHg		
	Sustained hypertension	ICH	<i>p</i> -value	Sustained hypertension	ICH	<i>p</i> -value	Sustained hypertension	ICH	<i>p</i> -value
N	142	72		153	61		167	47	
Men	56.3%	56.9%	0.933	56.2%	57.4%	0.876	56.9%	26(55.3)	0.848
Age, years (SD ^a)	58.4 (9.9)	56.30(14.9)	0.293	58.4 (10.1)	56 (15.4)	0.201	58.1 (10.1)	56.1(16.7)	0.454
Body mass index (SD)	28.5 (5.3)	28.5(5.4)	0.761	28.4 (5.3)	28.5 (5.5)	0.928	28.5 (5.1)	28.4 (6.1)	0.931
Left ventricular hypertrophy	25.4%	27.8%	0.703	25.5%	17.0(27.9)	0.721	26.3%	25.5%	0.911
Abnormal microalbuminuria ^b	2.8%	2.8%	0.977	2.6%	3.3%	0.790	3.0%	2.1%	0.751
Eye fundus I/II	61.3%	44.4%	0.019	60.1%	44.3%	0.035	59.9%	40.4%	0.018
Eye fundus III/IV	12.7%	9.7%	0.525	13.7%	6.6%	0.141	13.2%	6.4%	0.200
Eye fundus, some lesion	65.5%	49.6%	0.017	64.7%	47.5%	0.021	64.1%	44.7%	0.017

In bold, statistically significant at 95%. ^aSD, standard deviation. ^bNormal values: <2.5 mg/mmol in men and <3.5 mg/mmol in women.

Valores de normalidad de la automedida de la presión arterial en relación con la presencia de lesión en los órganos diana. Datos del estudio VAMPAHICA



Gabriel Coll-de-Tuero^a, Quintí Foguet-Boreu^b, Antonio Rodríguez-Poncelas^a, Ramón Creus-Bosch^c, Maria Sanmartín-Albertos^d, Marc Saez-Zafra^e, M. Antònia Barceló-Radó^e, Narcís Salleras-Marcó^a, en representación del grupo del estudio VAMPAHICA.

^aABS Anglès. Institut d'Assistència Sanitària. Girona.

^bHospital de Campdevànol. Girona.

^cABS Sarrià de Ter. Institut Català de la Salut. Girona.

^dABS Montilivi. Institut Català de la Salut. Girona.

^eGRECS, Grup de Recerca en Estadística, Economia Aplicada i Salut. Universitat de Girona. Girona.

Medicina Clínica (Barc), 2007

RESULTADOS

TABLA 1.

Descripción de los pacientes incluidos en el estudio. Normotensos e hipertensos

	Normotensos	Hipertensos	p
N (%)	128 (33,9)	250 (66,1)	
Varones, n (%)	54 (42,2)	140 (56,0)	0,011
Edad, años (DT)	50,891 (15,378)	57,155 (12,914)	< 0,001
Peso, kg (DT)	71,767 (13,210)	76,172 (17,945)	0,016
Talla, m (DT)	1,630 (0,090)	1,608 (0,271)	0,241
IMC (DT)	26,938 (4,019)	28,025 (6,017)	0,071
Tabaco, n (%)	23 (18,1)	38 (15,2)	0,468
Alcohol, n (%)		48 (19,2)	
Actividad física, n (%)		59 (23,6)	
Colesterol total, mmol/l (DT)		5,82 (0,99)	
cHDL, mmol/l (DT)		1,72 (1,008)	
cLDL, mmol/l (DT)		3,60 (0,84)	
Creatinina, mmol/l (DT)		82,03 (17,14)	
PA clínica S, mmHg (DT)	127,636 (12,893)	151,841 (15,437)	< 0,001
PA clínica D, mmHg (DT)	76,961 (8,292)	89,088 (10,613)	< 0,001
AMPA S, mmHg (DT)	119,109 (10,955)	142,670 (13,691)	< 0,001
AMPA D, mmHg (DT)	72,402 (8,101)	85,076 (10,315)	< 0,001
AMPA Fc (DT)	70,840 (8,566)	72,535 (10,458)	0,103
MAPA día S, mmHg (DT)		138,487 (12,825)	
MAPA día D, mmHg (DT)		87,863 (9,262)	
MAPA 24 h S, mmHg (DT)		134,023 (12,095)	
MAPA 24 h D, mmHg (DT)		83,620 (8,219)	
HVI, n (%)		65 (26,0)	
MAO, mg/mmol (DT)		0,54 (0,98)	
MAO no normal*, n (%)		6 (2,4%)	
FG Cockcroft-Gault, ml/min		106,514	
FG Levey, ml/min		98,963	
FO I/II, n (%)		136 (54,4)	
FO III/IV/V, n (%)		27 (10,8)	
FO alguna lesión, n (%)		146 (58,4)	

AMPA: automedida de presión arterial; cHDL: colesterol unido a lipoproteínas de alta densidad; cLDL: colesterol unido a lipoproteínas de baja densidad; D: diastólica; DT: desviación típica; Fc: frecuencia cardiaca; FG: filtrado glomerular; FO: fondo de ojo; IMC: índice de masa corporal; MAO: microalbuminuria; MAPA: monitorización ambulatoria de la presión arterial; PA: presión arterial; S: sistólica.

En negrita, significativo estadísticamente al 95%.

*Valores de normalidad: < 2,5 mg/mmol en varones y < 3,5 mg/mmol en mujeres.

RESULTADOS

Pacientes hipertensos incluidos en el estudio. Pacientes con HCA y con HTAM (punto de corte 135/85 mmHg)

	HTAM	HCA	p
N (%)	129 (60,28)	85 (39,72)	
Varones, n (%)	69 (53,5)	52 (61,2)	0,26
Edad, años (DT)	58,56 (9,93)	56,39 (14,16)	0,19
Peso, kg (DT)	77,21 (17,01)	77,744 (15,42)	0,81
Talla, m (DT)	1,62 (0,22)	1,63 (0,20)	0,78
IMC (DT)	28,40 (5,51)	28,53 (5,05)	0,85
Tabaco, n (%)	17 (13,2)	16 (18,8)	0,26
Alcohol, n (%)	22 (17,1)	22 (25,9)	0,11
Actividad física, n (%)	30 (23,3)	23 (27,1)	0,52
Colesterol total, mmol/l (DT)	5,97 (1,02)	5,64 (1,00)	0,029
cHDL, mmol/l (DT)	1,68 (0,68)	1,82 (1,52)	0,36
cLDL, mmol/l (DT)	3,77 (0,87)	3,47 (0,79)	0,021
Creatinina, μ mol/l (DT)	83,98 (17,68)	78,67 (15,02)	0,039
PA clínica S, mmHg (DT)	154,71 (9,34)	154,20 (9,96)	0,70
PA clínica D, mmHg (DT)	90,44 (8,38)	90,31 (8,94)	0,91
AMPA S, mmHg (DT)	147,95 (11,14)	131,15 (12,39)	< 0,001
AMPA D, mmHg (DT)	89,32 (8,57)	78,55 (9,63)	< 0,001
AMPA Fc (DT)	74,53 (9,24)	69,33 (11,01)	0,001
MAPA día S, mmHg (DT)	141,23 (12,47)	132,09 (11,11)	0,009
MAPA día D, mmHg (DT)	89,70 (9,76)	84,66 (8,49)	0,06
MAPA 24 h S, mmHg (DT)	136,13 (11,60)	129,23 (10,71)	0,035
MAPA 24 h D, mmHg (DT)	85,49 (8,47)	80,20 (7,61)	0,026
HVI, n (%)	34 (26,4)	22 (25,9)	0,93
MAO, mg/mmol (DT)	0,58 (1,09)	0,57 (0,91)	0,95
MAO no normal*, n (%)	4 (3,1)	2 (2,4)	0,74
FG Cockcroft-Gault, ml/min	112,92	102,09	0,48
FG Levey, ml/min	106,38	91,06	0,36
FO I/II, n (%)	81 (62,8)	38 (44,7)	0,009
FO III/IV/V, n (%)	18 (14,0)	7 (8,2)	0,20
FO alguna lesión, n (%)	87 (67,4)	41 (48,2)	0,005

AMPA: automedida de presión arterial; cHDL: colesterol unido a lipoproteínas de alta densidad; cLDL: colesterol unido a lipoproteínas de baja densidad; D: diastólica; DT: desviación típica; Fc: frecuencia cardíaca; FG: filtrado glomerular; FO: fondo de ojo; HCA: hipertensión clínica aislada; HTAM: hipertensión arterial mantenida; HVI: hipertrofia ventricular izquierda; IMC: índice de masa corporal; MAO: microalbuminuria; MAPA: monitorización ambulatoria de la presión arterial; PA: presión arterial; S: sistólica.

