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# Acute Heart Failure in the Cardiology Department of the Mohammed VI University Hospital Center in Marrakech: Presentations, Etiologies, Management and Mortality about 223 Cases

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**Abstract:** ***Introduction: Acute heart failure (AHF) is a serious condition that requires prompt medical attention. It is characterized by the sudden onset of symptoms such as shortness of breath, chest pain, and edema (swelling in the legs and feet). This study aims to describe the patient characteristics and outcomes of AHF at University Hospital Mohammed VI Marrakech. Objective: The results of this study can help healthcare providers better understand the patient population affected by AHF and identify potential risk factors for poor outcomes. Methods: A study was conducted at University Hospital Mohammed VI Marrakech where data was gathered from 223 patients who were admitted with acute heart failure (AHF) between February 2019 and February 2022. The information collected included socio - demographic characteristics, clinical information, and laboratory results. The research team evaluated the duration of hospital stay and the rate of in - hospital mortality for the patients. Results: The study found that the average age of the patients was 56 years with a standard deviation of 17.1 years, and 55.3% of the patients were male. All patients were experiencing symptoms of AHF, with 69.5% of them falling into NYHA functional class III or IV. The majority of patients (63.5%) had significant left ventricular dysfunction. The most prevalent coexisting medical conditions were hypertension (47.6%), and diabetes mellitus (15.2%). Dilated and Ischemic cardiomyopathy were significant causes of heart failure among the patients. The most commonly used treatments included furosemide (92.2%), beta - blockers (4.9%), angiotensin - converting enzyme inhibitors (61.2%), spironolactone (49.3%), digoxin (18.4%), angiotensin receptor blockers (9.7%). At discharge, most of the patients were on diuretic therapy, including 46.6% on furosemide, 60.20% on spironolactone, and 28.20% on thiazides. Beta - blockers represented 33% of prescriptions, and almost half of the patients were on ACE inhibitors. The median length of stay was nine days, and the in - hospital mortality rate was 14.56%. Conclusion: AHF is a significant public health problem, with high in - hospital and post - discharge mortality rates and prolonged hospital stays. Late and symptomatic presentation is common, and the most common causes are preventable and/or treatable co - morbidities, including hypertension and diabetes mellitus.***

**Keywords**: acute heart failure, in - hospital mortality, length of hospital stay, outcomes.

## 1. Introduction

Heart failure (HF) is a clinical syndrome characterized by symptoms (dyspnea and edema) possibly accompanied by clinical signs (pulmonary rales, edema of the lower limbs, increased jugular pressure) caused by an abnormality of the structure or cardiac function causing a decrease in cardiac output and an increase in intracardiac pressure at rest or during exercise [1]. It is a frequent and serious pathology, responsible for high morbidity and mortality. It represents one of the main factors in the discovery of cardiovascular diseases and poses a real public health problem. Yet therapeutic progress has been considerable, both medically and surgically. Its prevalence in Europe is 0.4 to 2% and concerns 1% of the general population in France [3]. Coronary artery disease appears to be one of the main causes. The prevalence of HF increases with age, less than 3% in patients under the age of 45 and 10% in patients over the age of 70 [3].

The objectives of our study were to study and determine the hospitalization of heart failure in patients hospitalized at the *cardiology department of University* Hospital Mohammed VI Marrakech.

## 2. Methodology

This study was conducted at the cardiology department of the University Hospital Mohammed VI Marrakech. The study period was from February 2019 to February 2022. Consecutive patients who were 18 years of age or older, and had been diagnosed with acute heart failure (AHF) were enrolled in the study. The study used the criteria of the European Society of Cardiology (ESC) to define heart failure (HF) and both decompensated HF in patients with a previous HF diagnosis and new - onset AHF were included. The symptoms and signs of HF were assessed, and the functional status of the patients at the time of admission was evaluated using the New York Heart Association (NYHA) classification. The medical history of the patients was also taken into consideration, including any pre - existing conditions such as atrial fibrillation, valvular heart disease, diabetes mellitus, or hypertension. Blood tests, including complete blood counts, serum electrolytes, urea, creatinine, and uric acid analyses, were performed on all enrolled patients. Patients were diagnosed with moderate to severe renal failure if they had an estimated glomerular filtration rate (eGFR) of less than 60 ml/min/1.73 m2 at admission and/or if they were on dialysis. Anemia was diagnosed if the patient's hemoglobin value was less than 10 g/dl. Echocardiography was performed on all patients, which helped to differentiate between HF with preserved and

altered ejection fractions and also for determining the etiology. The hospital length of stay (LOS) and in - hospital mortality were also assessed for each participant.

