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Characteristics of Moderate-Critical COVID-19 Patients: Retrospective Study at RSUP. M. Djamil Padang in June-August 2021

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ABSTRACT

COVID-19 in Indonesia reached the highest number in June-August 2021 so the government has carried out many policies to tackle this problem. This study aims to determine the characteristics of patients with confirmed Coronavirus Disease 2019 (COVID-19) of moderate-critical degree at RSUP. M. Djamil Padang June-August 2021 period. This type of research is descriptive with a sample size of 306 patients with confirmed COVID-19 of moderate-critical degree who were hospitalized. This research was conducted from October to December 2021 at Dr. M. Djamil Padang Hospital. Data were collected and processed using the Consecutive Sampling technique. The results of this study found that women (56.86%) were more confirmed positive for COVID-19 than men and were often found in the age range ≥56-65 years. The most common comorbidity is hypertension (35.62%), the average length of treatment of patients hospitalized is <15 days (77.2%) with the most treatment outcome being death (36.2%).

Conclusions and suggestions based on this study found that the elderly are more at risk of being infected with COVID-19 as well as experiencing worsening conditions and it is hoped that the entire community will remain strict in maintaining health protocols and following vaccinations.

Keywords: coronavirus, covid-19, pandemic.

INTRODUCTION

COVID-19 is a disease outbreak whose transmission is very difficult to control, making the mortality and morbidity rates very high. COVID-19 has had a significant harmful impact on more than 200 countries around the world due to the difficulty in screening for asymptomatic patients which makes controlling and preventing this pandemic even more difficult.[1,2]

COVID-19 in Indonesia throughout 2021 have always experienced an increase in the number of confirmed positives until in June-August there was a second wave of increased COVID-19 cases which led the government to make many policies including large-scale social restrictions to emergency social restrictions.[3]

The introduction of the Delta coronavirus variant in June-August 2021 has different characteristics when compared to the Alpha variant. It is about 60% more infectious than the Alpha variant, which has had the first high cases since the pandemic. When compared to the COVID-19 variant Alpha or other variants, COVID-19 variant has a more severe clinical and labour severity. COVID-19 positive patients with the Delta

variant are reportedly more advised to use hospitalization than patients with other COVID-19 variants.[4]

MATERIALS & METHODS

This study used a descriptive method with a cross-sectional design. The population in this study were all data on confirmed COVID-19 patients who had carried out RT-PCR tests with positive results at RSUP. Dr M. Djamil Padang during June-August 2021. This study was conducted in January-March 2022 with a total of 306 samples. The data analysis used in this study was univariate analysis to see the characteristics of the frequency distribution of the research subjects. This research has passed the ethical test issued by the Health Research Ethics Committee RSUP. M. Djamil Padang with the number LB.02.02/5.7/304/2022.

STATISTICAL ANALYSIS

Data analysis and processing were performed using SPSS (Statistical Package for the Social Sciences) version 21.0 for Mac.

RESULT

Subjects	N	%
Gender		
Male	132	43.14%
Female	174	56.86%
Age		
18-25	19	6.3%
26-35	38	12.4%
36-45	34	11.1%
46-55	45	14.7%
56-65	94	30.7%
>65	76	24.8%
D-dimer		
Normal	44	14.38%
Increase	262	85.62%
Comorbidity		
Hypertension	109	35.62%
ARDS	45	14.7%
Heart Disease	26	8.5%
Malignancy	6	1.96%
Asthma	10	3.26%
Kidney Disease	48	15.68%
Hiv	1	0.3%
Atopy Disease	0	0%
Diabetes	72	23.52%
Liver Disease	48	15.68%
No Comorbidity	96	31.37%
Duration of Treatment		
< 15 days	236	77.2%
15-28 days	61	19.9%
> 28 days	9	2.9%
Treatment Result		
Recovered	71	23.2%
Improvement	98	32.1%
Stable/Worsening	26	8.5%
Death	111	36.2%
Disability	0	0%

DISCUSSION

Gender

Based on the table above, it can be seen that there are 174 women (56.86%) compared to 132 men (43.14%). This can be influenced because women are more prone to stress in dealing with a problem or disease such as the COVID-19 pandemic, whereas the

results of the study state that men are better able to deal with stress or a new problem without using excessive emotions and with a fairly low level of anxiety compared to women so that if excessive stress arises, the body's defence system can go down.

