Original Research Article

Predictors of rehospitalization in patients with chronic heart failure

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 hospitalization is strongly correlated to mortality as shown by many studies .*

Material 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 .We calculated the correlations by PEARSON index using R Statistical Software .*

Results : *224 patients were includedThe main age of our patients 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 our patients were treated for hypertension and diabetes respectively. The main 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 . Whereas a negative correlation was found with LVEF (-0.312 ,p<0.005) while they was a positive correlation with QRS duration but without significance (+0.162 , p=0.03)*

Conclusion: *. This study showed a strong correlation between rehospitalization and advanced age, higher HR and lower LVEF . We hope that this study will help to elaborate a global risk stratification model that will help us understand more pathophysiology of HF and propose better therapeutics and follow up*

Key words : *heart failure , rehospitalization , left ventricular ejection fraction, heart rate*

Introduction :

Heart failure is a major problem of public health in the world. The increasing age of population in Morooco 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 HF prevalence in Morocco by 2.2% (1) Rehospitatlization rate is known to be correlated with more cardio-vascular events and is considered as a strong predictor of mortality (2,3) Hence , optimal medical therapy (OMT) is highly recommended for these patients . However , Despite the severity of this pathology; Few studies have been conducted to identify the factors associated with hospital readmission . Such factors may help physician intensify medical therapy and follow up of these patients for a better prognosis . The aim of this study was to detect factors that affect hospital readmission .

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. 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

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Results :

224 patients were included The main age of our population 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 our patients were treated for hypertension and diabetes respectively. The main 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

Discussion

Hospital readmission is an important determinant of HF progression and therapeutic efficacy(4), Even if our population was not representative of the HF patients in Morocco a positive correlation was found with various factors . In fact, older patients , patients with higher heart rate and patients with lower LVEF was 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 (5)

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 after discharge(6)

Conclusion

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This study showed a strong correlation between rehospitalization and advanced age, higher HR and lower LVEF . We hope that this study will help to elaborate a global risk stratification model that will help us understand more pathophysiology of HF and propose better therapeutics and follow up for HF patients.

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Referenecs

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Table 2. Results of correlation coefficients

Comment [37]: Construct a new table which shows the factors examined and their correlation with hospital readmission, using pearson coefficient and p value.

DECOMP	Corrélation de Pearson			1	.162*	.322**	-.312**
	Sig. (bilatérale)				.031	.000	.000
	N			178	178	178	178
	Bootstrap[c]	Biais		0	.001	-.001	.001
		Erreur standard		0	.086	.074	.075
		Intervalle de confiance à 95%	Inférieur	1	-.003	.173	-.450
			Supérieur	1	.330	.459	-.162
durée QRS0	Corrélation de Pearson			.162*	1	-.140	.014
	Sig. (bilatérale)			.031		.062	.848
	N			178	178	178	178
	Bootstrap[c]	Biais		.001	0	-.004	.000
		Erreur standard		.086	0	.059	.083
		Intervalle de confiance à 95%	Inférieur	-.003	1	-.254	-.147
			Supérieur	.330	1	-.021	.186
FC0	Corrélation de Pearson			.322**	-.140	1	-.148*
	Sig. (bilatérale)			.000	.062		.049
	N			178	178	178	178
	Bootstrap[c]	Biais		-.001	-.004	0	.001
		Erreur standard		.074	.059	0	.074
		Intervalle de confiance à 95%	Inférieur	.173	-.254	1	-.288
			Supérieur	.459	-.021	1	.011
FEVG	Corrélation de Pearson			-.312**	.014	-.148*	1
	Sig. (bilatérale)			.000	.848	.049	
	N			178	178	178	178
	Bootstrap[c]	Biais		.001	.000	.001	0
		Erreur standard		.075	.083	.074	0