



REVIEW ARTICLE

Depression in Heart Failure patients

Christos Lefteriotis

Nurse, MSc(c) of Cardiology

Abstract

Depression and heart failure share a common genetic and pathophysiologic basis, thus demanding a deep understanding of the relation between these diseases across all the stages of heart failure.

The aim of the present study was to review the literature about the relation of depression and heart failure.

Method and material : A computer search of the literature was conducted from 1999-2013. PubMed was searched using the following key-search terms: depression-heart failure-assessment- depression risk factors.

Results : Depression is prevalent in patients with heart failure and according to estimates, it ranges from 9% to 60% depending on the definitions of depression. Depression leads to poorer outcomes in patients with heart failure, including increased risk of poor functional status, hospital readmission and death. Depression incidence is higher in hospitalized patients with heart failure than in stabilized outpatients. Systematic evaluation of depression by both completion of self-reported scales and a personal interview by the specialist is imperative for successful treatment and generally a better quality of life in patients. Many factors are held responsible for depression of heart failure patients such as age, gender, educational and economic status, amount of receiving information as well as the stage of the disease.

Conclusions : Though, depression is often overlooked, however it is an issue that need to be addressed in patients with heart failure. Nurses have a major role in the management of patients

with heart failure and therefore in early detection and treatment of depression.

Keywords: Depression-heart failure-assessment-depression risk factors

Corresponding author: Lefteriotis Christos, Artemidos 6, Petroupoli, 13231, Athens.
Email: xristo76@hotmail.com

Introduction

During recent decades, life expectancy of patients with heart failure (HF) has been rapidly increased due to many reasons. Firstly, the improved diagnosis and medical management including advanced cardiovascular interventions as well as pharmacological therapeutic advances contributed significantly to the increased incidence of HF.^{1,2} Secondly, effective treatment of coronary artery disease in conjunction with reduce of risk factors (dyslipidemia, smoking, sedentary lifestyle) are held responsible for the increased number of HF patients. More in detail, 14-20% of patients who survive an acute myocardial infarction within the next 5-6 years is likely to develop heart failure and those with a history of acute myocardial have five times the risk of developing heart failure within five years of the episode.³⁻⁵ Last but not least, the aging population has led to the increasing numbers of HF patients.⁵ Given the aging population and improved survival of patients with heart failure, the burden of the disease will likely continue.²

HF affects more than 5 million Americans, about 20% of whom are also diagnosed with depression while and 550. 000 new cases are diagnosed each year.^{1,6} The estimated prevalence of depression is 100 cases per 1000 persons in the population more than 65 years old.¹ The incidence of heart failure increases with age and it is estimated to affect about 3.9% of the population aged 55 years or older and 6.7% of those aged 65–84 years.^{1,2} In Greece, the prevalence of HF



reaches 0.3-2% in the general population and 8-16% in those aged over 75 years, while 1-5 new cases per 1000 population are added each year.⁷

HF is a major cause of serious morbidity and one of the leading medical causes of hospitalisation among people aged greater than 60 years.¹⁻⁹ Moreover, HF is the main cause of hospital readmission and mortality.¹⁻⁸ Furthermore, HF clinical symptoms often exacerbate that is mainly attributed either to the nature and the chronicity of the disease or to non adherence to the therapeutic regimen.⁸⁻¹⁰

Significantly more, the disease imposes a burden on each dimension of human life such as personal, family, professional, thus underlining the need for early and appropriate treatment scheduling including accurate information to patients as well as constant assessment of the outcome of the disease.^{1,9} In addition, heart failure imposes a tremendous financial burden on Nation Health System of each country due to increased health care costs resulting from frequent re-hospitalizations, long hospital stay and medication.¹⁰ The estimated direct and indirect costs of the disease in the U.S. are more than \$37 billion.⁶

The traditional objective in the treatment of heart failure is to relieve symptoms, improve functional capacity and achieve a better quality of life within the limitations imposed by the disease. Apart from symptoms arising from physical dimension, such as dyspnoea, fatigue, etc., there are others arising from the mental dimension such as depression that exert a negative influence on the quality of life of HF patients. The extent to which the associations between psychosocial factors and heart failure are causal has been the subject of systematic enquiry.^{3,4,11,12}

HF is a prevalent debilitating disease of poor prognosis in which heart cannot fill with or eject the sufficient amount of blood that is required due to structural or functional cardiac disorder.

