International Journal of Cardiology 176 (2014) 852–858

Contents lists available at ScienceDirect

International Journal of Cardiology

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

Comparison of clinical profile and management of outpatients with heart failure with reduced left ventricular ejection fraction treated by general practitioners and cardiologists in contemporary Poland: The results from the DATA-HELP registry

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ARTICLE INFO

Article history:
Received 9 March 2014
Received in revised form 19 June 2014
Accepted 2 August 2014
Available online 8 August 2014

Keywords:
Management
Cardiologist
General practitioner
Heart failure with reduced ejection fraction
DATA-HELP registry
Poland

ABSTRACT

Objective: We sought to determine and compare clinical profile and management of outpatients with heart failure with reduced ejection fraction (HFREF) treated by cardiologists and general practitioners (GPs) in Poland.
Methods: All the 790 randomly selected cardiologists and GPs in the DATA-HELP registry, which included 5563 patients, filled out questionnaires about 10 consecutive outpatients with HFREF.
Results: Outpatients managed by GPs were older (69 ± 10 vs 66 ± 12 years), and the prevalence of men was less marked (58% vs 67%). They also had higher left ventricular ejection fraction (38 ± 6% vs 35 ± 8%) and had more pulmonary congestion (63% vs 49%) and peripheral oedema (66% vs 51%), compared with those treated by cardiologists (all $p < 0.001$). Hypertension (74% vs 66%), previous stroke and/or transient ischaemic attack (21% vs 16%), diabetes (40% vs 30%), and chronic obstructive pulmonary disease (14% vs 11%) were more common in outpatients of GPs (all $p < 0.001$). GPs were less likely to prescribe β-blocker (95% vs 97%, $p < 0.01$), mineralocorticoid receptor antagonist (MRA) (56% vs 64%, $p < 0.001$), and loop diuretic (61% vs 64%, $p < 0.05$) or use PCI (33% vs 44%, $p < 0.001$), CABG (11% vs 16%, $p < 0.001$), ICD (4% vs 10%, $p < 0.001$), or CRT (1% vs 5%, $p < 0.001$). Prescription of renin–angiotensin system inhibitors (94% vs 94%, $p > 0.2$) and digoxin (20% vs 21%, $p > 0.2$) by GPs and cardiologists was similar.
Conclusion: In contemporary Poland, most outpatients with HFREF receive drugs that improve survival and undergo revascularisation procedures, although devices are rare, but the clinical profiles and management of those treated by GPs and cardiologists differ. Outpatients treated by GPs are older and have more comorbidities. Outpatients treated by cardiologists more commonly receive β-blocker, MRA, ICD, and CRT, and undergo coronary revascularisations.

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1. Introduction

Heart failure (HF) is a crucial medical and social problem, constituting a growing burden for public health systems worldwide [1–3]. Although in recent decades mortality has declined in patients with HF [2,4–6], we are witnessing a rapidly growing number of recurrent hospitalisations associated with HF progression. These recurrent hospitalisations are becoming a major problem for HF patients, physicians and public health systems, alike [1,3,7,8].

Ambulatory care plays a major role in the long-term management of patients with HF [1,3,9–12]. General practitioners (GPs), with the support of cardiologists, need to recognize the major strategic goals of HF management on an everyday basis. These goals include the optimisation of drug doses, the synchronised treatment of comorbidities, the implementation of non-pharmacological recommendations, and the early detection of factors and/or signs of decompensation episodes. Effective ambulatory care from GPs and cardiologists has been shown to improve compliance and long-term outcomes in this group of patients [10–12].

There are differences in the management of patients with HF between European countries [2,3,9,13]. A study on the management of Polish outpatients with HF aged over 65 years was published

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http://dx.doi.org/10.1016/j.ijcard.2014.08.005
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Table 1
Baseline characteristics of patients with heart failure with reduced ejection fraction (continuous variables) participating in the DATA-HELP registry.

