Original Article

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].

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 [8].

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) [9].

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

Characteristic	n	%
Sex:		
Male	71	58.7
Female	50	41.3

Table 2. Clinical Characteristics

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

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 Comordibities*

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 comorbid 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

References

1. Ponikowski P., Anker SD., AlHabib KF., Cowie MR., Force TL., Hu Shengshou et al. 2014. Heart Failure: Preventing Disease and Death Worldwide. ESC Heart Failure, 1:4-25.

2. Joseph SM., Cedars AM., Ewald GA., Geltman EM., Mann DL. 2009. Acute Decompensated Heart Failure: Contemporary Medical Management. Texas Heart Institute Journal, 36;6:510-511.

3. Mozaffarian D., Benjamin EJ., Go AS., Arnett DK., Blaha MJ., Cushman M et al. 2016. Heart Disease and Stroke Statistics-2016 Update: A report from the American Heart Association. Circulation, 133;4:38–360.

4. Nieminen MS., Harjola VP. 2005. Definition and Epidemiology of Acute Heart Failure Syndromes. Am J Cardiol, 96(6A):5G-10G.

5. Pusat Data dan Informasi Kementrian Kesehatan Republik Indonesia. 2009. Profil Kesehatan Indonesia 2008. Departemen Kesehatan Republik Indonesia:61-64.

6. Wright SP., Verouhis D., Gamble G., Swedberg K., Sharpe N., Doughty RN et al. 2003. Factors Influencing the Length of Hospital Stay of Patients with Heart Failure. Eur J Heart Fail.5: 201-9.

7. Organisation for Economic Co-operation and Development. 2011. Health at a Glance: OECD Indicators. OECD Publishing:84-85.

8. Whellan DJ., Zhao X., Hernandez AF., Liang L., Peterson ED., Bhatt DL et al. 2011. Predictors of Hospital Length of Stay in Heart Failure: Findings from Get with the Guidelines. J Card Fail.17(8): 649-56.

9. Dusemund F., Steiner M., Vuilliomenet A., Muller C., Bossart R., Regez K et al. 2012. Multidisciplinary Assessment to Personalize Length of Stay in Acute Decompensated Heart Failure (OPTIMA II ADHF). J Clin Med Res. 4(6): 402-9.

10. Bueno H., Ross JS., Wang Y., Chen J., Vidan MT., Normand SL et al. 2010. Trends in Length of Stay and Short-term Outcomes Among Medicare Patients Hospitalized for Heart Failure 1993-2006. JAMA, 303 (21): 2141-47.

11. Kajimoto K., Sato N., Keida T., Mizuno M., Sakata Y., Asai K et al. 2013. Association Between Length of Stay, Frequency of In-hospital Death, and Causes of Death in Japanese Patients with Acute Heart Failure Syndromes. Int J Cardiol, 168(1): 554-6.

12. Singh N., Gupta M. 2005. Clinical Characteristic of South Asian Patients Hospitalized with Heart Failure. Ethn Dis, 15(4):615-9.

13. Rohde LE., Clausell N., Ribeiro JP., Goldraich L., Netto R., William DG et al. 2005. Health Outcomes in Decompensated Congestive Heart Failure: a Comparison of Tertiary Hospitals in Brazil and United States. Int J Cardiol, 102: 71-7.

14. Joshi AV., D'Souza AO., Madhavan SS. 2004. Differences in Hospital Length-of-Stay, Charges, and Mortality in Congestive Heart Failure Patients. Congest Heart Fail, 10(2):76-84.

15. Foraker RE., Rose KM., Chang PP., Suchindran CM., McNeill AM., Rosamond WD et al. 2014. Hospital Length of Stay for Incident Heart Failure: Atherosclerosis Risk in

Communities (ARIC) Cohort: 1987- 2005. J Healthc Qual, 36(1):45-51.

16. Frigola CE., Comin CJ., Davins MJ., Gich SI., Wensing M., Verdu RJ et al. 2013. Trends and Predictors of Hospitalization, Readmissions and Length of Stay in Ambulatory Patients with Heart Failure. Rev Clin Esp, 213(1):1-7.

17. Horwich TB., Hernandez AF., Liang L., Albert NM., Yancy CW., Fonarow GC et al. 2009. Weekend Hospital Admission and Discharge for Heart Failure: Association with Quality of Care and Clinical Outcomes. Am Heart J, 158(3):451-8.

18. Krumholz HM., Lin Z., Keenan PS., Chen J., Ross JS., Dryes EE et al. 2013. Relationship Between Hospital Readmission and Mortality Rates for Patients Hospitalized with Acute Myocardial Infarction, Heart Failure, or Pneumonia. JAMA, 309(6): 587-93.
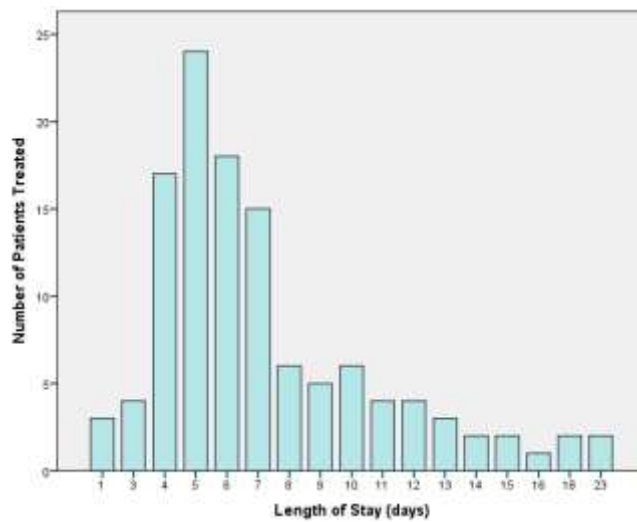
Supplementary Data

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