## 3. Results

In this study, 223 patients were evaluated. The age group of 55 to 64 years was the most represented, making up 28.5% of the study population. The average age of the patients was 49 years and the ratio of male to female participants was 1.05.33% of the patients had a history of hospitalization. The most common cardiovascular risk factors were advanced age (66.05%), high blood pressure (47.6%), physical inactivity (22.7%), and smoking (22.5%). The most common medical history in the patients was valvular heart disease (18.45%), dilated cardiomyopathy (5.82%), and ischemic heart disease (4.85%) (Figure 1).

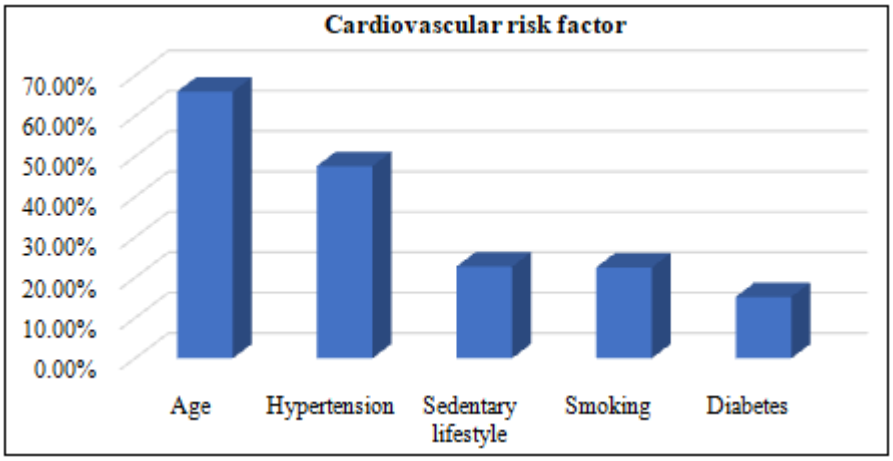


**Figure 1:** Distribution of patients according to cardiovascularrisk factors

The most common symptom for consultation was dyspnea (93.2%), followed by edema (70.9%), and cough (51.46%).77.52% of the cases were global heart failure. Electrocardiography showed signs of left cavity overload, with 23.49% of left ventricular hypertrophy and 15.69% of left atrial hypertrophy. The other anomalies were mainly represented by atrial fibrillation (29.54%) and sub - epicardial ischemia (32.35%). The main anomalies found on echocardiography were an alteration in the left ventricular ejection fraction (LVEF) of less than 45% in 47% of the cases (Figure 2), valvulopathies with mitral insufficiency (17.42%), mitral stenosis (15.60%), aortic insufficiency (11.72%), and pulmonary arterial hypertension (PAH) (52.56%). On a chest x - ray, cardiomegaly was found in 89.5% of the cases. The most common etiologies were dilated cardiomyopathy (36%), ischemic cardiomyopathy (28.30%), valvulopathies (20.32%), hypertensive heart disease (7.2%), and pulmonary heart (9%) (Figure 3).

