Clinical Characteristics and Profile of Heart Failure Patients at dr. Ramelan Navy Hospital in 2020

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ABSTRACT

Background: Heart failure (HF) is a global pandemic affecting at least 26 million people worldwide and is increasing in prevalence. It has been associated with a high rate of readmissions and prolonged hospitalizations. There were few publications in Indonesia that described the characteristics and length of hospital stay of heart failure patients.

Aims: To obtain data and describe the clinical characteristics and profile of heart failure patients hospitalized at dr. Ramelan Navy Hospital in 2020.

Methods and Results: A cross sectional study was done using secondary data from patients’ medical records in dr. Ramelan Navy Hospital admitted during 2020. Data were then calculated and presented further. Based on the medical records, 121 heart failure patients were included in the study. Median age was 56 years old, 58.7% were men. Median length of stay was 6 days for all patients. 51.2% patients admitted to hospital with NYHA FC III. When patients were admitted to hospital, median systolic blood pressure was 124 mmHg and pulse was 91 beats per minute. Peripheral edema was shown in 67.8% of patients, hypertension in 49.6%, diabetes mellitus in 24.8%, ischemic heart disease in 52.9%. 6.6% of total patients treated in hospital died.

Conclusion: Median length of stay for heart failure patients at dr. Ramelan Navy Hospital was 6 days. Most patients were men with median age of 56 years old.

Introduction

Life expectancy and survival after acute myocardial infarction are increasing. Advances in treatment are one of the reasons for the increasing number of patients living and progressing to chronic heart failure. As a result, the number of hospitalizations due to heart failure also increased. Heart failure (HF) affects 6% to 10% of people over the age of 65 years. Although the relative incidence is lower in women than in men [²].

HF has been defined as global pandemic, since it affects around 26 million people worldwide [¹]. In 2012 it was responsible for an estimated health expenditure of around $31 billion, equivalent to more than 10% of the total health expenditure for cardiovascular diseases in the United States (US) [³]. There are over 1 million hospitalizations with a primary diagnosis of HF each year in the U.S., and HF is the most common diagnosis for hospital admissions in patients above 65 years of age [⁴].

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In Indonesia, data on heart disease, including heart failure, is not widely known. The Ministry of Health reported that the number of heart failure cases in hospitals in Indonesia reached 13,396 hospitalized cases and 16,431 outpatients \[^5\]. Heart failure is often associated with a high frequency of hospitalization and a long length of stay. This contributes to a significant increase in resource use \[^6\]. Therefore, the length of stay of heart failure patients needs special attention. The average length of stay in hospital (ALOS) is often used as an indicator of treatment efficiency. The median length of stay was defined as the average number of days a patient was hospitalized \[^7\]. The length of stay of heart failure patients varies widely in various countries with a range between 4 - 21 days \[^8-10\]. Data on the length of stay of patients with heart failure is very important considering that hospitalization has a direct impact on the patient's quality of life, the risk of future events, as well as a significant contribution to the large costs of treatment \[^10\].

Bueno et al observational study also stated that the decrease in length of stay and mortality in hospital were observed over a period of 14 years (1993-2006), there was an increase in readmission and 30-day mortality rate after discharge \[^10\]. Therefore, the indication of hospitalization for patients with heart failure and the best time to discharge patients must still consider aspects of patient safety, cost savings, and losses due to lengthening the length of stay (such as nosocomial infections and deteriorating physical conditions) \[^10\].

To study these things, accurate data are needed regarding the average length of stay in the hospital, demographic characteristics, and clinical characteristics of these heart failure patients. The data then used as a benchmark for the development of an excellent service system for heart failure patients. This study will describe descriptively the average length of stay for heart failure patients at dr. Ramelan Navy Hospital along with the demographic and clinical characteristics of these patients in 2020.

**Methods**

The study population was heart failure patients. Population is patients treated in the cardiac ward, internal medicine ward, Intensive Coronary Care Unit-Chest Pain Unit (ICCU-CPU), and High Care Unit (HCU) during 2020. The research subjects were patients whose data were taken from medical records and met the inclusion and exclusion criteria. Inclusion criteria were patients in dr. Ramelan Navy Hospital based on medical records who were treated during 2020 with a diagnosis of heart failure with or without other comorbidities. Meanwhile, the exclusion criteria for this study included patients who were not proven to have a diagnosis of heart failure, and patients with incomplete medical records or did not have one of the following components: patient identity, basic data, data during treatment, and patient discharge medical resume.

This study used a cross-sectional design using secondary data from medical records. Data from the medical records of the research subjects were taken into research data to be processed and displayed descriptively with the help of SPSS software.