Age

Based on age, the most data were obtained, namely patients with an average age of 56-65 years as many as 94 people (30.7%). Age greatly affects patients who are confirmed positive for COVID-19 with older age, they will experience a degenerative period so that they are very vulnerable to a disease which makes the patient's immunity decrease and it is easy to get infected.[5]

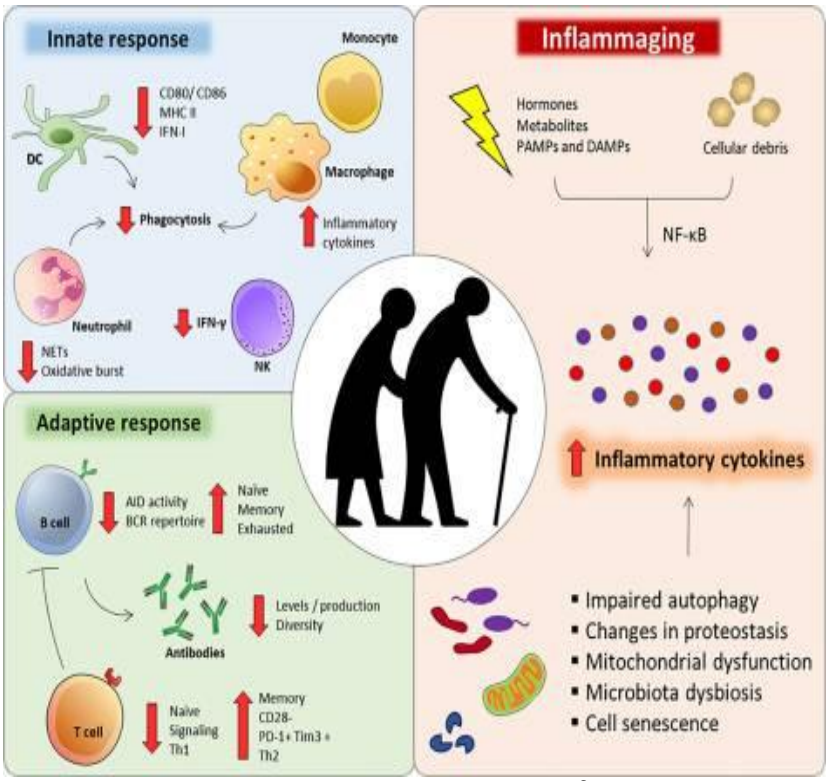

Figure 1. ***immunosenescence.***[6]

Ageing is a process in which there is a progressive and natural decline in a person's biological function, the immune system is also affected by the ageing process. Functional immune responses are considered critical for maintaining health and homeostasis, the ageing process in which chronic low inflammation occurs due to a combination of decreased immunity in the elderly is called immunosenescence. Immunosenescence contributes to risk factors for infections, autoimmune diseases, and cancer including COVID-19. Elderly patients on average have negligent habits in maintaining health protocols, which can increase the risk of being infected with COVID-19.[7]

D-dimer

Patients with moderate-critical COVID-19 who were hospitalised at Dr M. Djamil Padang Hospital in June - August 2021 based on D-dimer levels obtained the most data, namely with D-dimer levels of 262 people (85.62%).

Elevated D-dimer at the time of initial admission is known to be associated with an 18-fold risk of death compared to patients with normal D-dimer.[8] Increased D-dimer protein is usually taken by medical personnel to show evidence that

coagulopathy and fibrinolysis occur in COVID-19 patients in vivo. Based on research discussing the origin of D-dimer protein in COVID-19 patients, the increase in D-dimer reflects the production of fibrin degradation accumulated in the lung parenchyma and pulmonary alveoli as a result of lung injury in COVID-19 patients. Thus, D-dimers are considered to move and flow from the lungs to the bloodstream considering the origin of D-dimers, namely fibrin formed in the lungs, D-dimers are very easy to understand because they are interrelated with the prognosis and degree of lung injury due to COVID-19 infection.[9]
Hospitalised patients on admission with elevated D-dimer laboratory results are associated with a significantly higher risk of mortality, risk of venous thromboembolism (VTE) and risk of needing mechanical ventilation (intubation), which is particularly evident in patients confirmed positive for COVID-19 with severe clinical-criticality and has been associated with poor patient prognosis. D-dimer protein is usually elevated along with C-reactive protein (CRP) and serum ferritin.[10,11]

Comorbidity

The most common comorbidity was hypertension with 109 patients (35.62%). The renin-angiotensin-aldosterone system (RAS) (specifically the angiotensin-converting enzyme 2 [ACE2] protein) has been identified to play a major role in assisting the entry of the SARS-CoV-2 virus into target cells, especially in the lungs, which is one of the causative pathways of COVID-19. As such, many researchers have recommended that ACE inhibitors and angiotensin receptor blockers (ARBs), which affect ACE2 expression, may influence the severity and susceptibility of SARS-CoV-2 infection.[12]

