

THE RATIONALITY USE OF DIURETIC DRUG WITH HEART FAILURE TO INPATIENT CARE AT ONE OF THE HOSPITALS IN DENPASAR CITY

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Abstract

Cardiovascular disease is the most common cause of death worldwide. One of the cardiovascular diseases is heart failure. Based on the doctor's diagnosis in 2013, the prevalence of heart failure in Indonesia was 0.13% or around 229,696 people. Types of drugs used in the treatment of heart failure, such as renin-angiotensin system inhibitors, β -adrenoreceptor blockers, diuretics, inotropic agents, direct vasodilators, and aldosterone antagonists. The purpose of this study was to determine the rationale for using diuretic drugs in inpatients of heart failure at one of the Hospitals in Denpasar city. This research is a non-experimental study using a descriptive analytic design. Data were collected retrospectively. The data taken includes name, gender, age, patient complaints, heart rate and diuretic drugs used, the data is seen from the patient's medical record. This study was conducted on 75 patients with heart failure who used a diuretic drug, furosemide. The results of the study on the rationality of using furosemide based on the 4T criteria were 100% fulfilling the criteria for rationality.

INTRODUCTION

Cardiovascular disease is the most common cause of death worldwide. One of the cardiovascular diseases is heart failure. Heart failure is a complex disease due to structural and functional abnormalities of the heart resulting in impaired ventricular filling or blood ejection with symptoms of shortness of breath, fatigue and peripheral edema (Yancy, 2013). Based on the doctor's diagnosis in 2013, the prevalence of heart failure in Indonesia was 0.13% or approximately 229,696 people. Based on the Data and Information Center of the Ministry of Health of the Republic of Indonesia (Kemenkes RI), most heart failure sufferers are geriatric patients or aged 65-74 years. Heart failure is found to be more prevalent in women than men with the number of doctor diagnoses in women of 177.070 and in men of 88.155 (Kemenkes RI, 2014).

The symptoms commonly experienced by people with heart failure according to the Indonesian Cardiovascular Specialist Doctors Association (PERKI) are shortness of breath, fatigue, and reduced discharge (PERKI, 2015). Types of drugs used to treat heart failure include renin-angiotensin system inhibitors, β -adrenoreceptor blockers, diuretics, inotropic agents, direct vasodilators, and aldosterone antagonists (Harvey and Champe, 2014). Diuretics work by removing body fluids (through urine), so that the volume of fluid in the body decreases as a result of the heart's pumping power becomes lighter.

Irrational use of drugs will have a major negative impact and harm the health service unit or agency itself, as well as patients and the community. Therefore, it is necessary to select and use drugs rationally, so that drug interventions can achieve the target of healing the disease in patients with minimal drug side effects and the patient can obey instructions for using drugs (Munaf, 2004). Based on the high number of heart failure sufferers at one of the hospitals in Denpasar city for the period 2017 which was ranked second in the category of disease most suffered by patients, further analysis was needed regarding the rationality of using diuretic drugs in patients with heart failure. Therefore this research was conducted at the one of the hospital in Denpasar city.

METHODS

This research was conducted at one of the Hospital in Denpasar city, from March to July 2018. This research is a non-experimental study using a descriptive analytic design. Data were collected retrospectively. The data taken includes name, gender, age, patient complaints, heart rate and diuretic drugs used, the data is seen from the patient's medical record. This study was conducted on 75 patients with heart failure who used a diuretic drug, furosemide. The study population was all heart failure patients who used diuretic drugs at the one of the hospital in Denpasar city for the period 2017.

The research samples are:

A. Inclusion criteria: All patients with heart failure aged 17 years and over who used inpatient diuretic drugs at one of the hospital in Denpasar city for the period 2017.

B. Exclusion Criteria: Patients with incomplete or missing data.

The sampling technique used in this study was purposive sampling, namely method sample research conducted by selecting subjects based on specific criteria set by researchers.

The data was collected by reading the patient's medical records at one of the hospital in Denpasar city. The number of cases from heart failure patients was collected, then sample selection was carried out by grouping all patient data that met the inclusion criteria and exclusion criteria. Then data was collected from each sample, while the data taken included the patient's name, gender, age, patient complaints, heart rate and diuretic drugs given during treatment (including dosage and method of administration). The data obtained will be analyzed descriptively and presented in a table then the amount and percentage of each data is calculated, so that the rational use of diuretic drugs in patients with heart failure can be obtained.

