Description of the Symptoms of Hypertension Characteristics Confirmed by COVID-19 at the Inpatient Installation of Panembahan Hospital, Yogyakarta in 2020

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ABSTRACT

Background: The trend of hypertension is increasing every year. It is estimated that 1.13 billion people worldwide have hypertension 2/3 of low-middle income countries. Hypertension is the highest comorbid group in COVID-19 patients, which is 50.5%. This causes an increased risk of dangerous infections that can lead to death. The fact that the SARS-Cov-2 virus uses the Angiotensin Converting Enzym-2 receptor as an entry point to colonize in the body can cause vasoconstriction and inflammation that can worsen the incidence of hypertension and cardiovascular disease.

Purpose: This study aims to determine the characteristics of hypertensive patients with confirmed COVID-19 in the inpatient installation of Panembahan Hospital, Senopati, Bantul in 2020.

Methods: This study is a descriptive observational study using secondary data in the form of medical records conducted at Panembahan Hospital, Senopati, Bantul. A total of 21 medical record samples were taken that met the inclusion criteria. Samples were taken from December to October 2020 using the total sampling technique.

Results: The results of data analysis using the SPSS program obtained a total of 21 samples that met the criteria. There were 10 male patients (47.6%), female 11 patients (52.4%), age >54 years totaling 15 patients (71.4%). The dominant symptoms felt were cough, fever, headache, shortness of breath, malaise, abdominal pain and sore throat totaling 19 patients (90.4%).

Conclusion: COVID-19 disease with the most comorbidities is Hypertension, Hypertension with Diabetes Mellitus, followed by Hypertension with Chronic Kidney Failure. The therapy patterns that are often used in Panembahan Hospital, Senopati, Bantul for hypertension patients with Covid-19 are Calcium Channel Blocker (Amlodipine), Angiotensin Receptor Blocker (Valsartan and Candesartan), and Loop Diuretics (Furosemide and Spironolactone).

Keywords: Hypertension, COVID-19, Panembahan Hospital, SARS-CoV-2.

INTRODUCTION

Coronavirus disease-2019 (COVID-19) is a disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This virus was first reported to have occurred in Wuhan, China in early December 2019. Then it spread rapidly throughout the world, including in Indonesia in March 2020. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic (World Health Organization, 2020).

The current situation of COVID-19 in Indonesia as of August 24, 2022, has more than 6.3 million confirmed patients, 6.1 million have been declared cured, and 157,438 patients have died due to COVID-19 (Ministry of Health Republic of Indonesia, 2022). In the Monitoring period 28 September 2021 in D.I.Yogyakarta there was a slight improvement from the previous week where level 3 became 60% and level 2 became 40%, no region has yet managed to reach level 1 (Pusdatin Ministry of Health of the Republic of Indonesia, 2021). While the death rate as of August 26, 2022 in Bantul, D.I.Yogyakarta reached 1,723 people (Bantul Health Office, 2022). Although the death rate has decreased by 3% per week to date, the incidence continues to increase at 1% per week. This has a major impact on public health and the global economy (Chen et al., 2022).

This disease has a wide range of symptoms, from asymptomatic to respiratory distress, and even death (Syam et al. 2020). Mesquita et al. (2001) reported that there were 6 typical symptoms of this disease, namely fever (58.66%), cough (54.52%), dyspnea (30.82%), malaise (29.75%), fatigue (28, 16%) and phlegm/secretion (25.33%). Other symptoms that appeared were nervous disorders (20.82%), dermatological manifestations (20.45%), anorexia (20.26%), myalgia (16.9%), sneezing/runny nose (14.71%), pain throat (14.41%), rhinitis (14.29%), headache (12.17%), chest pain (11.49%) and diarrhea (9.59%). The risk of death depends on age, comorbidities, and disease severity, this increases to 49% in critically ill patients (Liu et al., 2020). Zhou et al. (2020) reported that older age with COVID-19 when hospitalized, had a higher risk of organ failure ($p < 0.0001$) and death in Wuhan, China. The median duration of hospitalization in recovered individuals was 10 days. The organs most affected are the lungs, followed by the heart, kidneys, liver, brain and digestive system (Zhou et al., 2020).

On the other hand, COVID-19 patients with comorbidities or comorbidities have a higher mortality rate than other patients. Hypertension is declared the deadliest and highest comorbidity during the COVID-19 pandemic, which is 49.7% and can certainly guarantee the condition of COVID-19 sufferers (Kemenko PMK, 2021) (Ministry of Health of the Republic of Indonesia, 2020) (Pusdatin of the Ministry of Health of the Republic of Indonesia, 2022).

Hypertension is a global health problem, ~70% of deaths in the world (57 million deaths/year) due to non-communicable diseases, including hypertension. Hypertension is known as "the silent killer" because it is often accompanied without any complaints.