	All patients				Type of outpatient clinic							
					General practitioner				Cardiologist			
	N	Mean ± SD	Median (Q1–Q3)	Min–max	N	Mean ± SD	Median (Q1–Q3)	Min–max	N	Mean ± SD	Median (Q1–Q3)	Min–max
Age (years)	5472	67 ± 11	68 (60–75)	21–98	2119	69 ± 10	69 (61–76)	29–97	3353	66 ± 12****	67 (59–75)	21–98
Height (cm)	5380	169 ± 8	170 (163–176)	131–198	2104	169 ± 8	169 (162–175)	146–193	3276	170 ± 8****	170 (164–176)	131–198
Weight (kg)	5371	81.0 ± 13.9	80.0 (72.0–89.0)	40.0–162.0	2101	80.9 ± 14.2	80.0 (72.0–89.0)	45.0–162.0	3270	81.0 ± 13.8	80.0 (72.0–90.0)	40.0–156.0
BMI (kg/m^2)	5339	28.2 ± 4.3	27.8 (25.4–30.5)	16.0–64.9	2090	28.4 ± 4.4	27.8 (25.6–30.7)	16.2–57.4	3249	28.1 ± 4.3**	27.8 (25.3–30.4)	16.0–64.9
Heart rate (bpm)	5513	77 ± 15	75 (68–84)	40–200	2149	77 ± 14	76 (68–85)	45–192	3364	77 ± 15	75 (68–83)	40–200
Systolic BP (mm Hg)	5514	130 ± 18	130 (120–140)	78–220	2155	132 ± 17	130 (120–140)	80–220	3361	128 ± 19****	130 (115–140)	78–200
Diastolic BP (mm Hg)	5514	79 ± 11	80 (70–85)	42–120	2155	80 ± 11	80 (70–90)	50–120	3361	78 ± 11****	80 (70–82)	42–120
BP amplitude (mm Hg)	5514	51 ± 13	50 (40–60)	5–120	2155	52 ± 13	50 (40–60)	5–120	3361	50 ± 14****	50 (40–60)	10–120
Mean BP (mm Hg)	5514	96 ± 12	95 (87–103)	54–147	2155	97 ± 12	97 (90–107)	60–147	3361	95 ± 12****	93 (87–101)	54–147
LVEF (%)	5563	36 ± 7	38 (30–40)	10–45	2171	38 ± 6	40 (35–42)	10–45	3394	35 ± 8****	35 (30–40)	10–45
HF diagnosis (years)	4867	5.5 ± 4.6	4.0 (2.0–8.0)	0.0–55.0	1908	5.8 ± 4.5	5.0 (2.0–9.0)	0.0–50.0	2961	5.3 ± 4.6****	4.0 (2.0–8.0)	0.0–55.0

Data are presented as an arithmetic mean ± a standard deviation of a mean, a median (with lower and upper quartiles), and minimum/maximum values.
** $p < 0.01$, **** $p < 0.0001$.
N — number, SD — standard deviation of an arithmetic mean, Q1 — lower quartile, Q3 — upper quartile, BMI — body mass index, BP — blood pressure, LVEF — left ventricular ejection fraction, HF — heart failure.

previously, but importantly the study was not designed as a registry investigating a general population of patients with HF [14,15]. Updated registry information, with an emphasis led on differences in clinical profile and treatment of patients with HF supervised by GPs and cardiologists, could be useful for developing long-term strategies to optimise the complex management of patients with HF.

For these reasons, we performed a prospective registry, aiming to determine and compare the clinical characteristics, applied diagnostics measures and therapies in outpatients with HF with reduced left ventricular ejection fraction (HFREF) treated by cardiologists and GPs in contemporary Poland.

2. Methods

2.1. Study population and protocol

The DATA-HELP (Diagnostic And TherApeutic methods used in patients with systolic HEart failure Living in Poland) registry was a prospective multicentre study performed from October to December 2009 in Poland among randomly selected cardiologists and GPs.

The stratified randomisation was performed among all cardiologists and GPs working in outpatient clinics in Poland in 2009 by the Cegedim Strategic Data, using the algorithm based on the generation of pseudorandom numbers according to B. A. Wichman and I. D. Hill [16]. A random sample of physician was invited to provide reliable information on 10 consecutive patients with HFREF, with the assumption that they would follow the rules of Good Clinical Practice. Such an approach allowed us to obtain a representative sample of outpatients supervised by these two groups of physicians.