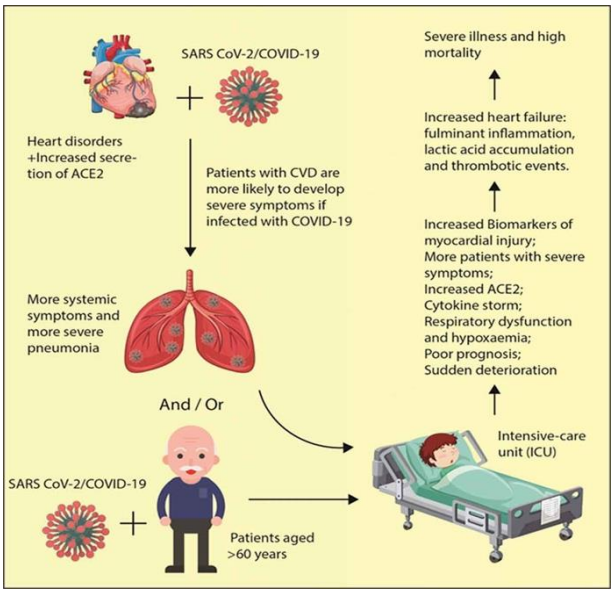

Figure 2. Role ACE2.[13]

Hypertension is a very common comorbidity, about 1.39 billion people worldwide have inherited hypertension and the prevalence of hypertension increases with age (affecting about 70% of older adults). In addition, RAS inhibitors such as ARBs and ACE inhibitors are favoured and widely used for the treatment of hypertension. However, hypertension is not a single clinical entity but manifests in many different phenotypes. Almost half of all hypertensive patients worldwide (44%) live in south or east Asia.[14]

Duration of Treatment

The highest number of patients with a length of treatment < 15 days was obtained by 236 people (77.2%). This can occur

because there are differences in COVID-19 handling and control strategies between countries, especially in the criteria for admission and discharge of patient care.[15] Understanding how long hospitalised patients with COVID-19 remain in hospital is critical to planning and predicting bed and related staffing and medical equipment needs.[16] The COVID-19 pandemic has put considerable pressure on the healthcare system, as it is unprecedented with a high and rapidly increasing demand for healthcare for COVID-19 patients in hospitals.[17]

Based on research that has been conducted, it is found that several internal factors can make a patient longer to be hospitalised during the COVID-19 treatment period, namely patients with severe-critical clinical symptoms are likely to be treated longer, patients with severe-critical clinical symptoms require more rigorous and comprehensive medical care so that the treatment process is longer. In addition, patients who have symptoms of fever, and anosmia and carry comorbidities such as diabetes mellitus will have a longer length of treatment as well.[17]

Treatment Result

The results of treatment (outcome) obtained the most data, namely patients with the outcome of treatment (outcome) died as many as 111 people (36.2%). Patients confirmed positive for COVID-19 who are hospitalized and have an outcome of death have at least one congenital disease such as cardiovascular disease (60%), diabetes mellitus (39.5%) kidney disease (20.8%).[18]Not only that, the occurrence of the second wave surge in Indonesia in June-August 2021 due to the Delta coronavirus variant caused a rapid and high increase in cases in hospitals. So this makes it difficult for hospitals to deal with the increasing number of patients. This has also led to an increase in the mortality rate in the hospital.[19]

Another factor causing this is social disruption. Social disruption arises not from the COVID-19 pandemic itself but from the response of central authorities in restricting social behaviour. Ultimately, the fear and panic that characterise the pandemic means that the average population has no experience in dealing with pandemic problems.[16] Another factor is that the vaccination programme in Indonesia is divided into two stages. The first phase of vaccination, which was supposed to take place from January to April 2021, had a target of 40.2 million health workers, public officials, and parents, and was short 43.2 million doses of vaccine. So, since then Indonesia has been working to increase its vaccine supply. This proves that Indonesia's vaccination programme is under-pressured, making the chance of a second wave at that time quite high.[15]

CONCLUSION

COVID-19 patients at the hospital. Dr M. Djamil Padang during the June-August period were mostly female with an average age range of ≥56-65 years. D-dimer patients mostly have high results and hypertension is the most common comorbidity carried by patients. Patients in the June-August period had an average outcome of death treatment with a length of treatment <15 days. It is hoped that all people, especially those with comorbidities and a fairly old age, should be stricter in maintaining health protocols such as wearing masks, keeping distance, washing hands and following COVID-19 vaccinations.

Declaration by Authors

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