Hypertension is the highest comorbid group in COVID-19 patients, which is 50.5% and is a risk factor for very severe COVID-19 infection (Shibata et al., 2020; Chen et al., 2022). What is between hypertension and COVID-19 is the pathway of this virus invasion (SARS-CoV-2). This virus invades the human body by direct contact with the Angiotensin Converting Enzyme 2 (ACE2) receptor on the cell surface. ACE2 expression is widely distributed in several organs such as lungs, arteries, heart, kidneys, endothelium, and epithelial cells of the digestive tract and alveoli (Damarwati et al., 2022) which is the main target of SARS-CoV 2. aldosterone angiotensin (RAAS). SARS-CoV-2 can disrupt the balance of ACE/ACE2 and RAAS activation, which ultimately leads to the development of COVID-29, especially in patients with comorbidities, such as hypertension, diabetes mellitus, and cardiovascular disease (Kordzadeh et al., 2020).

This study aims to determine the characteristics of hypertension sufferers confirmed by COVID-19 at the inpatient installation of Panembahan Hospital, Senopati, Bantul in 2020.

METHODS

The research method is descriptive analytic retrospectively and has been approved by the Ahmad Dahlan University Research Ethics Committee (Number: 022205029). Medical record data of all suspected and confirmed COVID-19 patients who have been hospitalized at Panembahan Senopati Hospital, Bantul since 2020 were included in the study, while patients aged under 14 years and pregnant women were not included in this study. Suspected and confirmed diagnosis of COVID- 19 is enforced based on guidelines from WHO and the Ministry of Health of the Republic of Indonesia.

A total of 21 medical record samples were taken that met the inclusion criteria. Samples were taken from December to October 2020 using the total sampling technique.

RESULTS AND DISCUSSION

Demographic characteristics data are presented descriptively (percentage). A total of 21 samples that met the inclusion criteria were then analyzed using the Statistical Package of Social Science (SPSS) version 24 test. The results showed that the gender of COVID-19 patients at Panembahan Senopati Hospital, Yogyakarta was mostly female (52.4%) and the percentage of male patients (47.6%). This is in line with the study by Jin et al. (2020) that men are consistently the highest prevalences with COVID-19 are more at risk for worse outcomes and death compared with female (Jin et al.,2020).

The most age variable category is >55 years (71.4%). WHO states that age > 60 years is the age most at risk of causing the severity of COVID-19. Several studies published both nationally and internationally state that the elderly have a high risk of death when diagnosed with COVID-19 (Elviani *et al.,* 2021; Lebrasseur *et al.,* 2021; Perrotta *et al.,* 2020; Meis-Pinheiro *et al.,* 2021; Jin *et al.,* 2020).

The most common symptom groups found in this study were cough, fever, headache, shortness of breath,

malaise, abdominal pain and sore throat totaling 19 patients (90.4%). Symptoms arising from several studies that COVID-19 can damage or interfere with performance in the central nervous system (CNS). Some of the symptoms observed include lossof sense of smell, taste or vision problems (Wu et al., 2020).

COVID-19 disease with the most comorbidities is Hypertension, Hypertension with Diabetes Mellitus, followed by Hypertension with Chronic Kidney Failure. Therefore, patients with a history of cardiovascular disease and high blood pressure have a higher risk of death than normal individuals. Oxygen deficiency due to lung injury can damage the lining of the heart and blood vessels. In addition, fatty plaque in the heart arteries in humans with or without symptoms of cardiovascular disease becomes unstable because it can cause inflammation and hyperthermia so that it can be at risk of blockage of blood vessels. Cytokine storm secretion has also been shown to exacerbate these complications (Esakandari et al. 2020).

Our findings show that the ACE-inhibitor group of drugs is the most frequently used in COVID-19 patients with hypertension at Panembahan Senopati Hospital. ACE2 is a component of the renin-angiotensin system (RAS) which works to catalyze the conversion of angiotensin II (vasoconstrictor peptide) to angiotensin 1-7 (vasodilator). ACE2 counteracts ACE activity by reducing the amount of angiotensin II and increasing angiotensin (1-7). Angiotensin (1-7) acts on its receptors by providing a vasodilating effect. Thus, ACE and ACE2 work oppositely in the blood pressure regulation system.

CONCLUSION

The characteristics of COVID-19 patients who were hospitalized at Panembahan Hospital, Senopati, Bantul, Yogyakarta in 2020 were mostly women, age range >54 years with the dominant symptoms felt were cough, fever, headache, shortness of breath, malaise, abdominal pain and aches. throat totaled 19 patients (90.4%). The COVID-19 disease with the most comorbidities is Hypertension, Hypertension with Diabetes Mellitus, followed by Hypertension with Chronic Kidney Failure. The therapy patterns that are often used in Panembahan, Senopati, Bantul hospitals for hypertension patients with Covid-19 are Calcium Channel Blocker (Amlodipine), Angiotensin Receptor Blocker (Valsartan and Candesartan), and Loop Diuretics (Furosemide and Spironolactone).

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