The registry was prospectively designed to randomly select 500 cardiologists and 290 GPs working in Poland. Each physician was requested to fill out a questionnaire regarding the clinical status, medical history, administered diagnostic tests, applied therapy, recent hospitalisations and outpatient visits in 10 consecutive outpatients with HFREF consulted between October and December 2009. Physicians were instructed to recruit patients with the established diagnosis of HFREF, for whom physicians were responsible for the complex management of these patients, and who realised the outpatient visit during the aforementioned period. Physicians were obliged to keep the source data, and were informed that in case of audit they would be obliged to provide the source data to respective authorities controlling the quality of the collected data. The expected numbers of outpatients with HFREF to be recruited by cardiologists and GPs were therefore 5000 and 2900, respectively.

Recruited patients had to fulfill the following inclusion criteria: (a) age ≥18 years; (b) clinical diagnosis of HF based on current European recommendations; (c) evidence of left ventricular ejection fraction (LVEF) ≤45%; and (d) outpatient visit to either a cardiologist or GP from October to December, 2009.

Our investigation conformed with the principles outlined in the Declaration of Helsinki. The study protocol was registered and approved by all ethics committees involved. Informed patient consent was not required.

2.2. Information obtained

Information regarding clinical status and administered treatment was obtained during the outpatient visit, which was reported in the registry by physicians. The following information on recruited patients was obtained from the questionnaires filled out by physicians:

a) demographic data and clinical status: age, gender, city/town size, weight, height, calculated body mass index (BMI), resting heart rate, systolic and diastolic blood pressure (BP), calculated BP amplitude and mean BP, presence of pulmonary congestion, peripheral oedema, hepatomegaly, jugular venous dilatation, and 3rd heart sound;
b) diagnosis of HF: time since HF diagnosis; left ventricular ejection fraction (LVEF), along with the method used for its assessment; HF aetiology; HF symptoms, according to New York Heart Association (NYHA) class; potential symptoms of angina, according to Canadian Cardiovascular Society (CCS) class;
c) co-morbidities and habits: previous myocardial infarction, hypertension, previous stroke and/or transient ischaemic attack (TIA), diabetes mellitus, intermittent claudication, thyroid dysfunction, renal dysfunction, atrial fibrillation, cancer, chronic obstructive pulmonary disease (COPD), alcohol consumption, and smoking;
d) diagnostic procedures performed within 12 preceding months: resting electrocardiogram (ECG), chest X-ray, echocardiography, ventriculography, scintigraphy, natriuretic peptides, ECG exercise testing, coronary angiography, cardiopulmonary exercise testing, and invasive haemodynamic measurements;
e) applied pharmacotherapy: angiotensin-converting enzyme (ACE) inhibitor, angiotensin receptor blocker (ARB), mineralocorticoid receptor antagonist (MRA), β-blocker, non-dihydropyridine calcium channel blocker (CCB), dihydropyridine CCB, loop diuretic, thiazide diuretic, digoxin, nitrate, dihydralazine, statin, and antiplatelet drug;
f) previous invasive therapeutic procedures and devices: percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG), supraventricular arrhythmia ablation, ventricular arrhythmia ablation, implantable cardioverter defibrillator (ICD), cardiac resynchronisation therapy (CRT), pacemaker (PM) other than CRT.

2.3. Statistical analyses

Continuous variables were presented as means ± standard deviations or medians with lower and upper quartiles, along with minimum and maximum values. The categorical variables were expressed as numbers with percentages. Intergroup differences were tested using the student t-test for continuous data and the χ^2 test for categorical data. A p-value <0.05 was considered statistically significant.

3. Results

3.1. Clinical characteristics

The registry included 5563 patients with HFREF (70% of the planned 7900 subjects); 3394 were treated by cardiologists (68% of the planned 5000 subjects) and 2169 by GPs (75% of the planned 2900 subjects).

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