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ANALYSIS OF CHARACTERISTIC AND DRUG INTERACTION IN HYPERTENSIVE PATIENTS AT PUTRI HIJAU HOSPITAL

Clinical Research

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ABSTRACT

Hypertension is a disease that is chronic, progressive and requires treatment throughout life. The use of more than one drug causes hypertensive patients to be susceptible to drug interaction problems. Drug interactions are drug-related problems that can affect the outcome of patient therapy. This type of research is a retrospective descriptive study. Sampling was done by purposive sampling method with a total sample of 40 patients. The study used CRM (Customer Relationship Management) to facilitate data collection for hypertensive patients at Putri Hijau Hospital. The results showed that the characteristics of the most age range suffered from hypertension, namely the age of more than 65 years with the sex of 67.5% women and 32.5% men. The highest classification of hypertension was stage II hypertension by 70.0% with complications of dyspepsia by 10.0%. Drug interactions occur as much as 62.5% and are classified as moderate interactions with the pharmacokinetic mechanism.

KEYWORDS

hypertension, drug interactions, CRM,

INTRODUCTION

According to the American Society of Hypertension (ASH), hypertension is a progressive syndrome or collection of cardiovascular symptoms as a result of other complex and interconnected conditions. Hypertension is a hot topic of conversation and has become one of the priority health problems in Indonesia and throughout the world. In 2000, more than 25% of the world population had hypertension, or about 1 billion people, and two-thirds of hypertensive patients were in developing countries. The number of people with hypertension will continue to increase if no appropriate effort is made. The number of people with hypertension in 2025 is predicted to increase to 29%, or around 1.6 billion people worldwide [1].

Drug interactions with drugs are occurrences of drug interactions that can occur when sharing two or more types of drugs. Giving more than one antihypertensive drug can lead to drug interactions. Drug interaction is a Drug Related Problem (DRP) which can affect the body's response to treatment. The result is an increase or decrease in effects that can affect the outcome of patient therapy. An interaction occurs when the effect of a drug is changed by the presence of other drugs, herbal medicines, food, drinks or other chemical agents in the environment. The results can be dangerous if interactions cause an increase in drug toxicity [2].

Customer Relationship Management (CRM) is an application that is built with the open source PHP program to store patient data (medical records) in the form of name, age, gender, telephone number, symptoms of illness, medication used, advice and time of visit. This CRM program is designed to assist researchers in inputting data on hypertensive patients making it easier to draw conclusions [3,4].

MATERIAL AND METHODS

This research was conducted at Putri Hijau Hospital from May to July 2018. This type of research is an approach perspective where the data are collected and expressed in the form of words arranged in sentences which are communication between researchers and hypertensive patients. The design of this study uses cross sectional design with CRM applications (FIGURE 1) as a substitute for medical records of patients.

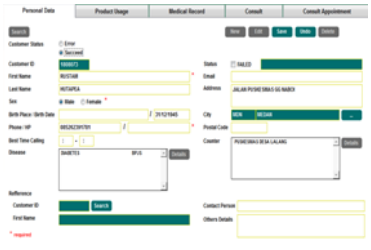

FIGURE 1. Customer Relationship Management

RESULT AND DISCUSSION

Characteristic	n (%)
Age (years)	
36-45	8 (20,0)
46-55	11 (27,5)
56-65	8 (20,0)
> 65	13 (32,5)
Gender	
Male	13 (32,5)
Female	27 (67,5)

The highest age category is in the age group of more than 65 years which is equal to 32.5%. This happens because the older a person is, the greater the risk of developing hypertension. This is because the arteries lose elasticity and cause the blood pumping ability to decrease so that blood pressure increases. Women suffer from cardiovascular disease after menopause. This is related to reduce estrogen hormone after menopause. Hormone estrogen can protect women from cardiovascular diseases such as hypertension because it causes vasodilation of the heart arteries [5].

Hypertensive comorbidities	n(%)
Stage II + kidney disorders + gastric ulcer	1(2,5)
Stage II + vertigo	1(2,5)
Stage II + typhoid fever + gastric ulcer	1(2,5)
Stage II + dyspepsia	4(10,0)
Stage II + dyspepsia + stroke	1(2,5)
Stage II + diabetes mellitus	2(5,0)
Stage I + arthritis acute	3(7,5)
Stage II + GERD + Neuropati	2(5,0)
Stage II + obstructive lung deases + hyperuricemia	1(2,5)
Stage II + arthritis acute + dyspepsia	1(2,5)
Stage I + dyspepsia + dermatic + osteoarthritis	1(2,5)
Stage II + diarrhea + dyspepsia	1(2,5)
Stage II + hyperlipidemia + gastric ulcer	1(2,5)
Stage II + osteoarthritis	1(2,5)
Stage I + colic abdomen	1(2,5)
Stage II + cephalgia	2(5,0)
Stage II + vertigo + dyspepsia	1(2,5)
Stage II + Congestive Heart Failure + vertigo	1(2,5)
Stage I + dyspepsia + pharyngitis	1(2,5)
Stage I + dyslipidemia	1(2,5)
Stage II + angina pectoris	1(2,5)
Stage I + diabetes + respiratory tract infection	1(2,5)
Stage II + Congestive Heart Failure	1(2,5)
Stage I + gastric ulcer	1(2,5)
Stage II + gastric ulcer + CHF	1(2,5)
Stage I + vertigo	2(5)
Stage II + hypercholesterolemia	1(2,5)