En negrita, significativo estadísticamente al 95%.

*Valores de normalidad: < 2,5 mg/mmol en varones y < 3,5 mg/mol en mujeres.

RESULTADOS

Riesgo relativo de presentar alguna lesión de órgano diana de los pacientes que presentan una HTA mantenida frente a aquellos con HCA, en relación con el valor de normalidad de AMPA^{a,b}

AMPA	RR (IC del 90%)	p
135/85 mmHg	7,66 (0,97-60,34)	0,13
130/85 mmHg	12,04 (1,03-140,28)	0,09
130/80 mmHg	8,16 (0,75-88,90)	0,15
125/80 mmHg	5,38 (0,38-75,22)	0,30

AMPA: automedida de presión arterial; HCA: hipertensión clínica aislada; HTA: hipertensión arterial; IC: Intervalo de confianza; RR: riesgo relativo.

^aAjustado por edad, género, actividad física e IMC.

^bLOD: hipertrofia del ventrículo izquierdo por electrocardiograma y/o microalbuminuria positiva y/o creatinina elevada y/o lesión en el fondo de ojo grado III/IV

Evolution of Target Organ Damage by Different Values of Self-Blood Pressure Measurement in Untreated Hypertensive Patients

Gabriel Coll-de-Tuero¹⁻³, Marc Saez^{2,4}, Carmen Roca-Saumell⁵, Antonio Rodriguez-Poncelas¹, Pilar Franco⁶, Antoni Dalfó⁷, Laia Calvó-Perxas¹, Antonio Pose-Reino⁸ and Joan Bayó-Llibre⁵

BACKGROUND

To determine the prognostic value of various self-blood pressure (BP) monitoring (SBPM) cutoff at the time of diagnosis.

METHODS

Cohort of 466 newly diagnosed and never-treated hypertensive patients. At baseline and at 1 year, the patients underwent a physical examination, clinic BP (CBP), SBPM, and ambulatory BP monitoring (ABPM), fasting blood and urine analysis, electrocardiogram (ECG), and retinography. The diagnosis of hypertension was made based on CBP average of two readings, separated by 2 min, taken over three different days, with results $\geq 140/90$ mm Hg. At 1-year follow-up, target organ damage (TOD) evolution was classified as favorable or unfavorable.

RESULTS

Mean age was 57.4 years, 56.8% were men. Adjusted multivariate analysis showed that hypertensive patients with baseline SBPM $<135/85$ mm Hg had a more favorable evolution of left ventricular hypertrophy (LVH) (odds ratio (OR): 1.9; 95% confidence interval (CI): 1.5–2.5), high urinary albumin excretion rate (UAER) (OR: 6.9; 95%

CI: 3.4–14.4), and more favorable amount of TOD evolution (OR: 1.7; 95% CI: 1.4–2.0) than those with baseline SBPM $\geq 135/85$ mm Hg. Patients with baseline SBPM $<130/80$ mm Hg, or $<125/80$ mm Hg had a more favorable evolution of the amount of TOD (OR: 2.7; 95% CI: 2.0–3.6, and OR: 2.9; 95% CI: 2.1–4.1, respectively) at 1 year than those with baseline SBPM $<135/85$ mm Hg.

CONCLUSIONS

Baseline SBPM values $<130/80$ mm Hg is associated with better evolution of amount of TOD than SBPM values $<135/85$ mm Hg. These results would support a clinical trial to test a SBPM threshold $<130/80$ as an optimal pressure not needing pharmacological treatment among those with CBP $\geq 140/90$.

Keywords: blood pressure; fundus oculi; hypertension; left ventricular hypertrophy; self-blood pressure monitoring; target organ damage; urinary albumin excretion rate

Table 4 | Favorable evolution of target organ damage at the end of follow-up depending on baseline SBPM values and ambulatory blood pressure monitoring-unadjusted results

	SBPM				
	≥135/85 mm Hg	<135/85 mm Hg	<130/85 mm Hg	<130/80 mm Hg	<125/80 mm Hg
	<i>n</i> = 366	<i>n</i> = 100	<i>n</i> = 72	<i>n</i> = 50	<i>n</i> = 10
LVH, <i>n</i> (%)	281 (76.7)	80 (80.0)	68 (94.4)	47 (94.0)	10 (100.0)
OR (CI 95%)	1.00	1.02 (0.7–2.1)	5.14 (1.9–13.9)*	4.7 (1.5–14.7)*	—
High UAER, <i>n</i> (%)	357 (97.5)	100 (100.0)	—	—	—
FO advanced, <i>n</i> (%)	341 (93.9)	99 (97.0)	71 (93.0)	49 (94.0)	9 (90.0)
OR (CI 95%)	1.00	7.25 (0.97–15.4)*	5.2 (0.8–39.0)	3.59 (0.5–27.1)	0.6 (0.08–5.4)
Amount of TOD, <i>n</i> (%)	258 (70.5)	89 (80.0)	67 (93.0)	46 (92.0)	9 (90.0)
OR (CI 95%)	1.00	1.7 (0.9–2.8)	5.6 (2.2–13.8)*	4.8 (1.7–13.1)*	3.76 (0.5–30.1)

Amount of TOD, hypertensive patients in which the number of TOD remained absent or decreased; FO, fundus oculi; LVH, left ventricular hypertrophy; OR, odds ratio; SBPM, self-blood pressure monitoring; TOD, target organ damage; UAER, urinary albumin excretion rate.

**P* < 0.05 vs. SBPM ≥135/85 mm Hg.

Table 5 | Favorable evolution of target organ damage at the end of follow-up according to baseline SBPM values

	SBPM				
	≥ 135/85 mm Hg	<135/85 mm Hg	<130/85 mm Hg	<130/80 mm Hg	<125/80 mm Hg
LVH	1.00	1.9 (1.5–2.5)	3.8 (2.1–6.7)	3.9 (2.1–7.0)	4.05 (1.9–8.3)
High UAER	1.00	6.9 (3.4–14.4)	—	—	—
FO advanced damage	1.00	1.9 (1.1–3.6)	0.7 (0.3–1.4)	0.8 (0.3–2.3)	0.5 (0.2–1.4)
Amount of TOD	1.00	1.6 (1.4–2.0)	2.2 (1.7–2.8)	2.7 (2.0–3.6)	2.9 (2.1–4.1)

Multivariate analysis (OR (CI 95%)). Adjusted for: age, gender, glucose, cholesterol, HDL-cholesterol, LDL-cholesterol, BMI, tobacco consumption, clinic blood pressure variation, SBPM variation, ABPM-day variation, average clinic blood pressure, average SBPM, average ABPM, and antihypertensive drug treatment. Each column is compared to SBPM group ≥ 135/85 mm Hg.

Amount of TOD, hypertensive patients in which the number of TOD remained unchanged (if pre-existing) or increased.

ABPM, ambulatory blood pressure measurement; BMI, body mass index; FO, fundus oculi; HDL, high-density lipoprotein; LDL, low-density lipoprotein; LVH, left ventricular hypertrophy; SBPM, self-blood pressure monitoring; UAER, urinary albumin excretion rate.

