Archives of Cardiovascular Diseases 101 (2008) 242–248

Available on www.sciencedirect.com

CLINICAL RESEARCH

No gender survival difference in a population of patients with chronic heart failure related to left ventricular systolic dysfunction and receiving optimal medical therapy

Absence de différence de survie liée au sexe dans une population de patients en insuffisance cardiaque chronique secondaire à une dysfonction systolique ventriculaire gauche et sous traitement médical optimal

P. de Groote*, N. Lamblin, F. Mouquet, C. Bauters

Pôle de cardiologie et maladies vasculaires, Hôpital Cardiologique, Centre hospitalier universitaire, Lille.

KEYWORDS
Chronic heart failure;
Systolic dysfunction;
Gender;
Woman;
Prognosis.

Summary

Introduction.— Controversial results have been published concerning a possible gender survival difference in patients with chronic heart failure (CHF).

Methods.— We analysed data from consecutive patients with stable CHF admitted to our department for prognostic evaluation. Patients underwent coronary angiography, echocardiography, radionuclide angiography and a cardiopulmonary exercise test.

Results.— We included 613 consecutive patients of whom 115 (19%) were women. The major difference in clinical characteristics was a higher proportion of ischaemic cardiomyopathy in men compared to women (51% *vs* 28%, p<0.0001) and a lower left ventricular ejection fraction (35±9 *vs* 38±9%, p=0.001). Therapeutic management was similar in men and women. A total of 140 cardiovascular-related deaths and 4 urgent transplantations occurred during a median follow-up of 1.234 days. There was no gender difference in cardiac survival. Cardiovascular mortality rates at 2 years were 11% in men and 13% in women.

Conclusions.— Despite a lower percentage of ischaemic cardiopathy in women, no gender survival benefit was found in our population of CHF patients receiving optimal medical therapy.

MOTS CLÉS
Insuffisance cardiaque chronique ;

Résumé

Introduction. — La notion d'une survie différente en fonction du sexe chez des patients porteurs d'une insuffisance cardiaque chronique (ICC) est controversée.

Méthodes. — Nous avons suivi tous nos patients consécutifs avec une ICC stable admis dans notre service pour un bilan pronostique, comprenant une coronarographie, une échocardiographie, une détermination isotopique des fractions d'éjection et une épreuve d'effort métabolique.

* P. de Groote, Service de cardiologie C, Hôpital Cardiologique, Centre hospitalier universitaire, Bd Pr J.-Leclercq, 59037 Lille cedex.
E-Mail : pdegroote@chru-lille.fr

Dysfonction systolique ;
Sexe ;
Femme ;
Pronostic.

Résultats. — Nous avons inclus dans l'analyse 613 patients dont 115 de sexe féminin (19 %). Les différences cliniques significatives en fonction du sexe sont, chez l'homme par rapport à la femme, une proportion plus importante de cardiopathie ischémique (51 % vs 28 %, p < 0,0001) et une fraction d'éjection du ventricule gauche plus basse (35 ± 9 % vs 38 ± 9 %, p = 0,001). Le traitement des patients est identique quel que soit le sexe. Pendant un suivi de 1 234 jours, il y a eu 140 décès d'origine cardio-vasculaire et 4 transplantations en urgence. La survie est identique quel que soit le sexe. La mortalité cardiovasculaire à 2 ans est de 11 % chez les hommes et de 13 % chez les femmes.
Conclusion. — Dans notre population de patients suivis pour une ICC stable et recevant un traitement médical optimal, malgré une proportion plus faible de cardiopathie ischémique chez la femme, la survie cardiovasculaire est identique quel que soit le sexe.

Introduction

Previous studies have shown gender differences in clinical characteristics, therapeutic management and survival in patients with cardiac diseases. Although some specific aspects of metabolism could explain theses differences, gender difference in survival in patients with chronic heart failure (CHF) remains controversial. Some studies clearly demonstrate better survival in women with CHF, particularly in post-hoc analyses of large mortality trials [1-3]. However, other studies have failed to demonstrate a gender survival benefit [4-6]. In the SOLVD (Studies Of Left Ventricular Dysfunction) registry and the DIG (Digitalis Investigation Group) trial, women had a greater mortality than men [7, 8]. These controversial results could be related to selection bias in mortality trials and gender differences in the management of CHF.

The aim of the present study was to compare gender differences in clinical characteristics, therapeutic management and survival in a large cohort of patients with CHF related to left ventricular systolic dysfunction from a tertiary hospital, who was receiving contemporary treatment including high doses of renin inhibitors and beta-blockers.

Methods

All patients referred to our department for non-invasive evaluation of left ventricular systolic dysfunction were considered for inclusion in the study. Before inclusion, treatment of the patients was optimized with the introduction and/or uptitration to maximal tolerated doses of renin inhibitors and/or beta-blockers. The non-invasive evaluation was performed 3 months after maximal tolerated doses of both renin inhibitors and beta-blockers were reached. During this treatment optimization, patients had systematic coronary angiography to help define the aetiology of left ventricular systolic dysfunction. Patients were included in the study if they were ambulatory, stable for at least 2 months and had an echocardiographic left ventricular ejection fraction (LVEF) ≤45%. Patients were excluded if they had an acute coronary syndrome or had undergone coronary revascularization or cardiac surgery in the previous 3 months.

All of the patients underwent echocardiography, radionuclide angiography, and a cardiopulmonary exercise test as described previously [9]. Blood samples were drawn in the morning with the patient in the supine position for standard measurements and brain natriuretic peptide (BNP) determination. BNP samples were immediately put on ice, centrifuged at 4°C within 20 minutes and the supernatant was immediately stored at -70°C until assayed. Plasma BNP concentrations were measured by radio-immunoassay (Shionoria BNP kit, Shionogi & Co. Ltd., Osaka, Japan). Normal values were <21.1 pg/mL with inter-assay and intra-assay coefficients of variation of 4.2% and 2.7%, respectively, for the concentration of 21.1 pg/mL, and 2.1% and 2%, respectively, for the concentration of 520 pg/mL.

Definitions

Patients with ischaemic cardiomyopathy were defined as those with a proven history of myocardial infarction (significant Q waves on the electrocardiogram and/or significant increase in creatinine kinase levels during a previous hospitalization) and/or stenosis >50% in one of the major coronary arteries. Patients who did not fulfil these criteria were considered to have non-ischaemic cardiomyopathy. If coronary angiography was not performed or if the patient did not have a proven history of myocardial infarction, they were considered as having undetermined cardiomyopathy (7 men and 3 women), except for young patients (<30 years' old) without any risk factor for atherosclerosis. These patients were considered to have non-ischaemic cardiomyopathy.

Qualitative classification of doses of angiotensin-converting enzyme (ACE) inhibitor was defined using the recommendations of the European Society of Cardiology. High doses were defined as the highest recommended doses, intermediate as the lowest recommended doses, and low as non-recommended doses of ACE inhibitor [10].

Statistics

Results are expressed as mean±SD except for BNP values, which are presented as median with interquartile range. Discrete variables were compared using χ^2 analysis or with Fisher's exact test, when indicated. Continuous variables were compared by the unpaired Student's *t* test or by the non-parametric Mann-Whitney test. Follow-up was performed either by direct examination or by contact with the general practitioner. Cardiac mortality was defined as cardiac-related death or urgent cardiac transplantation (United Network for Organ Sharing [UNOS] status 1); patients who had non-urgent transplantation (UNOS status 2) were censored at the time of transplantation. A cardiac event was defined as cardiac-related death or cardiac transplantation (UNOS1 and 2). A Kaplan-Meier method was performed to