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OUTCOME OF PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION DISCHARGE ON NEUROHORMONAL ANTAGONIST

Dr Ahmad Aneeq[1], Dr Maryam Saghir[2], Dr Hassam Ahmed[2], Dr Numair Mahmood[3], Dr Haleema Saadia[2]

[1]QAMC, Bahawalpur
[2]SIMS, Lahore
[3]IMC

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Abstract:

Introduction: *Heart failure (HF) is an important health problem with elevated socio-health care costs. This disease is highly prevalent in the people over the age of 65 years and constitutes the first cause of hospitalization in this population.* ***Objectives:*** *The main objective of the study is to find the outcome of patients with heart failure with preserved ejection fraction discharge on neurohormonal antagonist.* ***Material and methods:*** *This randomized control trial was conducted in QAMC Bahawalpur during June 2021 to November 2021. The data was collected with the permission of ethical committee of hospital. The present analysis included all patients discharged alive after an episode of AHF with a LVEF of 50% or more recorded in an echocardiography performed during the 6 months prior to decompensation or that had been recorded during the current admission.* ***Results:*** *The data was collected from 100 patients of both genders. The mean age was 82.45 ± 4.56 years. The group receiving ANHD was younger, had a higher presence of hypertension, diabetes mellitus and ischemic cardiomyopathy, less functional capacity, and decompensation was more frequent due to tachyarrhythmia, hypertensive crisis or incompliance with pharmacological or dietetic treatments.* ***Conclusion:*** *It is concluded that anti-neuro hormonal drugs do not seem to reduce mortality or adverse events preserved ejection fraction patients, only renin-angiotensin-aldosterone-system inhibitors could provide some benefits, reducing the risk of hospitalization for AHF*

Corresponding author:
Dr Ahmad Aneeq,
QAMC, Bahawalpur

QR code

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INTRODUCTION:

Heart failure (HF) is an important health problem with elevated socio-health care costs. This disease is highly prevalent in the people over the age of 65 years and constitutes the first cause of hospitalization in this population. In addition, mortality and rehospitalization associated with decompensations such as acute heart failure (AHF) are high, even in patients with low risk HF.

Heart failure with preserved ejection fraction (HFpEF) is a clinical syndrome in which patients have symptoms and signs of HF as the result of high ventricular filling pressure despite normal or near normal left ventricular ejection fraction (LVEF ≥50 percent) [1]. Most patients with HFpEF also display normal LV volumes and evidence of diastolic dysfunction (eg, abnormal pattern of LV filling and elevated filling pressures) [2]. By contrast, HF with reduced EF (HFrEF) is characterized by increased LV volumes and reduced EF. Previously, HFpEF was termed "diastolic HF" and HFrEF was described as "systolic HF.

Although the clinical presentation and diagnosis of HFpEF are similar to what occurs in HF with reduced ejection fraction (HRrEF, defined by LVEF <40%), it is considered a different entity at both a physiopathological and prognostic level, and there are significant differences in the treatment of both types of HF [3].

Thus, neurohormonal antagonists such as beta-blockers (BB), renin angiotensin aldosterone system (RAAS) inhibitors and mineralocorticoid receptor antagonists (MRA) are used in the treatment of HFrEF and have shown to improve disease outcomes. These neurohormonal antagonists are generically called disease-modifying drugs as they are able to improve outcomes in patients with HFrEF, and the guidelines of clinical practice recommend their use [4].

Failed clinical trials that tried complete neurohormonal inhibition in chronic HF suggested another way or paradigm in addition to neurohormonal blockade for HF therapy. Following myocardial or vascular stress or injury, 2 types of neurohormonal change contribute to the evolution and progression of HF. One is increased activity or response to maladaptive mechanisms or bad neurohormones, and the other is decreased activity or response to adaptive mechanisms or good neurohormones [5].

Objectives

The main objective of the study is to find the outcome of patients with heart failure with preserved ejection fraction discharge on neurohormonal antagonist.

MATERIAL AND METHODS:

This randomized control trial was conducted in QAMC Bahawalpur during June 2021 to November 2021. The data was collected with the permission of ethical committee of hospital. The present analysis included all patients discharged alive after an episode of AHF with a LVEF of 50% or more recorded in an echocardiography performed during the 6 months prior to decompensation or that had been recorded during the current admission. To be included in the present analysis, in addition to the clinical criteria required to be included in the EAHFE registry, determination of natriuretic peptides during ED stay or hospitalization was necessary, and blood concentrations > 100 ng/L (for BNP) or 450 ng/L (for NT-proBNP) were required for final inclusion.
To assess the severity of the current episode of decompensation we used the MEESSI score, a clinical score that has demonstrated very good prediction of 30-day mortality in patients with AHF using clinical data recorded in the ED.