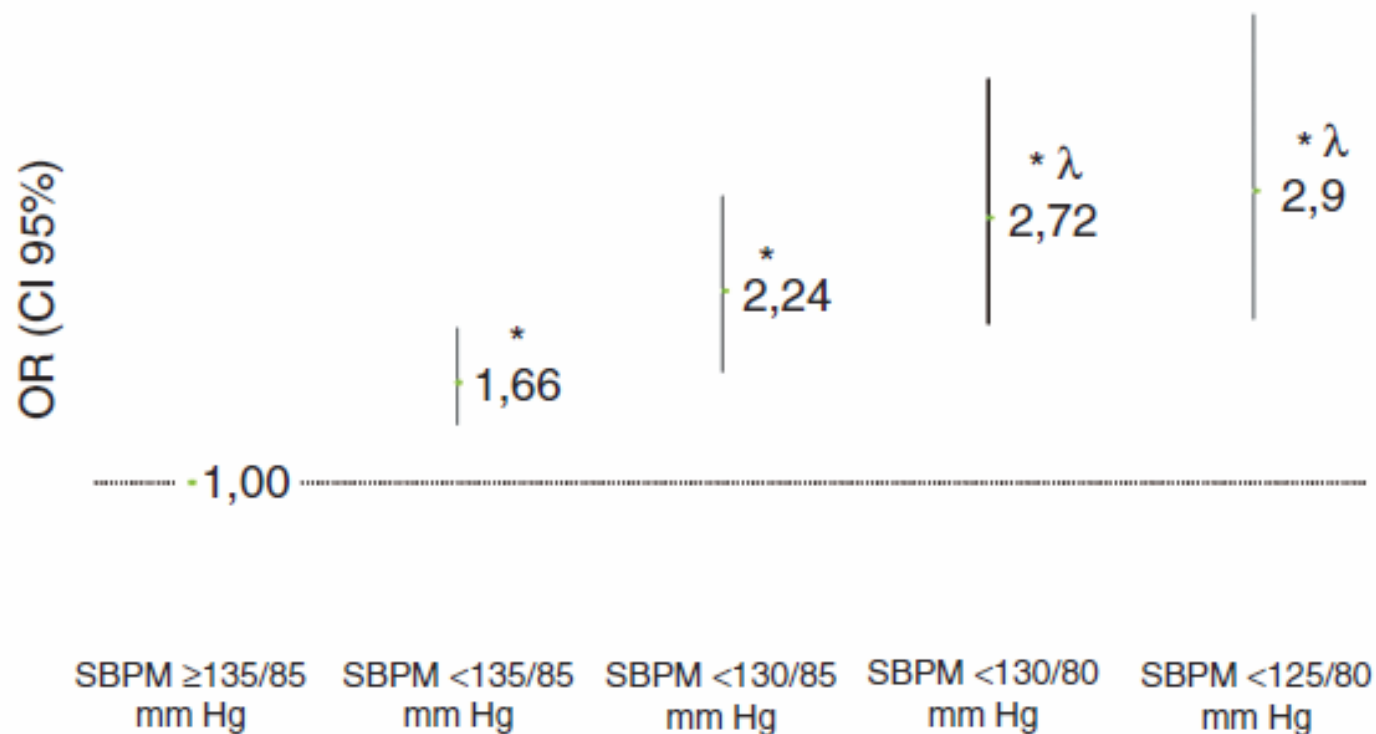


Figure 1 | Favorable evolution of target organ damage at final follow-up depending on baseline SBPM values. Multivariate analysis (OR; CI 95%).
 * $P < 0.005$ vs. baseline SBPM $\geq 135/85$ mm Hg; $^{\lambda}P < 0.005$ vs. baseline SBPM $< 135/85$ mm Hg. Adjusted for: age, gender, glucose, cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, body mass index, tobacco consumption, clinic blood pressure, SBPM and ambulatory blood pressure monitoring (ABPM)-day variation, average clinic blood pressure, SBPM, and ABPM-day, and antihypertensive drug treatment. Each column is compared to SBPM group $\geq 135/85$ mm Hg. CI, confidence interval; OR, odds ratio; SBPM, self-blood pressure monitoring.

Aportació sobre el diagnòstic de Hipertensió clínica aïllada

Isolated clinical hypertension diagnosis: self-home BP, ambulatory BP monitoring, or both simultaneously?

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Self-blood pressure (BP) measurement (SBPM) and ambulatory BP measurement (ABPM) are suitable for the isolated clinical hypertension (ICH) or 'white-coat' hypertension diagnosis. However, patients with ICH have a different cardiovascular risk according to the measurement technique used for the diagnosis.

Objective To describe baseline cardiovascular risk of patients with hypertension and with ICH according to SBPM and daytime ABPM.

Methods Six hundred and sixty-four newly diagnosed and never treated patients with hypertension and with an average age of 59.3 years (standard deviation = 12.0) were included (52% men) in this study. Clinical data, analytical data with urinary albumin excretion rate, estimated glomerular filtration rate, retinography, SBPM, and ABPM were performed. Cardiovascular risk was estimated from the European Society of Hypertension and Systemic Coronary Risk Evaluation tables.

Results ICH prevalence varies according to the ambulatory measurement technique used: SBPM = 24.2%, daytime ABPM = 8.1, and 5.2% if criteria are required from both techniques. In the 403 patients with hypertension and who had SBPM and ABPM, the percentage of patients with high or very high baseline

cardiovascular risk, falls progressively from 31.2% of patients with sustained hypertension to 20.0% of patients with ICH measured using SBPM, to 15.1% of patients with ICH measured using ABPM-day and to 9.5% of patients who present ICH using both techniques ($P < 0.005$ for trend).

Conclusion The baseline results show that patients with hypertension and with ICH using SBPM and daytime ABPM are those who have a lower baseline cardiovascular risk and allow ICH to be defined on the basis of normal ambulatory readings using both techniques. *Blood Press Monit* 16:11–15 © 2011 Wolters Kluwer Health | Lippincott Williams & Wilkins.

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Keywords: ambulatory blood pressure measurement, cardiovascular risk, isolated clinical hypertension, self-blood pressure measurement

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Table 1 Values for the baseline variables based on the clinical condition of hypertension

Variable	SHT ^a	ICH-SBPM ^a	ICH-ABPM ^b	ICH-SBPM and ABPM ^b	P ^c
n (%)	488 (75.7)	156 (24.2)	33 (8.1)	21 (5.2)	
Age: years (SD)	59.4 (12.2)	57.4 (11.6)	63.5 (10.7)	61.0 (9.9)	0.05
Men: n (%)	264 (58)	55 (40.7)	12 (36.4)	4 (19.0)	<0.001
CBP: mmHg (SD)					
Systolic	154.5 (10.1)	149.8 (8.8)	153.7 (9.5)	148.4 (6.0)	<0.001
Diastolic	90.6 (8.63)	88.5 (7.1)	95.2 (4.8)	92.7 (2.4)	<0.001
SBPM: mmHg (SD)					
Systolic	146.7 (11.4)	126.5 (6.1)	142.5 (11.2)	122.8 (7.7)	<0.001
Diastolic	87.4 (8.4)	77.3 (5.0)	87.6 (6.0)	77.0 (5.1)	<0.001
ABPM-daytime: mmHg (SD)					
Systolic	140.7 (10.4)	133.2 (10.1)	123.6 (8.4)	124.4 (5.9)	<0.001
Diastolic	86.5 (9.9)	81.6 (9.6)	77.4 (5.5)	78.1 (4.1)	<0.001
BMI: kg/m ² (SD)	28.7 (4.0)	28.5 (4.4)	28.4 (3.8)	29.9 (6.3)	NS
Blood glucose: mmol/l (SD)	5.12 (0.89)	5.10 (0.89)	5.12 (0.89)	5.51 (1.26)	NS
Total cholesterol: mmol/l (SD)	5.66 (0.95)	5.70 (0.93)	5.74 (0.92)	5.81 (0.70)	NS
HDL-chol: mmol/l (SD)	1.51 (0.37)	1.68 (0.74)	1.52 (0.35)	1.72 (0.56)	0.006
LDL-chol: mmol/l (SD)	2.49 (0.87)	3.50 (0.87)	3.61 (0.81)	3.97 (0.43)	NS
TGC: mmol/l (SD)	1.45 (0.95)	1.43 (0.84)	1.34 (0.57)	1.01 (0.31)	NS
Creatinine: mcmmol/l (SD)	83.9 (58.3)	76.0 (15.9)	77.7 (18.5)	70.7 (11.4)	NS
GFR: ml/min (SD)	94.1 (30.1)	95.8 (30.1)	84.6 (22.9)	91.8 (15.8)	NS
UAER: mg/mmol (SD)	1.42 (0.54)	0.47 (0.48)	0.42 (0.28)	0.81 (0.56)	NS
Abnormal UAER: n (%)	14 (2.3)	4 (1.5)	–	1 (2.8)	NS
LVH: n (%)	80 (18.1)	14 (11.0)	1 (3.0)	2 (9.5)	0.03

