International Journal of Cardiology 254 (2018) 136–141

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Arterial hypertension in patients with atrial fibrillation in Europe: A report from the EURObservational Research Programme pilot survey on atrial fibrillation

G.A. Dan [a,b,*,1], E. Badila [b,c,1], E. Weiss [b,c,1], C. Laroche [d,1], G. Boriani [e,1], A. Dan [a,1], L. Tavazzi [f,1], A.P. Maggioni [d,g,1], H.J. Crijns [h,1], R. Popescu [a,1], D. Blommaert [i,1], W. Streb [j,1], G.Y.H. Lip [k,1], On behalf of EORP-AF General Pilot Registry Investigators [2]

[a] Colentina University Hospital, Cardiology Clinic, Bucharest, Romania
[b] Carol Davila University of Medicine and Pharmacy, Bucharest, Romania
[c] Bucharest Emergency Clinical Hospital, Internal Medicine Clinic, Bucharest, Romania
[d] European Society of Cardiology, EURObservational Research Programme Department, Sophia-Antipolis, France
[e] Cardiology Division, Department of Diagnostics, Clinical and Public Health Medicine, University of Modena and Reggio Emilia, Policlinico di Modena, Modena, Italy
[f] GVM Care and Research, Ettore Sansavini Health Science Foundation, Maria Cecilia Hospital, Cotignola, Italy
[g] ANMCO Foundation For Your Heart, Florence, Italy
[h] Maastricht University Medical Centre (MUMC), Cardiology and CARIM, Maastricht, Netherlands
[i] Université catholique de Louvain, CHU UCL, Namur, Belgium
[j] Poradnia Kardiologiczna Kardio-Plus, Radlin, Poland
[k] University of Birmingham Centre for Cardiovascular Sciences, City Hospital, Birmingham, United Kingdom

ARTICLE INFO

Article history:
Received 11 September 2017
Received in revised form 11 October 2017
Accepted 23 October 2017

Keywords:
Atrial fibrillation
Hypertension
Registry

ABSTRACT

Background: Hypertension (HTN) is the most prevalent co-morbidity among atrial fibrillation (AF) patients; the relationship between the two is bidirectional, with an incremental effect on adverse outcomes.
Purpose: To study clinical features, treatment patterns and 1 year outcomes amongst AF patients with HTN in the EURObservational Research Programme Atrial Fibrillation (EORP-AF) Pilot Registry, a prospective multi-national survey conducted by the European Society of Cardiology in 9 European countries.
Methods: Of 3119 enrolled AF patients, 2194 were diagnosed with HTN (AF-HTN) and 909 were normotensive (AF-NT) (16 patients had unknown HTN status). We compared baseline clinical features, management strategy and 1-year outcomes in terms of all-cause death, cardiovascular (CV) death, and any thrombosis-related event (TE: stroke, transient ischemic attack, acute coronary syndrome, coronary intervention, cardiac arrest, peripheral/pulmonary embolism) in AF-HTN vs AF-NT patients.
Results: The AF-HTN patients had more prevalent CV risk factors and comorbidities (median CHA2DS2-VASc score (IQR) 4 (3, 5) in AF-HTN, versus 2 (1, 3) in AF-NT; $p < 0.01$). Crude rate of all-cause death and any TE event was higher in AF-HTN (194 (11.2%) versus 60 (8.2%), $p = 0.02$). Kaplan-Meier analysis curves for death by hypertensive status showed no significant differences between the subgroups (log rank test, $p = 0.22$). On logistic regression analysis, HTN did not emerge as an independent risk factor for outcomes (OR 1.08, 95% CI 0.76–1.54).
Conclusion: AF-HTN patients have a higher prevalence of comorbidities and this conferred a higher risk for a composite endpoint of all-cause death and thromboembolic events. In this cohort HTN did not independently predict all-cause mortality at 1-year.

1. Introduction

There has been a progressive increase in the cardiovascular (CV) burden of the general population, as a consequence, among others, of the ever higher incidence and prevalence of hypertension (HTN), atrial fibrillation (AF) and their associated mortality. In 2008, approximately 40% of worldwide adults over the age of 25 had been diagnosed with hypertension; the number of people with the condition rose from

Abbreviations: AF, atrial fibrillation; ACEI, angiotensin converting enzyme inhibitor; AF-HTN, atrial fibrillation hypertensive; AF-NT, atrial fibrillation normotensive; ARB, angiotensin receptor blocker; BP, blood pressure; CV, cardiovascular; EORP-AF, EURObservational Research Programme Atrial Fibrillation; HTN, hypertension; IQR, interquartile range; NOAC, non-vitamin K oral anticoagulant; NT, normotensive; OAC, oral anticoagulant; TE, thromboembolic event; VKA, vitamin K antagonist.