**Result**

Data on the demographic and clinical characteristics of patients can be seen in table 1 and table 2. The median age of the subject is 56 years old with a range of 15-93 years old.
Table 1. Demographic Characteristic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>71</td>
<td>58.7</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>41.3</td>
</tr>
</tbody>
</table>

Table 2. Clinical Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Initial condition of treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>124</td>
<td></td>
<td>80-221</td>
<td>mmHg</td>
</tr>
<tr>
<td>Heart rate</td>
<td>91</td>
<td>48-195</td>
<td></td>
<td>bpm</td>
</tr>
<tr>
<td>Peripheral edema</td>
<td>82</td>
<td>67.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Treatment indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay</td>
<td>6</td>
<td>1-23</td>
<td></td>
<td>days</td>
</tr>
<tr>
<td>C. Diagnosis and comorbidities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NYHA Class I</td>
<td>1</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NYHA Class II</td>
<td>34</td>
<td>28.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NYHA Class III</td>
<td>62</td>
<td>51.2</td>
<td></td>
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<tr>
<td>NYHA Class IV</td>
<td>23</td>
<td>19.0</td>
<td></td>
<td></td>
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<tr>
<td>Hypertension</td>
<td>60</td>
<td>49.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>30</td>
<td>24.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>64</td>
<td>52.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Mortality in hospital</td>
<td>8</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Demographic Characteristics

In this study, the largest proportion was found in men (58.7%). This is similar to studies in several other centers abroad. A prospective cohort study in Japan, Kajimoto et al. also stated that the proportion of men with congestive heart failure in the Acute Decompensated Heart Failure Syndromes Registry in Japan reached 58% \[11\]. Wright et al found that the proportion of men treated with heart failure in New Zealand was 60% \[6\].

The median age of the subjects was 56 years old. This result is different from other studies, where the average age of subjects treated for heart failure ranged from 67-80 years old. This may be due to life expectancy of the population in Indonesia (71.9 years) which is generally lower than other countries.

Clinical Characteristics

- Initial Condition of Treatment

This study reported the median blood pressure at the start of treatment was 124 mmHg. The existence of a wide range of minimum and maximum range (80 - 221 mmHg) indicates a wide range of clinical spectrum that varies
greatly between the patients who were the subjects of this study, ranging from shock to hypertensive emergency or urgency. Singh and Gupta (2005) also found that systolic blood pressure at the start of treatment was 139 ± 20 mmHg in South Asian patients [12].

The initial heart rate at the start of treatment was not significantly different between this study (91 beats/minute) and previous studies (81-98 beats/minute). There was a wide range of minimum and maximum values (48-195 beats/minute) again showed that there was a wide variety of clinical spectrum that varied greatly between the patients who were the subjects of this study, ranging from bradycardia, tachycardia, and arrhythmias. Peripheral edema was seen in 67-68% of patients admitted for congestive heart failure in the studies of Wright et al and Dusemund et al [6,9]. In this study also found that peripheral edema seen in 67.8% of patients.

- **Treatment Indicator**

The length of stay for heart failure patients varies greatly from one study to another. Length of stay ranged from 4-21 days [6,8-11,13-17]. Rohde et al revealed that the median length of stay for heart failure patients in Brazil was 11 days [13]. Meanwhile, the median length of stay for heart failure patients in Europe range from 9-11 days [9,16]. The longest length of stay appeared to be in Japan (median 21 days) [11]. In this study, the median length of stay for heart failure patients at dr. Ramelan Navy Hospital during 2020 was 6 days. The very wide range of minimum and maximum values (1-23 days) indicates a highly variable clinical spectrum among the study subjects.

- **Diagnosis and Comorbidities**

The severity of heart failure in this study was stratified by functional class from the New York Heart Association. From the results of this study, it was found that patients with NYHA functional class III was the largest portion (51.2%). Ischemic heart disease as the most common comorbidity was found in heart failure patients at 52.9%, followed by hypertension at 49.6% and diabetes mellitus at 24.8%. This is not significantly different from that found in other studies.

- **Mortality**

The mortality rate or mortality of heart failure patients at dr. Ramelan Navy Hospital in 2020 was 6.6% for all heart failure patients. Krumholz et al (2013) studied heart failure patients from 4767 hospitals in the United States and involved 1,161,179 patients from July 2005 to June 2008. The study found that the mean 30-day mortality of hospitalization was 11.17% (SD ±1.46) [18]. This indicates that the mortality rate of heart failure patients at dr. Ramelan Navy Hospital in 2020 is lower than the mortality rate of heart failure patients treated in the United States in 2005-2008. However, this could be due to patients who do not return regularly for follow-up resulting in not being recorded by the hospital medical records.

**Conclusion**

Based on this study, it was found that the median length of stay for heart failure patients at dr. Ramelan Navy Hospital in 2020 was 8 days. The cut-off value of the length of stay for patients with heart failure needs to be determined to be an operational limitation for further research and as an indicator of the success of services in hospitals. Several other studies can be planned to learn more
about the high percentage of ischemic heart disease as the comorbid and also possible etiology of heart failure.

Acknowledgement

The authors would like to express their gratitude to the cardiologists, and also to the nurses and staff at dr. Ramelan Navy Hospital for their assistance with this study.

References

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Supplementary Data

Figure 1. Frequency Distribution of Hospitalization for Heart Failure Patients at dr. Ramelan Navy Hospital in 2020