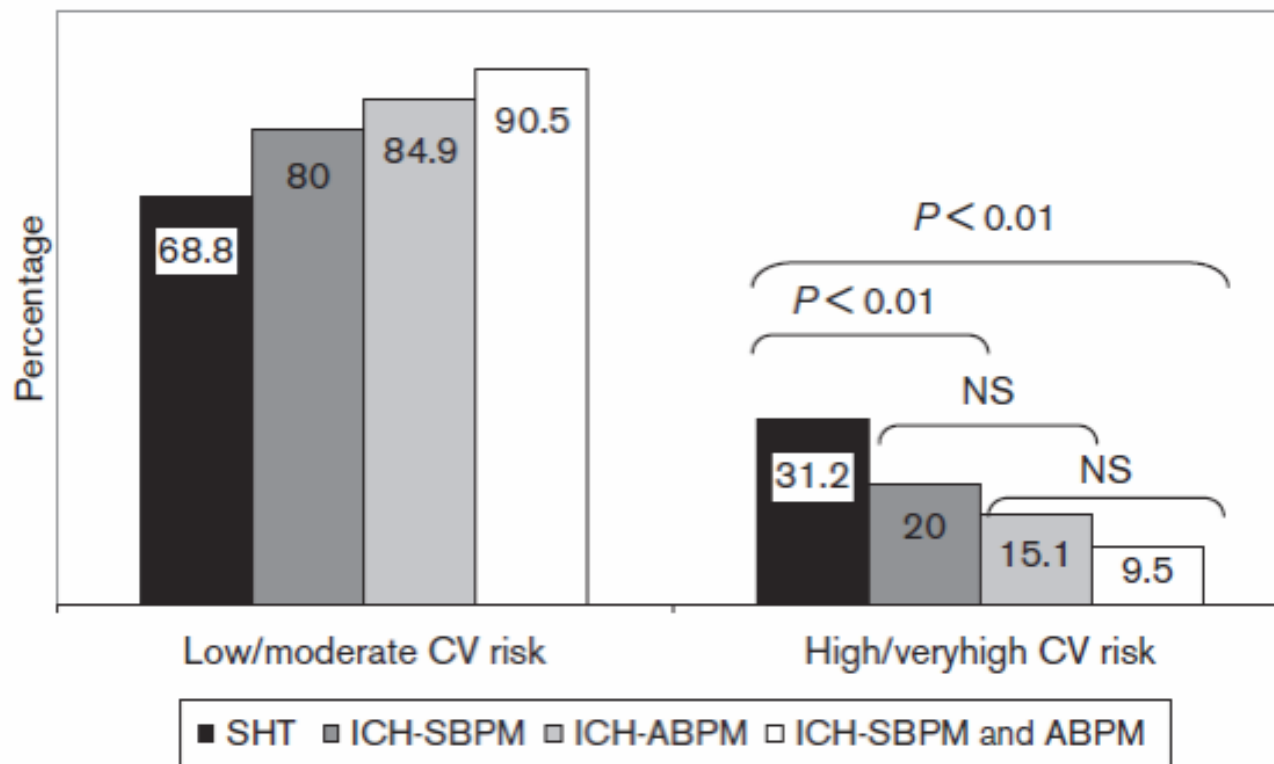
ABPM, ambulatory blood pressure measurement; CBP, clinical blood pressure; GFR, glomerular filtration estimated using the Cockcroft–Gault formula; HDL-chol, high-density lipoprotein-cholesterol; ICH, isolated clinical hypertension; LDL-chol, low-density lipoprotein-cholesterol; LVH, left ventricular hypertrophy; NS, not significant; SBPM, self-blood pressure measurement; SD, standard deviation; SHT, sustained hypertension; TGC, triglycerides; UAER, urinary albumine-excretion rate.

^aData from the 644 patients of which SBPM are available.

^bData from the 403 patients of which SBPM and ABPM are available.

^cAnalysis of variance for quantitative variables and χ^2 -test for qualitative variables.

Fig. 2



Percentage of 403 patients in each category of cardiovascular risk (European Society of Hypertension guidelines) according to clinical condition of blood pressure. Chi-square test, P for trend < 0.005 . CV, cardiovascular; ICH-ABPM, isolated clinical hypertension by ambulatory blood pressure monitoring; ICH-SBPM, isolated clinical hypertension by self-blood pressure measurement; ICH-SBPM and ABPM, isolated clinical hypertension by self-blood pressure measurement and ambulatory blood pressure monitoring; NS, not significant; SHT, sustained hypertension.

Estratificació del risc cardiovascular dels Hipertensos

Usefulness of Optic Fundus Examination With Retinography in Initial Evaluation of Hypertensive Patients

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BACKGROUND

Although international guidelines for management of hypertension recommend optic fundus examination in the initial evaluation of hypertensive patients, there have been no studies to evaluate the usefulness of retinography in this application.

METHODS

Two hundred and fifty consecutive new patients with hypertension but without known cardiovascular disease were studied. The average age was 57.2 years (s.d. 12.9) and 56% were men. The study was conducted in 14 primary care centers. Measurements included target organ damage (TOD) evaluation (electrocardiography, retinography, microalbuminuria, and serum creatinine) and blood pressure (BP) measurements. Outcome measurements were made to risk stratification according to 2003 World Health Organization and International Society of Hypertension (WHO–ISH) and 2007 European Society of Hypertension and European Society of Cardiology (ESH–ESC) guidelines, analyzed first without incorporating the retinography results and then reclassified using the retinography data.

RESULTS

Advanced retinopathy was detected in 10.8%. The risk stratification arrived at as per the WHO–ISH guidelines, and without the retinography data was: 11.4% low risk, 62.4% moderate risk, and 26.2% high risk. When retinography results were taken into account, 8% from the moderate-risk group were reclassified to the high-risk group (11.4, 54.4, and 34.2%, respectively; $P < 0.001$). Using ESH–ESC guidelines, the risk stratification without the retinography data was 0.9% reference, 11.3% low, 58.8% moderate, 21.7% high, and 7.3% very high risk. With retinography, 10% were reclassified from a lower to a higher risk group (0.9, 10.4, 51.1, 20.4, and 17.2%, respectively; $P < 0.001$).

CONCLUSIONS

As an alternative to optic fundus examination, retinography enables a more accurate cardiovascular risk stratification in the first evaluation after diagnosis of hypertension. When retinography is included in the assessment of cardiovascular risk, ~10% of patients are reclassified to a higher risk group.