Stage I + cephalgia	1(2,5)
Stage II + Myalgia + dyspepsia	1(2,5)
Stage II + Gastroenteritis	1(2,5)
Without comorbidities	1(2,5)

In this study the most common comorbidities were hypertension stage II + dyspepsia by 10.0%. One of the main factors of increasing blood pressure (hypertension) is stress if someone experiences stress, the production of stomach acid becomes increased, functional dyspepsia is one of the main causes of stress, this is what causes the most comorbidities in hypertensive patients is dyspepsia [6].

Type of hypertension medication	n(%)
Amlodipin	(5)12,5
Candesartan	(1)2,5
Valsartan	(1)2,5
Bisoprolol	(1)2,5
Furosemid + Valsartan (Diovan) + Ramipril	(1)2,5
Amlodipin + Valsartan	(6)15,0
Amlodipin + Candesartan (Canderin)	(8)20,0
Nifedipine (Adalat Oros) + Candesartan	(2)5,0
Nifedipine (Adalat Oros) + Micardis (Telmisartan)	(1)2,5
Amlodipin + Captopril	(2)5,0
Furosemid + Valsartan + Amlodipin	(1)2,5
Furosemid + Candesartan (Canderin) + Amlodipin	(2)5,0
Captopril + Furosemid	(1)2,5
Candesartan (Canderin) + Furosemid	(3)7,5
Valsartan (Diovan) + Furosemid	(1)2,5
Furosemid + Bisoprolol	(3)7,5
Candesartan + Bisoprolol	(1)2,5
Furosemid + Bisoprolol + Canderin	(1)2,5

Amlodipine is the most widely used antihypertensive drug. This group of drugs as calcium influx inhibitors (slow channel blockers or calcium ion antagonists), and inhibits the entry of transmembrane calcium ions into the heart and vascular smooth muscle. Amlodipine and candersartan combination is superior because it acts as a neuroprotective and reduces metabolic side effects in patients with metabolic disorders [7].

Level of Drug Interaction		n(%)
MINOR		
Captopril	Amlodipine	(2)4,9
Captopril	Antacids	(1)2,4
Ranitidine	Ketorolac	(1)2,4
Omeprazole	Nifedipin	(2)4,9
Furosemide	Aspirin	(1)2,4
Aspirin	Bisoprolol	(1)2,4
Bisoprolol	Antacids	(1)2,4
Ranitidine	Antacids	(1)2,4
Ranitidine	Paracetamol	(1)2,4
MODERATE		
Furosemide	Ceftriaxone	(2)4,9
Furosemide	Bisoprolol	(4)9,8
Natrium Diklofenac	Amlodipine	(2)4,9
Furosemide	Omeprazole	(3)7,3
Furosemide	Ramipril	(1)2,4
Ketorolac	Candesartan	(1)2,4
Dexamethasone	Amlodipine	(1)2,4
Furosemide	Sucralfat	(1)2,4
Ketorolac	Amlodipine	(2)4,9
Mefenamic Acid	Amlodipine	(2)4,9
Candesartan	Mefenamic Acid	(2)4,9
Ketorolac	Valsartan	(1)2,4
Metformine	Glimepirid	(1)2,4
Aspirin	Clopidogrel	(1)2,4
Natrium Diklofenac	Valsartan	(1)2,4
Amlodipine	Meloxicam	(1)2,4
Candesartan	Meloxicam	(1)2,4
Nifedipine	Mefenamic Acid	(1)2,4
MAJOR		
Ramipril	Valsartan	(1)2,4
Gemfibrozil	Simvastatin	(1)2,4

The most frequent drug interactions at the level of interaction are furosemide with bisoprolol in 4 times the percentage of 10.3%. Diuretics and beta-blockers can increase the risk of hyperglycemia and hypertriglyceridemia in some patients, especially in patients with diabetes. Using furosemide and bisoprolol together can lower blood pressure and slow heart rate [8].

CONCLUSIONS

This research conducted on 40 hypertensive patients in the Putri Hijau hospital in Medan – Indonesia gave results Based on the age range that most suffer from hypertension is age> 65 years as much as 32.5%, age 46-55 years as many as 27.5% age 56-65 years as much as 20% and age 36-45 years as much as 20%. Based on the gender of hypertensive patients is 67.5% of female and 32.5% of male patients. Based on the classification of hypertension the most is Stage II Hypertension as much as 70.0% and Stage I Hypertension as much as 30.0% Based on the most common comorbidities are Stage II Hypertension + Dyspepsia as much as 10.0%. The most widely used single antihypertensive drug is amlodipine at 12.5%, while the most widely used combination antihypertensive drug is Amlodipine with Candesartan by 20%. The percentage of hypertensive patients who experienced drug interactions based on the severity of the most prevalent was a moderate level of 68.3%, a minor level of 26.8% and a major level of 4.9%.

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