RESULT

From the data obtained through the medical records of inpatients with heart failure at the one of the hospital in Denpasar city for the period 2017, 75 inpatients of inpatient heart failure using diuretic drugs were found. All these patients met the inclusion criteria.

Table 1. Characteristics of Research Subjects Based on Gend

Sex	Number of patients (person)	Percentage (%)
Male	36	48,00
Female	39	52,00
Total	75	100,00

Table 2. Characteristics of Research Subjects by Age

Age	Number of patients	Percentage (%)
17-25 years	1	1,33
26-35 years	1	1,33
36-45 years	0	0,00
46-55 years	13	17,33
56-65 years	23	30,67
> 65 years	37	49,34
Total	75	100,00

Table 3. Rationale for the Use of Furosemide Drugs Based on the Patients

Assessment guidelines	Assessment Parameters	Number of patients	Percentage (%)
History of allergy to furosemide and diagnosis	Right patient	75	100,00
	Unright patient	0	0,00
Total		75	100,00

Table 4. Rationality of Furosemide Drug Use Based on Appropriate Indications

Assessment Guidelines	Assessment Parameters	Number of patients	Percentage (%)
Diagnosis, syptoms and indications for drugs	Precise Indication	75	100,00
	Inexact Indication	0	0,00
Total		75	100,00

Table 5. Rationality of Using Furosemide Drugs Based on Appropriate Drugs

Assessment Guidelines	Assessment Parameters	Number of patients	Percentage (%)
<i>Pharmacotherapy Handbook Seventh Edition, 2009</i>	Right drug	75	100,00
	Unright drug	0	0,00
Total		75	100,00

Table 6. Use of Furosemide Drugs by Dosage

Drug	Dose	User guide (dailys)	Number of patient (person)	Percentage (%)
Furosemid	20 mg	1x	21	28,00
		2x	26	34,67
	40 mg	1x	28	37,33
Total			75	100,00

Table 7. Rationality of Furosemide Drug Use Based on Correct Dosage

Assessment Guidelines	Assessment Parameters	Number of patients	Percentage (%)
<i>Drug Information Handbook 17th edition, 2009</i>	Right dose	75	100,00
	Unright dose	0	0,00
Total		75	100,00

DISCUSSION

The results of the study in table 1 show that patients with heart failure were mostly women, namely 52.00% with 39 patients. The results of this study are in accordance with the research conducted by Fachrunnisa, et al (2015) which states that heart failure is more common in women, amounting to 53.1%. According to the American Heart Association (2015), the incidence of cardiovascular disease is predominantly female, this is because when women experience menopause, decrease the levels of the hormone estrogen, HDL (High Density Lipoprotein) and an increase in LDL (Low Density Lipoprotein), triglycerides, and total cholesterol which increase the risk of heart disease (Kasdu, 2004).

The results of the study in table 2 show that the age of heart failure patients with the highest frequency is in the age group 56-65 years, namely 30, 67% and the age group 65 years and over, namely 49.34%, this is in accordance with the theory presented by Braunwald. et al., in Shila (2012) which states that 80% of all cases of heart failure occur in individuals over the age of 65. This is because as age increases, heart function decreases, thereby increasing the risk of heart failure (Yayang et al. , 2016).

The results of the study in table 3 show that the suitability of the administration of furosemide in patients with heart failure has met the exact criteria of the patient, namely 100% with 75 patients. This is because the patient does not have a history of allergy to the drug furosemide and the treatment diagnosis is appropriate, these results are seen based on the patient's medical record data. One of the parameters for the precise assessment of patients based on the study of Uce et al., 2015 is that there is no history of allergy to drugs, while the patient is not right to mean that the drug is contraindicated with the patient and increases the risk of adverse events (Katzung, 2001).

The results of the study in table 4 show that the patient has 100% accurate indication with a total of 75 patients. Exact indication means that the drug given is in accordance with the disease diagnosis, symptoms and indication of the

drug given to patients with heart failure. Where are the The main symptoms of heart failure are shortness of breath and fatigue accompanied by chest pain (Goodman and Gilman, 2007).

The results of the study in table 5 show that the patient is right on the drug by 100%. Furosemide is a diuretic drug that belongs to the loop diuretic class, where this group has a mechanism of action of inhibiting the transfer of sodium, potassium, and chloride to the henle loop which is responsible for mineral reabsorption and increasing diuresis. Existence-increased diuresis can reduce the symptoms caused by heart failure. Based on research conducted by Patricia, 2018 states that the use of loop diuretic therapy is the first line therapy for heart failure.