Table 2 | Target organ damage: number and types in studied patients

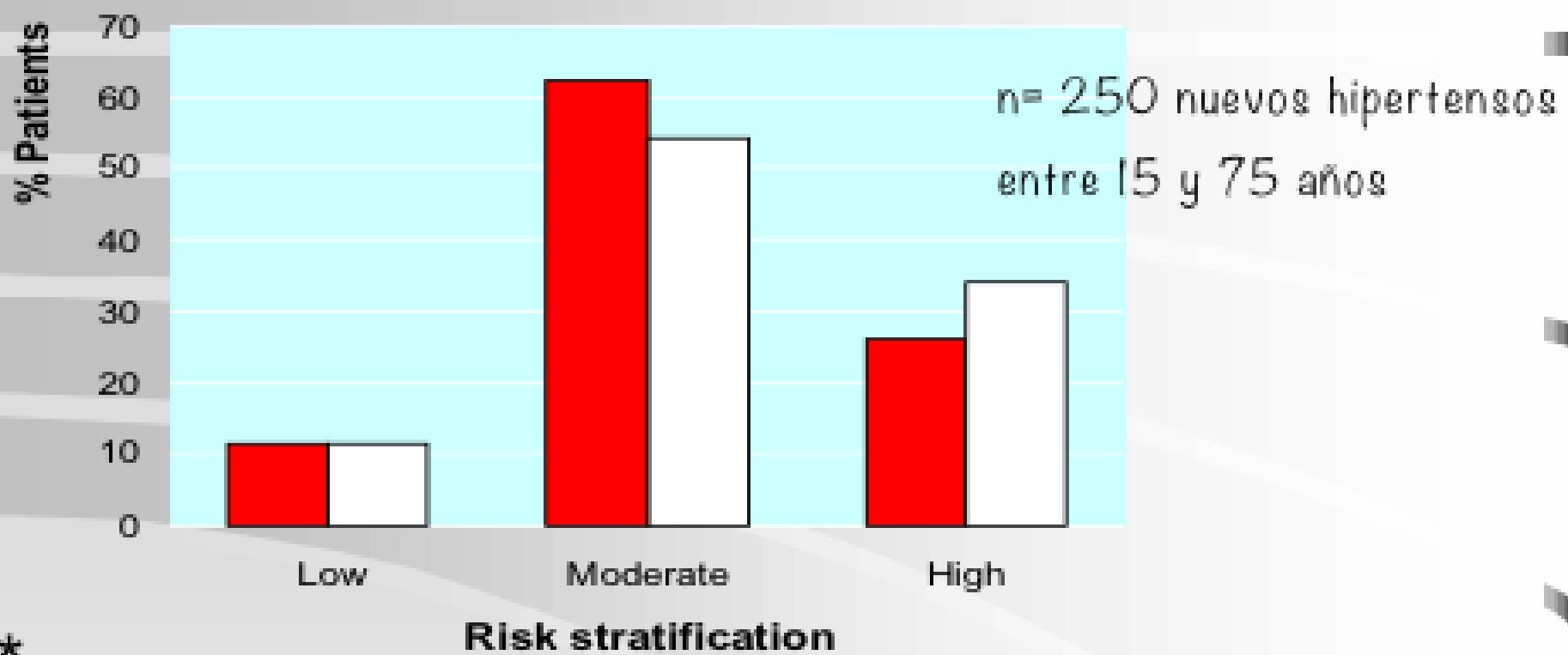
TOD: number found	TOD type	Percentage
None		45.4
1 TOD		35.9
	LVH	50.6
	Microalbuminuria (abnormal)	3.9
	Renal lesion ^a	24.7
	AR	20.8
>1 TOD		18.7
	LVH + Microalbuminuria	4.8
	LVH + Renal lesion	38.1
	LVH + AR	19.0
	Microalbuminuria + Renal lesion	9.5
	Renal lesion + AR	23.8
	LVH + Microalbuminuria + AR	4.8

AR, advanced retinopathy (exudates, hemorrhages, or papilledema); LVH, left ventricular hypertrophy; TOD, target organ damage.

^aRenal lesion: creatinine (women >1.2 mg/dl, men >1.3 mg/dl) or glomerular filtrate <60 ml/min.

Figure 2 Risk stratification according to the guidelines of the 2003 World Health Organization and the International Society of Hypertension

■ Without data provided by retinography □ With data provided by retinography

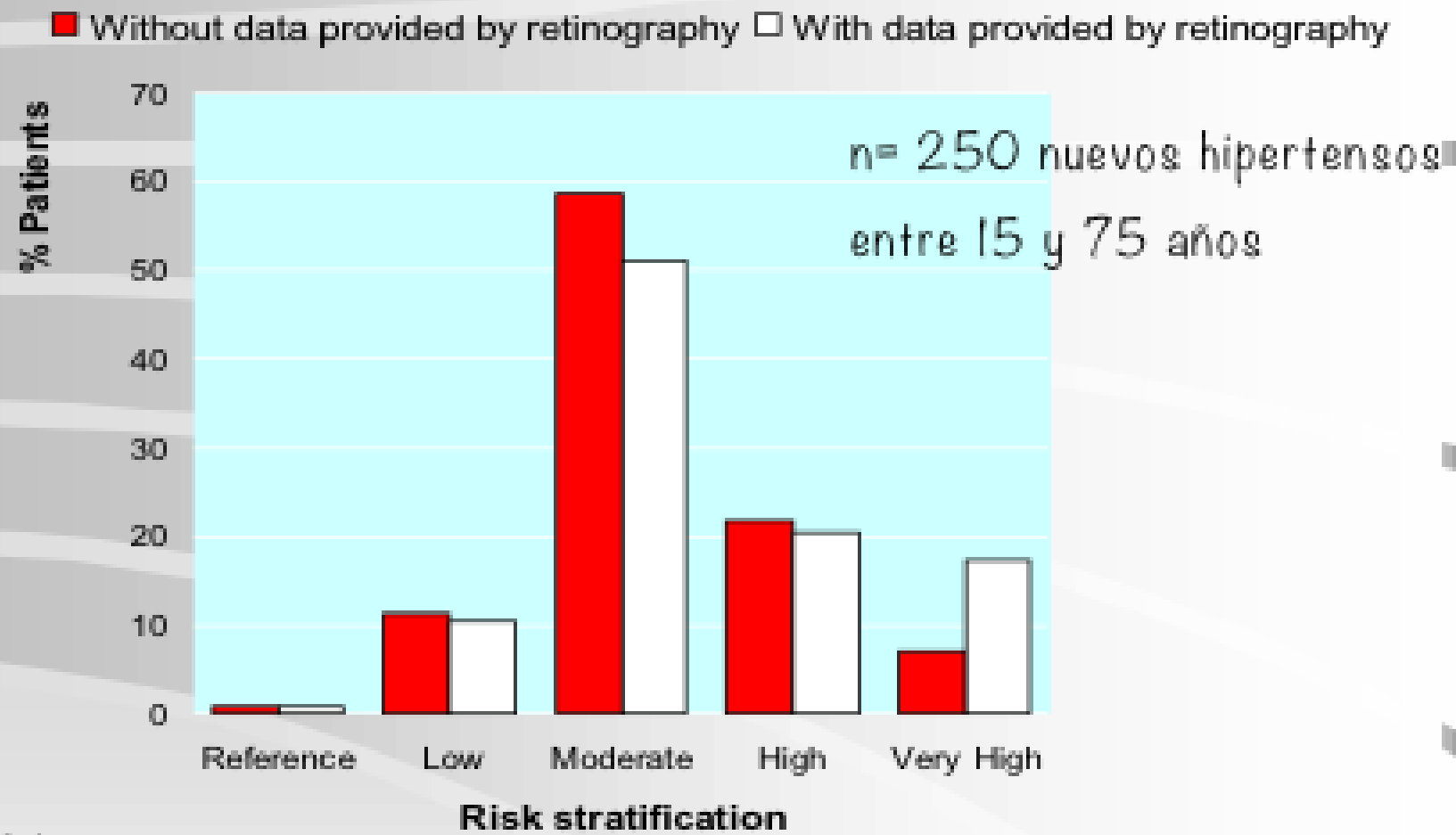


* p < 0.001

8% change of risk group from stages of less risk to a higher risk (p < 0.001)

Basal: FG estimado, MAO

Figure 2 Risk stratification according to the guidelines of the 2007 European Society of Hypertension



10% change of risk group from stages of less risk to a higher risk (p < 0.001)

ORIGINAL ARTICLE

Why is cardiovascular risk stratification important in hypertensive patients?

