



Predictors of Rehospitalization in Patients with Chronic Heart Failure a Single Center Study in Moroccan Patients

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/CA/2023/v12i3332

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/99479>

Original Research Article

Received: 01/03/2023
Accepted: 03/05/2023
Published: 15/05/2023

ABSTRACT

Chronic heart failure (HF) is a major problem of public health in Morocco with few studies exploring HF particularities in this country where the prevalence of HF is estimated to be around 2.2%.

Objective: The aim of this study was to evaluate the correlation between frequency of rehospitalization in our population with age, left ventricular ejection fraction (LVEF), heart rate (HR), and QRS duration, Since the number of rehospitalizations is strongly correlated to mortality as shown by many studies.

Materials and Methods: Patients with HF were enrolled in this retrospective case control study regardless of their LVEF, patients with recent (<3months) myocardial infarction were excluded. They were all examined and questioned in the heart failure unit of our hospital between the period of October 2022 and December 2022. The correlations were calculated by PEARSON index using R Statistical Software.

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Results: 224 patients were included. The mean patient age was 59 years (57.2-63;IC 95%) with a male predominance of 60.1 % (56.8-71; IC 95%). 35.5% and 32.2% of patients were treated for hypertension and diabetes respectively. The mean LVEF was 35.2% (33.96-36.91;IC 95%). A positive correlation was found between rehospitalization frequency and age and high heart rate (+ 0.42 p = 0,04;+0.322, p<0.005) respectively . Conversely a negative correlation was found with LVEF (-0.312, p<0.005) while there was a positive correlation with QRS duration but without significance (+0.162 , p=0.03).

Conclusion: This study shows strong correlation between rehospitalization and advanced age, higher HR and lower LVEF.

Keywords: Heart failure; rehospitalization; left ventricular ejection fraction; heart rate.

1. INTRODUCTION

Heart failure is a major public health problem across the globe [1]. The increasing age of population in Morocco due to the improvement of life quality was associated with the rise of heart failure incidence in this country; with a recent meta-analysis estimating a HF prevalence in Morocco by 2.2% [2] Rehospitalization rate is known to be correlated with more cardio-vascular events and is considered a strong predictor of mortality [3,4]. Hence, optimal medical therapy (OMT) is highly recommended for these patients. However, despite the severity of this pathology; Few studies in Morocco have been conducted to identify the factors associated with hospital readmission. The aim of this study was to Identify risk factors correlated with an increased rate of hospital readmission in heart failure patients in Morocco.

2. MATERIALS AND METHODS

Patients with HF were enrolled in this retrospective case control study regardless of their LVEF , data were collected from the HF registry and by contacting patients by phone. Patients with recent (<3 months) myocardial infarction were excluded. All patients were examined and questioned in the heart failure unit of our hospital between the period of October 2022 and December 2022 .We calculated the correlations by PEARSON index using R Statistical Software. Composite criterion was rehospitalization frequency.

3. RESULTS

224 patients were included. The mean patients age was 59 years (57.2-63;IC 95%) with a male predominance of 60.1 % (56.8-71; IC 95%) . 35.5% and 32.2% of patients were treated for hypertension and diabetes respectively. The

mean LVEF was 35.2% (33.96-36.91;IC 95%).A positive correlation was found between rehospitalization frequency , age and higher heart rate (+ 0.42 p = 0,04;+0.322, p<0.005) respectively , Whereas a negative correlation was found with LVEF (-0.312 ,p<0.005) Finally a positive correlation with QRS duration but without significance (+0.162 , p=0.03)

Table 1. Epidemiological study result

Characteristics	N (%)
Patients	224
Median age	59 years
Sex (male)	60.1%
Comorbidities	
Hypertension	35.5%
Diabetes	32.2%
Smoking	
Active smokers	15%
Ex smokers	26%
Non smokers	54%
LVEF	35.2%

LVEF: Left Ventricular Ejection Fraction

Table 2. Results of correlation coefficients

Factors	Pearson correlation	P value
Age	+ 0.42	0.04
Sex (male)	+ 0.14	0.3
Heart rate	+ 0.322	<0.005
LVEF	-0.312	<0.005
QRS duration	+ 0.162	0.03

LVEF: Left Ventricular Ejection Fraction

4. DISCUSSION

Heart failure is a complex clinical syndrome due to a structural and/or functional abnormality of the heart that results in elevated intracardiac pressures and/or impaired cardiac output at rest and/or during exercise [5]. Hospital readmission

is known to be an independent factor of mortality [6] and an important determinant of HF progression and therapeutic efficacy [7]. In addition to being an economic burden for the country [8].

Our patients mean age was relatively young 59 years in comparison to EUR Observational programme, where mean age was 69 years This may be due to the relatively higher life expectancy in Europe, 39.9% of our patients were female compared to 37.4% in the EUR Observational programme [9].

The results of this study showed that older patients, patients with higher heart rate and patients with lower LVEF were prone to more admission for hospitalization due to heart failure decompensation; Kaneko shared the same results in addition to first episode of hospitalization and diuretic loop use in a Japanese study as independent factors of rehospitalization [10].

While our study failed to prove a significant correlation between QRS duration and rehospitalization; Wang proved in a Retrospective study that prolonged QRS duration was frequent in patients with reduced LVEF who are hospitalized for heart failure; and is an independent predictor of higher morbidity and mortality following discharge [11].

5. CONCLUSION

This study showed a strong correlation between patients rehospitalization and advanced age, higher HR and lower LVEF. Hence, These patients should benefit from a closer follow up and more aggressive medical therapy, In order to reduce health care costs and for a better prognosis and life quality.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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