Statistical analysis

The data was collected and analysed using SPSS version 19. Continuous variables are expressed as mean and standard deviation (SD) or median and interquartile range (IQR) if not normally distributed, and categorical variables as absolute values and percentages.

RESULTS:

The data was collected from 100 patients of both genders. The mean age was 82.45 ± 4.56 years. The group receiving ANHD was younger, had a higher presence of hypertension, diabetes mellitus and ischemic cardiomyopathy, less functional capacity, and decompensation was more frequent due to tachyarrhythmia, hypertensive crisis or incompliance with pharmacological or dietetic treatments. There were no significant differences between the two groups with respect to the severity of the AHF episode estimated using the MEESSI scale or by the need for hospitalization. In the case of hospitalization, the median hospital stay was longer in the group without ANHD.

Table 01: Characteristics of patients with heart failure with preserved ejection fraction (HFpEF)

	Total	With ANHD	Without ANHD	p
Demographic data				
Age (years)	82.4 (77.5-87.7)	82.1	83.5	**0.00**
Arterial hypertension	28	20	8	**0.00**
Diabetes mellitus	13	9	4	**0.03**
Dyslipidemia	16	11	5	0.05
Ischemic cardiomyopathy	83	62	21	**0.00**
Chronic renal disease	93	65	28	0.87
Cerebrovascular disease	40	30	10	0.06
Atrial fibrillation	20	14	6	0.66
Previous heart failure	23	16	7	0.32
Functional capacity				
Aldosterone receptor antagonists	50	38	12	**0.00**
Infection	13	8	5	**0.00**
Rapid atrial fibrillation	48	36	12	**0.01**
Anemia	23	17	6	0.16
Hypertensive crisis	16	13	3	**0.00**
Acute coronary syndrome (either angina or non-STEMI)	53	43	10	0.07
Hospitalization	26	18	8	0.18
Length of hospital stay (days) (median (IQR))	6 (2-10)	6 (2-10)	6 (3-11)	**0.01**

ANHD antineurohormonal drugs; NYHA: New York Heart Association; LVEF: left ventricular ejection fraction; ACEI: angiotensin- converting enzyme

DISCUSSION:

Acute HF (AHF) is defined as new or worsening of symptoms and signs of HF and is the most frequent cause of unplanned hospital admission in patients of >65 years of age3. From a clinical perspective, we distinguish de novo HF — in which symptoms occur in patients without a previous history of HF — from acutely decompensated HF (ADHF) — in which symptoms increase in patients with previously diagnosed chronic HF [5]. This classification provides little additional information in regard to the pathophysiology of AHF but has mainly clinical implications (de novo HF requires a more extensive diagnostic process to investigate the underlying cardiac pathology than ADHF). As HF is a chronic and progressive disease, the majority of hospitalizations are related to ADHF rather than de novo AHF [6]. The clinical presentation of AHF is characterized mostly by symptoms and signs related to systemic congestion (that is, extracellular fluid accumulation, initiated by increased biventricular cardiac filling pressures) [7]. Accordingly, the initial treatment in most patients with AHF consists of non-invasive ventilation and intravenous diuretics, which are administered alone or, especially in Europe and Asia, in combination with short-acting vasodilators [8].

Only a minority of patients with AHF present with cardiogenic shock, a critical condition characterized by the presence of clinical signs of peripheral tissue hypoperfusion; cardiogenic shock has a tenfold higher in-hospital mortality than AHF without shock and requires specific treatments [9].

In contrast to the substantial improvements in the treatment of chronic HFrEF, AHF is still associated with poor outcomes, with 90-day readmission rates and 1-year mortality reaching 10–30%. Although AHF is not a specific disease but the shared clinical presentation of different, heterogeneous cardiac abnormalities, most patients still receive decongestive drugs only, at best tailored according to the initial haemodynamic status with little regard to the underlying pathophysiological particularities.

This approach might have contributed to the multitude of neutral or negative clinical trials assessing the effect of decongestive treatments on survival and to the persistence of poor outcomes in AHF. Thus, there is an unmet need for increased individualization and continuation of treatment after hospital discharge to improve long-term outcomes [10].

CONCLUSION:

It is concluded that anti-neuro hormonal drugs do not seem to reduce mortality or adverse events preserved ejection fraction patients, only renin-angiotensin-aldosterone-system inhibitors could provide some benefits, reducing the risk of hospitalization for AHF.

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