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Abstract

Background. The aim is to evaluate whether cardiovascular (CV) risk stratification in newly diagnosed hypertensive patients according to the European Society of Hypertension (ESH) guidelines, can predict the evolution of target organ damage (TOD) using routine examinations in clinical practice during 1 year. **Methods.** Prospective study of recently diagnosed untreated hypertensives. At the moment of inclusion and 1 year later, urinary albumin excretion rate (UAER), blood analysis, electrocardiogram, retinography, self-monitored blood pressure (BP) and ambulatory BP measurement were performed. TOD was defined following the ESH guidelines and evaluated as having favorable or unfavorable evolution. **Results.** Four hundred and seventy-nine hypertensive patients were included (58.8 years; 43.4% women). The baseline prevalence of TOD was: high UAER (2.4%), left ventricular hypertrophy (LVH) (20.7%), advanced lesion of the fundus oculi (FO) (10.2%). After 1 year, no differences were found between the final systolic and diastolic BP neither in the high/very high nor in the low/moderate CV risk groups. Patients with low/moderate CV risk had less unfavorable TOD evolution, LVH (9.2% vs 41.7%; $p < 0.001$), FO advanced damage (0.99% vs 14.3%; $p < 0.001$), high UAER (0.3% vs 5.1%; $p < 0.005$) and amount of TOD (9.2% vs 44.0%; $0 < 0.001$) than those with high/very high CV risk. The odds ratios of favorable TOD evolution adjusted for BP change and antihypertensive drug treatment were (low/moderate vs high/very high CV risk); 5.14 (95% confidence interval, CI, 3.99–6.64) for LVH; 12.42 (6.67–23.14) FO advanced damage; 10.71 (3.67–31.22) high UAER and 13.99 (10.18–19.22) for amount of TOD. **Conclusions.** It is possible to detect variations in TOD in hypertensive patients with a 1-year follow-up using the examinations available in routine clinic practice. The risk determined by the ESH guidelines predicts the evolution of TOD at 1 year.

Key Words: Cardiovascular risk, hypertension, target organ damage

Table III. Baseline and final variables of the cohort according to cardiovascular risk ESH guidelines stratification.

	Low/moderate CV risk, <i>n</i> = 304	High/very high CV risk, <i>n</i> = 175	<i>p</i> -value
S CBP _o , mmHg, mean (SD)	152.9 (9.2)	155.6 (11.7)	<0.005
S CBP _f , mmHg, mean (SD)	147.7 (22.3)	148.7 (15.4)	ns
Δ S CBP, mmHg, mean (SD)	- 5.2 (18.57)	- 6.9 (12.28)	ns
D CBP _o , mmHg, mean (SD)	90.7 (7.8)	91.0 (9.3)	ns
D CBP _f , mmHg, mean (SD)	86.1 (9.7)	87.1 (10.6)	ns
Δ D C BP, mmHg, mean (SD)	- 4.6 (7.44)	- 3.9 (7.94)	ns
CBP _f < 140/90 mmHg, <i>n</i> (%)	52 (16.7)	21 (12.3)	ns
CBP _f > 160/100 mmHg, <i>n</i> (%)	47 (15.6)	48 (27.6)	0.001
S SBPM _o , mmHg, mean (SD)	141.8 (12.1)	143.9 (14.8)	ns
S SBPM _f , mmHg, mean (SD)	135.8 (13.1)	138.3 (15.3)	ns
Δ S SBPM, mmHg, mean (SD)	- 6.0 (11.9)	- 5.6 (12.0)	ns
D SBPM _o , mmHg, mean (SD)	85.9 (8.6)	85.6 (10.1)	ns
D SBPM _f , mmHg, mean (SD)	82.6 (9.0)	81.9 (9.9)	ns
Δ D SBPM, mmHg, mean (SD)	- 3.3 (7.2)	- 3.7 (7.9)	ns
S ABPM _o -day, mmHg, mean (SD)	137.1 (11.7)	139.7 (11.7)	ns
S ABPM _f -day, mmHg, mean (SD)	134.8 (11.4)	137.1 (12.5)	ns
Δ S ABPM-day, mmHg, mean (SD)	- 2.3 (8.4)	- 2.6 (7.6)	ns
D ABPM _o -day, mmHg, mean (SD)	85.4 (9.8)	86.5 (11.0)	ns
D ABPM _f -day, mmHg, mean (SD)	84.1 (9.6)	84.6 (10.9)	ns
Δ D ABPM-day, mean (SD)	- 1.3 (5.1)	- 1.9 (5.0)	ns
Treatment at the last evaluation, <i>n</i> (%)	144 (47.3)		
Lifestyle modification only		68 (38.9)	ns
Antihypertensive drugs			ns
Diuretics	34 (11.2)	21 (12.0)	ns
Beta-blockers	22 (7.2)	15 (8.6)	ns
ACEI	87 (28.6)	62 (35.4)	ns
CCB	2 (0.6)	1 (0.6)	ns
ARB	7 (2.3)	8 (4.5)	ns
Others	8 (2.6)	-	ns

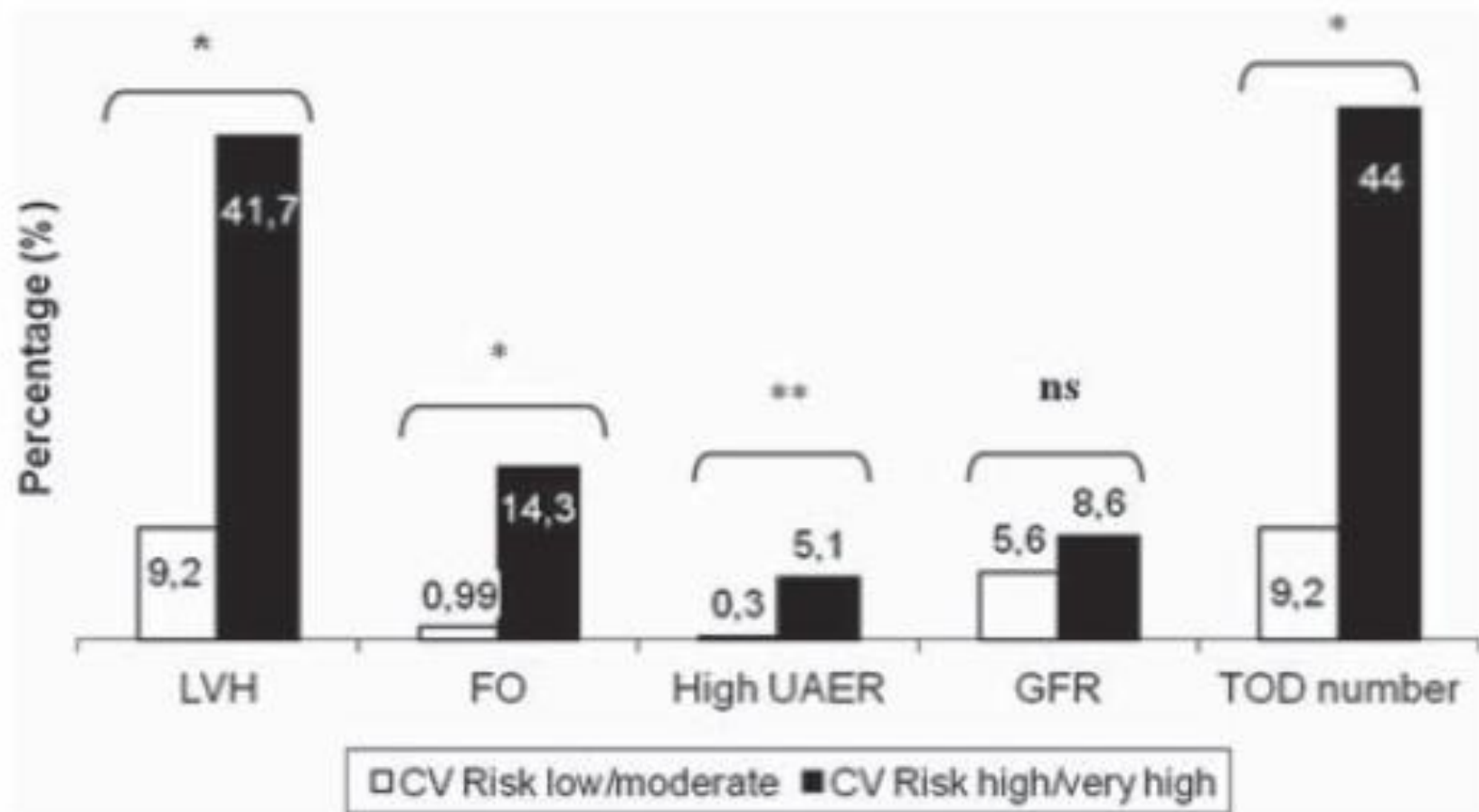


Figure 1. Unfavorable evolution of target organ damage (TOD) after 1 year according to baseline cardiovascular (CV) risk. ESH, European Society of Hypertension LVH: left ventricular hypertrophy; FO: fundus oculi; UAER: urinary albumin excretion rate; GFR: glomerular filtration rate. * $p < 0.001$ ** $p < 0.005$.