* Corresponding author at: 22 Sos. Kiseleff, 011346 Bucharest, Romania.
E-mail address: andrei.dan@gadan.ro (G.A. Dan).

[1] This author takes responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation.

[2] Listed in Supplementary Appendix 1.

https://doi.org/10.1016/j.ijcard.2017.10.092
0167-5273/

600 million in 1980 to 1 billion in 2008 [1]. More recent analysis of trends in blood pressure showed that these numbers continue to increase, and this comes mostly as a consequence of low-income and middle-income states joining the statistics [2].

Probably driven by growth in population and shifts in the population age-structure towards older ages, death for hypertensive heart disease increased from 622,000 to 1,068,000 from 1990 to 2013 (but age-standardized death rate did not increase), while both crude death rate

Table 1
Patient characteristics at baseline.

Patient characteristics at baseline		Whole cohort	Hypertensive	Non hypertensive	HTN vs nonHTN
No of patients		n = 3103	n = 2194	n = 909	p-value
Male		1854	1261	593	
Average age, SD		68.8, 11.5	70.4, 10.3	65.0, 13.2	<0.01
Physical characteristics					
BMI	Mean, SD	28.0, 4.8	28.5, 4.9	26.8, 4.4	<0.01
Reason for admission					<0.01
Atrial fibrillation	N	1866	1261	605	
	%	60.1	57.5	66.6	
Acute myocardial infarction	N	129	98	31	
	%	4.2	4.5	3.4	
Valvular heart disease	N	113	82	31	
	%	3.6	3.7	3.4	
Hypertension	N	45	42	3	
	%	1.5	1.9	0.3	
Heart failure	N	502	363	139	
	%	16.2	16.5	15.3	
Other CAD	N	141	116	25	
	%	4.5	5.3	2.8	
Other cardiac	N	232	175	57	
	%	7.5	8.0	6.3	
Other non-cardiac reason	N	75	57	18	
	%	2.4	2.6	2.0	
Patient history					
Lone atrial fibrillation	N	122	0	122	<0.01
	%	3.9		13.4	
Chronic HF (yes)	N	1403	1055	348	<0.01
	%	45.6	48.5	38.5	
Ischemic	N	534	427	107	0.01
	%	47.4	50.2	38.8	
Non-ischemic	N	593	424	169	
	%	52.6	49.8	61.2	
Coronary artery disease (yes)	N	975	769	206	<0. 01
	%	34.8	39.2	24.6	
MI	N	437	337	100	0.22
	%	44.8	43.8	48.5	
PTCA/CABG	N	458	348	110	0.03
	%	47.0	45.3	53.4	
Stable angina	N	364	295	69	0.19
	%	37.3	38.4	33.5	
Unstable angina	N	157	131	26	0.12
	%	16.1	17.0	12.6	
Previous TIA	N	126	92	34	0.54
	%	4.1	4.2	3.8	
Previous stroke	N	194	145	49	0.19
	%	6.3	6.7	5.4	
CV Risk factors					
Smoking NO	N	1786	1271	515	0.59
	%	59.3	59.6	58.5	
Diabetes mellitus	N	636	538	98	<0.01
	%	20.6	24.7	10.8	
Hypercholesterolemia	N	1468	1189	279	<0.01
	%	48.4	55.6	31.1	
Other clinical conditions					
Peripheral vascular disease	N	326	270	56	<0.01
	%	11.0	12.9	6.4	
Chronic kidney disease	N	407	336	71	<0.01
	%	13.2	15.4	7.8	
COPD	N	339	254	85	0.07
	%	11.0	11.7	9.5	
Sleep apnea	N	67	54	13	0.06
	%	2.3	2.7	1.5	
SCORES					
$CHADS_2$	Median(IQR)	2 (1–3)	2 (1–3)	1 (0–2)	<0.01
CHA_2DS_2-VASc	Median(IQR)	3 (2–4)	4 (3–5)	2 (1–3)	<0.01
	2 OR more N	2537	2024	513	
	%	81.8	92.3	56.4	
HAS-BLED	Median (IQR)	1 (1–2)	1 (1–2)	1 (0–2)	<0.01