The main symptoms of heart failure are fatigue, breathlessness, and ankle swelling and they are developed either quickly (acute heart failure) or gradually (chronic heart failure). As heart function is decreasing, the needs of oxygen in the tissues are unmet and cognitive impairment (memory loss, poor concentration) may also occur. Consequently, the disease is significantly related to poor physical, psychological and social functioning.^{13,14}

HF is not attributed to a single cause but a number of factors seem to increase the possibility to develop the disease such as hypertension, coronary heart disease, cardiomyopathy, atrial fibrillation and heart valve disease. HF is increasingly recognized as a systemic disease associated with cardiac dysfunction. Anaemia, renal dysfunction and diabetes were once considered only as conditions that caused or exacerbated heart failure, but are now recognized to be a consequence of heart failure and a potential target for treatment.⁹

New York Heart Association (NYHA) describes the stage of heart failure based on the symptoms to everyday activities and the patient's quality of life.¹⁵

Class I : No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea (shortness of breath).

Class II: Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnea.

Class III: Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnea.

Class IV : Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased



Depression in heart failure patients

Depression is a common psychiatric disorder characterized by the presence of low mood or loss of interests associated with several other features that are present almost daily for at least two weeks. Moreover, depression results in impaired function and reflects a pathological change in the mental sphere in relation to a previously healthy mental state.⁷

According to the Diagnostic and Statistical Manual of Mental Disorders, the diagnosis of a depressive syndrome involves the following : a) insomnia or hypersomnia b) diminished interest or pleasure from activities c) excessive or inappropriate guilt d) loss of energy or fatigue e) diminished concentration f) decrease or increase in appetite and resulting weight loss or gain g) psychomotor retardation/agitation h) recurrent thoughts of death, suicidal ideation, or suicide attempt.⁷

Depression is prevalent in patients with HF and according to estimates ranges from 9% to 60% depending on the definitions of depression. Relatively, prevalence rate of depression in HF patients varies from 19.3% when depression is defined based on diagnostic interviews to 33.6% for depression based on questionnaires.² The discrepancies in percentages of depression are mainly attributed to the use of different diagnostic tools, as well as to the association of each subgroup with the total of patients as regards their age, gender and severity of disease. Furthermore, interpretation of findings of several population is difficult if the research does not provide information about heart failure diagnosis or disease severity.¹³

Depression is the strongest predictor of health status in HF patients. In fact, depressed patients have functional impairment (walking distance), increase of heart failure symptoms and impaired health-related quality of life. Moreover, depressed HF patients are at increased risk for re-

hospitalization and death compared to non-depressed.¹⁵

Though considerable advances were made in the last decade in understanding the common pathophysiological mechanisms and aetiological factors between heart failure and depression, however their relation has not been fully explored. More in detail, four pathological patterns that occur in depressed patients correspond to the pathogenesis of heart failure: neurohormonal activation, hyper-coagulability, autonomic neurocardiac dysfunction, and cytokine release.^{1,16}

Interestingly, behavioral factors are held responsible for the impact of depression on heart failure. Indeed, depression is associated with poor compliance to healthy behaviours and engagement of additional risks factors, such as smoking, sedentary life, unhealthy dietary habits and substance abuse, which may lead to worsening of the existing condition.^{2,16}

Moreover, environmental factors, such as familial and social surroundings, often contribute significantly to the occurrence of depression in HF patients, thus imposing a further emotional burden upon them, with feelings of insecurity, rejection and social isolation.⁷ On the other hand, co-morbidity of the diseases complicates the therapeutic management of HF patients, reduces patients' compliance with treatment guidelines, thus leading to poor prognosis.^{13,17} Furthermore, this co-existence affects the main dimensions that shape the overall quality of life, physical health, psychological state, level of independence and social relationships. Treating depression relieves various clinical symptoms experienced by HF patients and significantly improves their quality of life.^{3,12}

One aspect of depression research in need of closer scrutiny is whether and to what extent is aetiologically related with HF development or whether being a coexistent entity is one of the



many clinical manifestations of the syndrome.⁷

Assessment of depression in HF patients

Depression should be assessed both in hospitalized HF patients and outpatients. For hospitalized patients, the ultimate goal of treatment is to relieve the symptoms of both disease (depression, heart failure). Symptoms of depression may disappear as heart failure becomes under control.^{1,18} Depression incidence is higher in hospitalized HF patients than in stabilized outpatients.¹⁹ Indeed, assessment of depression in HF outpatients is more reliable because then, symptoms of heart failure are more stable.^{1,18} Therefore, evaluation and treatment of depression is wise to start from diagnosis of heart failure throughout the progress of disease because the level of depression is frequently altered, due to the involvement of other factors.¹³

An essential step to minimize this risk of underestimating depression is that patients should undergo a detailed interview with a specialist, in order to confirm or to rule out depression.⁷ Even among not depressed HF patients, determination of patients at high risk is crucial. Depression prevention programs can be effective and can prevent inauspicious developments.^{7,20}