Table VI. Odds ratio of TOD's favorable evolution, according to baseline cardiovascular risk (low/moderate risk vs high/very high risk) of hypertensive patients.

	OR ^a	95% CI	<i>p</i> -value
LVH	5.14	3.99–6.64	<0.001
FO advanced damage	12.42	6.67–23.14	<0.001
High UAER	10.71	3.67–31.22	0.003
Amount of TOD	13.99	10.18–19.22	<0.001

^aAdjusted for variation in systolic and diastolic clinic blood pressure and for treatment with antihypertensive drugs. OR, odds ratio; CI, confidence interval; TOD, target organ damage; LVH, left ventricular hypertrophy; FO, fundus oculi; UAER, urinary albumin excretion rate.

Are There Height-Dependent Differences in Subclinical Vascular Disease in Hypertensive Patients?

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The aim of the study was to determine whether there are differences in subclinical vascular disease (SVD) in hypertensive patients in relation to height. A total of 922 hypertensive, newly diagnosed, treatment-naïve patients were included. Physical examination was conducted, with renal function, electrocardiography, and retinography. Patients were distributed according to quartiles of height and sex. Multivariate analysis adjusted for age, sex, and body mass index showed an association between height above the mean and fasting glucose (odds ratio [OR], 1.04; 95% confidence interval [CI], 1.02–1.06), high-density lipo-

protein cholesterol (OR, 0.96; CI, 0.92–0.99), triglycerides (OR, 1.07; CI, 1.01–1.15), and left ventricular hypertrophy (LVH) (OR, 1.57; CI, 1.10–2.24). The authors found an inverse association between arteriole-to-venule ratio and height above the mean (OR, 0.97; CI, 0.94–0.99). There are differences in the SVD of hypertensive patients in relation to height. Tall stature is associated with LVH while short stature is associated with increased microvascular involvement. Detection of SVD in hypertensive patients should consider the height. *J Clin Hypertens (Greenwich)*. 2014;16:70–76. ©2013 Wiley Periodicals, Inc.

TABLE III. Multivariate Models of Clinical Characteristics and Vascular Involvement by Size^a

	Model A	Model B
CBP (for mm Hg)		
Systolic	1.0 (0.98–1.01)	1.0 (0.98–1.01)
Diastolic	1.02 (1.00–1.04) ^b	1.00(0.99–1.02)
SBPM (for mmHg)		
Systolic	0.99 (0.97–1.00)	0.99 (0.97–1.00)
Diastolic	1.03 (1.01–1.05) ^b	1.01 (1.00–1.03) ^c
Tobacco (yes)	1.23 (0.86–1.77)	1.11 (0.76–1.62)
Alcohol (yes)	1.07 (0.76–1.51)	1.18 (0.82–1.70)
Fasting glucose (for mg/dL)	1.02 (1.00–1.04) ^b	1.04 (1.02–1.06) ^b
Cholesterol (for mg/dL)	0.98 (0.96–1.00)	0.99 (0.97–1.01)
HDL cholesterol (for mg/dL)	0.93 (0.89–0.96) ^b	0.96 (0.92–0.99) ^b
Triglycerides (for mg/dL)	1.13 (1.06–1.20) ^b	1.07 (1.01–1.15) ^b
Creatinine (for mg/dL)	1.02 (0.99–1.06)	1.04 (1.00–1.08) ^c
GFR <60 mL/min/1.73 m ² (yes)	0.66 (0.35–1.21)	1.16 (0.59–2.27)
High UAER (yes)	0.51 (0.17–1.49)	0.54 (0.18–1.65)
Advanced FO lesions (yes)	0.78 (0.47–1.30)	0.92 (0.54–1.56)
Microvascular lesions (2) (yes)	0.69 (0.46–1.02) ^c	0.94 (0.61–1.43)
LVH (yes)	1.46 (1.05–2.04) ^b	1.57 (1.10–2.24) ^b

Abbreviations: CBP, clinic blood pressure; FO, fundus oculi; GFR, glomerular filtration rate; HDL, high-density lipoprotein; LVH, left ventricular hypertrophy; SBPM, self-blood pressure monitoring; UAER, urinary albumin excretion rate. Height median=men 170 cm, women=157 cm. Model A: adjusted for sex and body mass index (BMI); model B: adjusted for age, sex, and BMI. High UAER >21 mg/g for men and >32 mg/g for women. GFR <60 mL/min/1.73 m² and/or high UAER and/or advanced FO lesions. ^aHeight > median odds ratio for each centimeter, 95% confidence interval. ^bP<.05. ^cP<.10.

TABLE IV. Baseline AVR According to Sex and Height (n=166), Multivariate Analysis

	Baseline AVR < Median Odds Ratio (Confidence Interval 95%)	
	Model A	Model B
All (height < median)	1.00	1.00
Height > median (for each centimeter)	0.95 (0.93–0.97) ^a	0.97 (0.94–0.99) ^a
Men (height < median)	1.00	1.00
Height > median (for each centimeter)	0.94 (0.91–0.97) ^a	0.95 (0.92–0.98) ^a
Women (height < median)	1.00	1.00
Height > median (for each centimeter)	0.95 (0.91–0.99) ^a	0.97 (0.93–1.02)

Abbreviation: AVR, arteriole-to-venula ratio. Model A: adjusted for sex and body mass index (BMI); model B: adjusted for age, sex, and BMI. Height median=men 170 cm, women=157 cm; AVR median=men 0.8220, women=0.8540. ^aP<.05.

Research Article

Retinal arteriole-to-venule ratio changes and target organ disease evolution in newly diagnosed hypertensive patients at 1-year follow-up