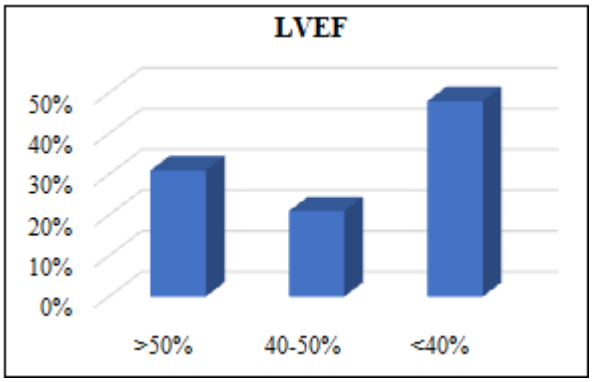


**Figure 2:** Distribution of patients according to the LVEF

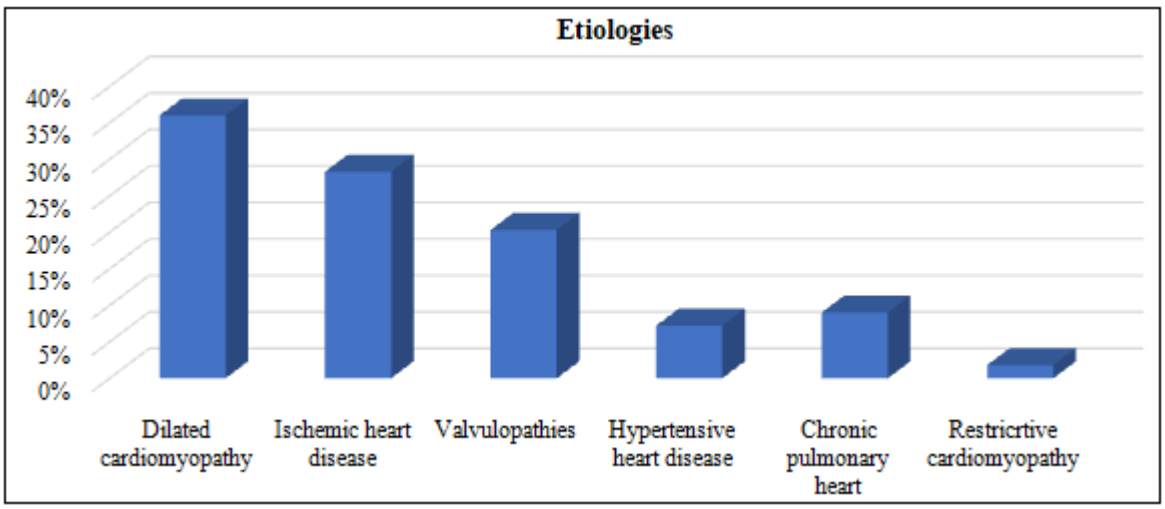


**Figure 3:** Distribution according to the different etiologies

There was a male predominance among those with dilated cardiomyopathy and ischemic heart disease, while the predominance was female among those with valvulopathy. In lowered LVEF heart failure, the predominant etiology was represented by dilated cardiomyopathy, while in heart failure with preserved LVEF, valvulopathies appeared as the most recurrent etiology. The management of the patients mainly consisted of diet and hygiene measures and drugs, such as loop diuretics (92.2%), converting enzyme inhibitors (ACE) inhibitors (61.2%), spironolactone (49.3%), angiotensin II receptor antagonists (9.7%), digoxin (18.4%), and 4.9% of beta blockers. The other drugs were represented by oxygen therapy (25.2%) and amines (5.8%). At discharge, most of the patients were on diuretic therapy, including 46.6% on furosemide, 60.20% on spironolactone, and 28.20% on thiazides. Beta - blockers represented 33% of prescriptions, and almost half of the patients were on ACE inhibitors (48.50%). The average length of hospital stay was 9 days. Complications were noted in 18.44% of the cases with 14.56% of deaths.

## 4. Discussion

As anticipated, a considerable number of our patients displayed symptoms associated with left ventricular systolic dysfunction, most of which were male. Our findings reaffirm that hypertension, diabetes, renal failure, and anemia continue to be prevalent and play a significant role in heart failure (HF) development. These co - occurring conditions not only contribute to the underlying causes of HF but also have an impact on the progression of the disease. Therefore, they should be addressed simultaneously upon admission [4, 5, 6]. The study found that the most common etiology of heart failure was dilated cardiomyopathy, accounting for 36% of cases. Our data was similar with to that found in Lomé [7]. However, this is different from the findings in France [8] where ischemic cardiomyopathy was the most common etiology, accounting for 46% of cases, and dilated cardiomyopathy only represented 10% of cases. The high rate of altered left ventricular ejection fraction (LVeF) and the prevalence of these two etiologies may be due to poor management of cardiovascular risk factors and delayed treatment of heart disease in the region. As for the treatment of HF, our data are identical to those observed inYaoundé [9] and by Ezekowitz J et al [10].

Where diuretics and ACE inhibitors were the most used. in the series by Groote et al including 1919 patients, diuretics (other than spironolactone) were prescribed in 83% of patients, and spironolactone in 35% of cases [13]. in 2012, the FuTure study [11], showed that diuretics were prescribed in 86% of patients and anti aldosterone in 29% of patients with heart failure. regarding cardiac resynchronization, 10.77% of our patients had the indication of multisite cardiac stimulation. it could not be carried out because of insufficient financial means. However, the large COMPANION [12] Care - HF [14] studies have demonstrated the benefit of biventricular stimulation on symptoms and capacity for exertion in patients whose ejection fraction is impaired with a Qrs>120 ms and who remain symptomatic (NYHA Class II - IV) despiteoptimal medical treatment. The present study demonstrates that patients with HF are at risk for adverse clinical outcomes, which ranks HF among the major causes of death of cardiovascular origin.

## 5. Conclusion

Heart failure (HF) is a complex and diverse condition, characterized by a wide range of symptoms, causes, and outcomes. Heart failure is often global, with a frequently reduced left ventricular ejection fraction (LVEF). The most common causes of heart failure are dilated and ischemic cardiomyopathies.

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