Moreover, completion of reliable scales is an essential step to assess depressive burden. The most widespread scale is Zung's Self-rating Depression Scale (ZSDS), which is available in more than 30 languages and has wide cultural applications.⁷ More in detail, Zung Self-Rating Depression Scale is a 20-item self-report instrument, which is a diagnostic tool for psychological and physical symptoms associated with depression. It needs approximately 10 minutes to complete and its questions are posed as positive or negative statements. Each question is rated on a 4-point Likert-scale (1 to 4), with 4 representing the most unfavorable answer. Total

score comes up by adding each question and ranges from 20 to 80. More specifically, total score may be classified in four categories to give an overall clinical estimation of depression. A total score of <40 is interpreted as normal or absence of depression, 40 to 47 indicates mild depression, 48 to 55 indicates moderate depression and a total score of 56 to 80 indicates severe depression.^{13,21}

In recent years, it has become increasingly clear that evaluation of depression is usually underestimated for various reasons. Firstly, physical symptoms of depression can be confused with the symptomatology of HF.⁷ Secondly, health professionals pay more attention to the treatment of the disease. In such cases, symptoms are misdiagnosed as physical problems while the underlying cause remains. Another reason why health professionals fail to recognize depression is the lack of education on the typical and atypical symptoms.^{13,14} Moreover, patients are sometimes unwilling to reveal their emotional stress to healthcare professionals of fear for being stigmatized under the label of mental illness.¹³

Evaluation of depression should not be underestimated because it may confuse the symptoms of HF disease, thus complicating the treatment. The whole situation seems to be a vicious cycle since as heart failure is deteriorating, the greater becomes depression, thus imposing a negative effect on disease outcome.^{3,4,1,12}

Physiologic changes, which occur in depressed HF patients, have been implicated as possibly contributing to the increased mortality.¹⁹

Factors associated with depression in HF patients

The main precipitating factors associated with depression in HF patients are age, gender, educational and economic status, amount of receiving information as well as the stage and the onset of the disease.¹³



Regarding sex, it has been shown that women experience more intense depression though there are not enough data regarding depression among HF women.¹³ On the contrary, Thomas et al.,¹⁹ showed that men with heart failure are more likely to become depressed than the general population. Freeland et al.,²³ indicated that major depression in hospitalized HF patients was related to age and functional status. Rutledge et al.,²⁴ showed that New York Heart Association (NYHA) functional status is correlated with the prevalence of depression, which increased steadily from 11% in patients with NYHA class I (mild) heart failure to 20% in those with class II, 38% in those with class III, and 42% in those with class IV (severe) heart failure. Gottlieb et al.,²⁵ who explored 155 patients with stable New York Heart Association functional class II, III, and IV HF and an ejection fraction <40% showed that : a) women were more likely (64%) to be depressed than men (44%), b) among men, blacks (34%) tended to have less depression than whites (54%) and c) depressed patients tended to be younger than non-depressed patients.

Age seems to play an important role on HF patients since the elderly (over 60 years old) feel more depressed due to the fact that they experience functional and cognitive impairment (poor memory or concentration difficulties) which make their daily life more difficult.¹³ Rozzini et al.,²⁶ found that hospitalized patients older than 70 years readmission rates were 67% among heart failure patients with depression versus 44% among heart failure patients without depression.

Moreover, low socio-economic and educational status is an important factor to affect depression since HF patients do not easily accept the disease, adopt non-compliance to drug therapy, are unwilling to report their depressive symptoms or due to the lack of financial sources, they seek for medical advice only when the depression has reached an advanced level. Severity of the disease is related to depression

since physical or cognitive impairment imposes limitations on every dimension of HF patients' lives, such as personal, family, occupational, thus affecting the mental sphere of this vulnerable population.^{13,27-29}

Not adequately informed HF patients about their health or their treatment experience more intense depression and show non-compliance to therapy that is related to poor prognosis and mortality. Counseling by health care professionals including accurate and elaborate information is highly beneficial.¹³

Faller et al.,³⁰ showed that major (but not minor) depression was associated with an increased mortality risk and this relation remained significant after adjustment for other prognostically relevant factors as age, sex, heart failure aetiology, degree and type of left ventricular dysfunction and New York Heart Association functional class.

Psychological interventions and pharmacological or non-pharmacological treatment of depression may lead to a substantial decrease in morbidity and perhaps in mortality among HF patients. On the other hand, education on self-care management and physical exercise are important elements of HF disease management.⁷

Biological, psychological and social aspects in heart failure should be integrated in a holistic model. The holistic model of care involves apart from conventional cardiac treatment, needs' assessment of coronary disease patients, systematic screening of depression, in-hospital counseling and psychological interventions including support groups at hospitals.³¹

Conclusions

Assessment of depression in HF patients should be an integral part of the therapeutic intervention and mainly in the holistic model for health care.



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