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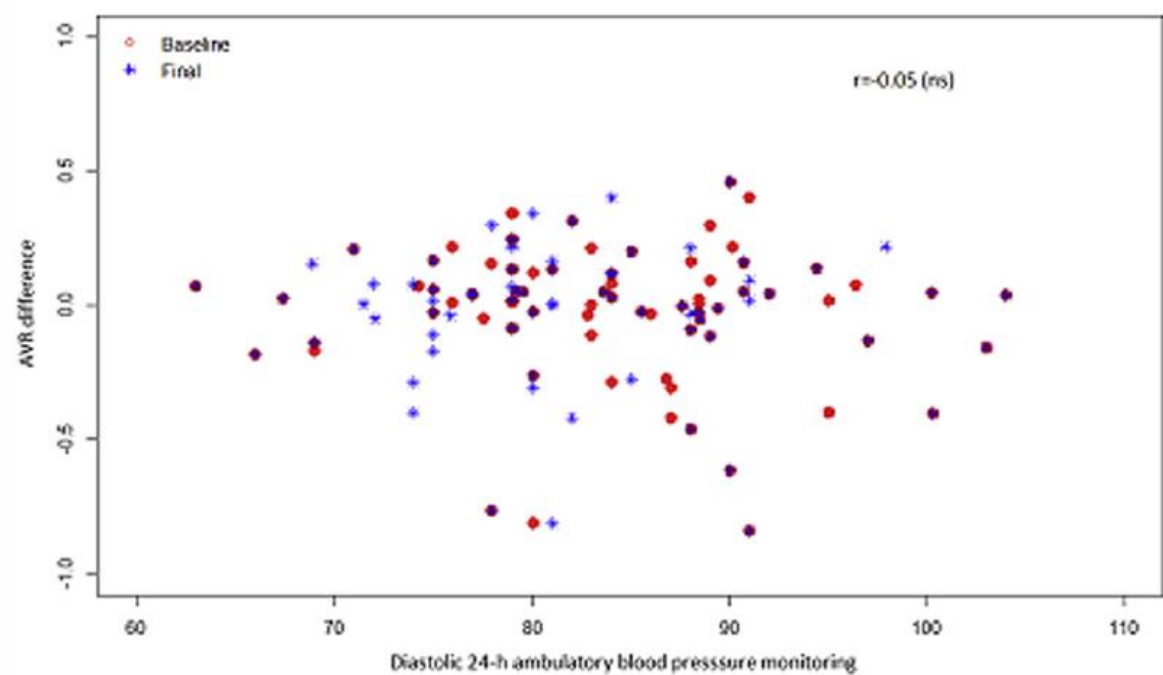
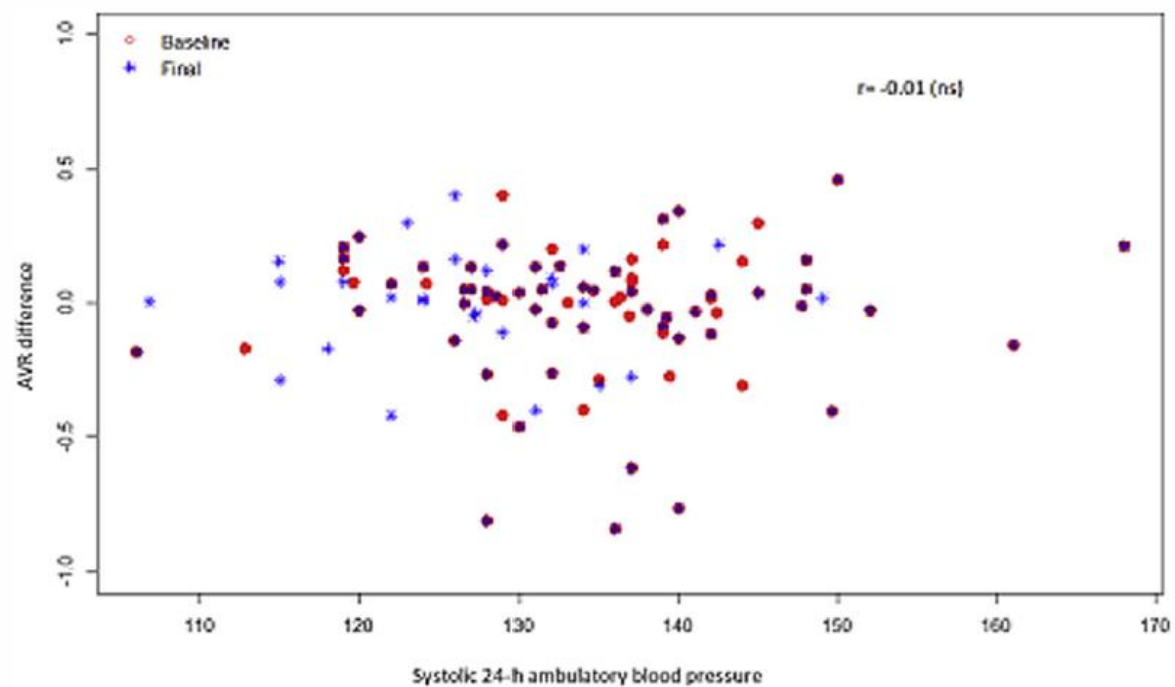


Table 4

Favorable evolution of target organ damage according to baseline-final quartile differences of arteriole to venule ratio (multivariate analysis)

	LVH	Amount of TOD*	GFR
	OR (95% CI)	OR (95% CI)	OR (95%CI)
AVR dif Q1-3 (≤ 0.081750)	1.00	1.00	1.00
AVR dif Q4 (> 0.081750)	14.9 (1.08–206.8)	2.22 (1.03–6.05)	1.17 (0.11–19.3)

AVR, Arteriole to venule ratio; GFR, glomerular filtration rate; LVH, left ventricular hypertrophy.

Model adjusted for age, gender, clinic blood pressure, 24-hour ambulatory blood pressure monitoring, body mass index, smoking status, fasting glucose, low density lipoprotein cholesterol, months of evolution.

* Without FO advanced lesions.

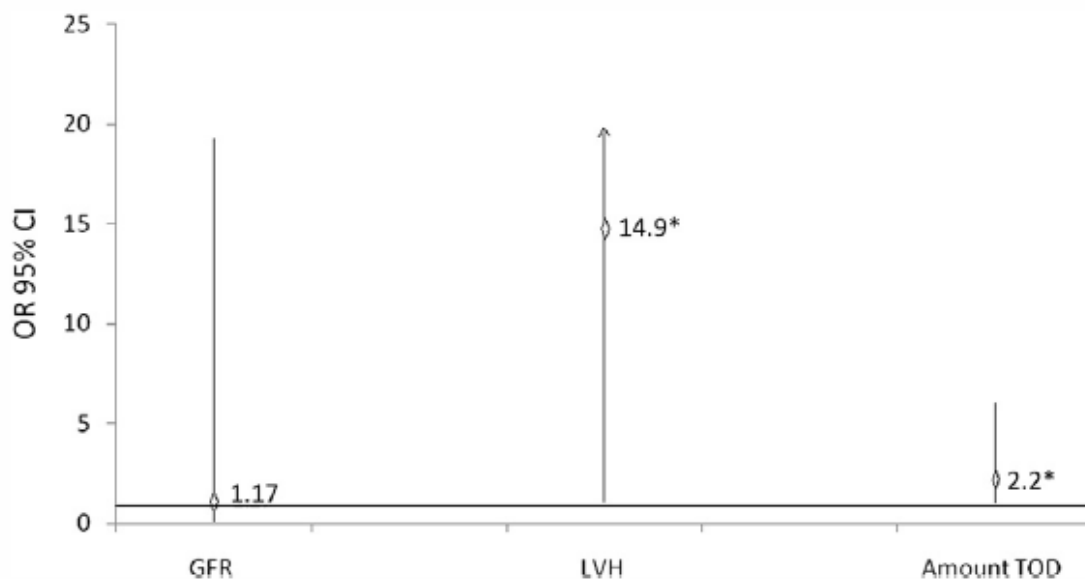


Figure 2. Favorable evolution of TOD according to final AVR difference (Q4 dif vs. Q3-Q1 dif). * $P < .05$. AVR, Arteriole-to-

CONCLUSIONES

- Es necesario disponer de estudios prospectivos de morbimortalidad en nuestra población para definir los puntos de corte de normalidad para AMPAd
- Por los estudios epidemiológicos transversales y de seguimiento a 1 año disponibles hasta el momento en nuestro ámbito, el valor de normalidad debería ser inferior al descrito

CONCLUSIONES

- La HCA con los criterios actuales presenta un porcentaje de LOD similar a la HTA sostenida y debería ser considerada como una situación “no benigna”
- Obtener los valores de normalidad de AMPA para la definición de HCA a partir de la presencia y evolución de LOD puede resultar útil

CONCLUSIONES

- Un criterio de HCA inferior a 130 mmHg por AMPA, determina un mayor riesgo de cualquier LOD en los pacientes con HTA mantenida.
- Si se define la HCA por la probabilidad de presentar LOD, cabe plantearse un punto de corte de AMPA inferior a 130 mmHg de presión arterial sistólica.

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I Fòrum de Recerca de la CAMFiC

Estudi VAMPAHICA: principals resultats i aplicació pràctica en el diagnòstic de la hipertensió arterial

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