The results in table 6 show that most patients use the drug furosemide with a dose of 20 mg (1-2 times a day) because this dose is the initial therapeutic dose for the treatment of heart failure patients in elderly patients (Anonymous, 2006). The initial dose range of furosemide was 20-80 mg /day, so that patients who received a dose of furosemide 40 mg (once daily) were also included in the initial therapeutic dose range. Most of the patients who receive a dose of 20-40 mg are patients aged 50 years and over (Anonymous, 2002).

The results of the study in table 4.7 show that the patient with the correct dose was 100% with 75 patients, while the patient with the wrong dose was 0%. Based on the Drug Information Handbook (2009), the dose of furosemide for the treatment of heart failure is the oral route of administration, the initial dose is 20-80 mg, while the maximum dose does not exceed 240 mg per day for adult patients. For the dose of furosemide on the route of administration intravenously and intramuscularly, the initial dose is 20-40 mg, with a maximum dose per day of 200 mg for adult patients.

CONCLUSION

Based on research that has been conducted regarding the rationality of using diuretic drugs in heart failure patients who are hospitalized at the one of the hospitals in Denpasar city period 2017, the results obtained were 100% which met the criteria for rationality with 75 patients.

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REFERENCES

- Aberg, J.A., Lacy, C.F., Amstrong, L.L., Goldman, M.P., Lance, L.L. 2009, *Drug Information Handbook*, 17th Edition, Lexi-Comp, America.
- Anonim. 2002, *Informasi Obat Nasional Indonesia*, Depkes RI, Jakarta.
- Anonim. 2006, *Pedoman Pelayanan Farmasi (Tata Laksana Terapi Obat) Untuk Pasien Geriatri*, Depkes RI, Jakarta.
- Braunwald, E., Kasper, D.L., Hauser, S.L., Longo, D.L., Jameson, J.L. 2005. *Harrison's Principles of Internal Medicine*, 16th Edition, New York, McGraw Hill: 535. In: Shila, L. 2012. *Gambaran Peresepan Digoksin Pada Pasien Gagal Jantung yang Berobat Jalan di RSUD DR. KARIADI SEMARANG*, *Jurnal Media Medika Muda*:9
- Dipiro, J.T., Schwinghammer, T.L., Dipiro, C.V., Wells, B.G. 2009, *Pharmacotherapy Handbook*, Seventh Edition, Appleton and Lange, New York.
- Goodman dan Gilman, 2007, *Dasar Farmakologi Terapi*, Edisi Ke-10, diterjemahkan dari Bahasa Inggris oleh Amalia, EGC, Jakarta.
- Harvey, Richard A., Pamela C. Champe. 2014, *Farmakologi Ulasan Bergambar*, EGC, Jakarta.
- Kasdu. 2004. *Kiat Sehat dan Bahagia di Usia Menopause*. Jakarta: Puspawara. In: Fachrunnisa., Nurchayati S., Arneliwati. 2015. *Faktor-Faktor Yang Berhubungan Dengan Kualitas Tidur Pada Pasien Congestive Heart Failure*, 02:1099.
- Katzung, B.G. 2001, *Farmakologi Dasar dan Klinik*, Salemba Medika, Jakarta.
- Kemenkes RI. 2014, *Laporan Hasil Riset Kesehatan Dasar (Riskesdas) Indonesia tahun 2013*, Badan Peneliti dan Pengembangan Kesehatan Kemenkes RI, Jakarta.
- Munaf, S. 2004, *Pengantar Farmakologi*, Edisi Kedua, EGC, Jakarta.
- National Heart Foundation of Australia. 2011, *Guidelines for the Prevention Detection and Management of Chronic Heart Failure in Australia*, NHFA, Australia.

- PERKI. 2015, *Pedoman Tatalaksana Penyakit Kardiovaskular*, Edisi Pertama, Perhimpunan Dokter Spesialis Kardiovaskular Indonesia Jakarta.
- Uce, L., Dewi, R., Riana. 2015, *Kajian Penggunaan Kaptopril Dengan Furosemid Terhadap Pasien Gagal Jantung Kongestif Di Bangsal Jantung RSUD RADEN MANTTAHER JAMBI: 724.*
- Yancy. 2013, *Guideline for the Management of Heart Failure.A Report of The American College of Cardiology Foundation/ American Heart Association Task Force on Practice Guideline,ACCF/AHA, American.*
- Yayang, H., Dewi, A., Khoiriyati, A. 2016. *Gambaran Karakteristik Pasien Gagal Jantung Usia 45-65 Tahun di Rumah Sakit PKU Muhammadiyah Gamping Sleman, 01:57.*