458

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PROFILE OF ANTIVIRAL AND ANTIBIOTIC PRESCRIBING IN COVID-19 PATIENTS IN BENGKULU, INDONESIA

ABSTRACT

Coronavirus Disease 2019 (COVID-19) is caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus and has a fast spread rate. The treatment for COVID-19 was at the beginning of the pandemic, and until now, it cannot be determined with certainty, so various efforts have been made. Treatment can be in the form of antiviral therapy until the use of antibiotics given at the start of the pandemic. The aim of this study is to identify antiviral and antibiotic use patterns in COVID-19 patients at a government hospital in Bengkulu City, Indonesia. This research was conducted by retrospective collection using secondary data (Medical Records) of COVID-19 patients hospitalized at a Regional General Hospital (RSUD) Dr M. Yunus Bengkulu from June to September 2021. In this study, a sample of 232 patient medical records was obtained. Common symptoms in confirmed COVID-19 patients were weakness (76.29%), cough (67.67%), shortness of breath (65.52%), flu (43.10%), fever (42.24%), etc. In this study, the most comorbid disease was hypertension (10.34%). There are three types of antiviral prescribed for COVID-19 patients: Favipiravir (49.56%), Remdesivir (19.82%), and Oseltamivir (15.51%), but 15.08% of patients were not prescribed antivirals. The prescription of antibiotics in this study varied, Azithromycin (53.02%), Ceftriaxone (24.57%), Cefixime (18.53%), and several other types of antibiotics, while 9.91% of patients were not given antibiotics. Antiviral therapy for COVID-19 patients was Favipiravir, Remdesivir, and Oseltamivir. Favipiravir is the most widely used antiviral drug. Meanwhile, the most widely used antibiotic therapy for COVID-19 patients is Azithromycin.

KEYWORDS: Antiviral; Antibiotics; COVID-19 ; Prescribing

INTRODUCTION

Coronavirus Disease 2019 (Covid -19) pandemic in the world caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2). This viral first was confirmed to spread from Wuhan city in China. Indonesia's government announced the first case of COVID-19 in March 2020 in Jakarta city. From January 2020 to 2023, there have been reported to WHO 6.729.209 confirmed cases of COVID-19 with 160.801 deaths in Indonesia (1).

The emergence of the COVID-19 pandemic requires healthcare systems around the world to move quickly in determining the right therapy. There are several types of antibiotics used in Indonesia are given to COVID-19 patients, namely Azithromycin, Ceftriaxone, and Levofloxacin (2). Until now, the treatment for COVID-19 is still not definitive, so various treatment efforts have been made, including administering antibiotics and antiviral. The selected antibiotics are empirical antibiotics based on local microbial

profiles (3). Antibiotics can be used in cases of COVID-19 with moderate and severe symptoms (4).

Apart from antibiotics, antiviral therapy is also a treatment option for COVID-19 patients. According to WHO recommendations, several antivirals are used for medical therapy in COVID-19 patients, including Lovinapir / Ritonavir and Remdesevir (5). Meanwhile, antiviral therapy for COVID-19 patients in Indonesia can be used, namely Oseltamivir, Favipiravir, Molnupiravi, Ritonavir, and Remdesevir (2).

Regional General Hospital (RSUD) Dr. M. Yunus Bengkulu is one of the hospitals that has been used as a provincial referral centre for handling COVID-19 patients. Based on medical data on COVID-19 cases Dr. M. Yunus Bengkulu experienced an increase at the end of June-July 2021 with a total of 376 patients and experienced a decrease in September (6). This research was conducted to look at patterns of use of antibiotics and antivirals in the handling of COVID-19 cases in Bengkulu City for a certain period.

METHOD

Research design

This research was conducted using an observational descriptive analysis design with a cross-sectional approach in DR. M.Yunus Hospital in Bengkulu, Indonesia from Desember 2021to Maret 2022.

Research subjects

The sample for this study was the medical records of COVID-19 patients treated at the DR. M.Yunus Hospital in Bengkulu, Indonesia.

Data collection

Data was carried out retrospectively using secondary data from the medical records of COVID-19 patients. The sampling technique used was purposive sampling. The inclusion criteria for this study sample were the medical records of inpatients for 18 years from June to September 2021. The samples obtained in this study totaled 232 patient medical records.

Statistical analysis

The analysis performed is the frequency distribution of each data obtained.

RESULT And DISCUSSION

Patient Characteristics

The data we get are patient characteristics (age, sex, and jobs), symptoms, comorbidities events, antiviral and antibitics used. Based on observational data, it is known that most patients aged 56-65 who are being treated are confirmed with COVID-19. Based on sex criteria, there is a slight difference in the number of males and females, and housewife is the most job in this study (Table 1).

Previous research stated a relationship between age and the level of immunity, where older individuals have a greater tendency to be infected and decrease body immunity. In addition, elderly individuals have consumed many types of drugs at the same time to treat comorbidities which results in decreased organ function (7). In other studies related to COVID-19 patients, it was also found that the characteristics of patients who were most diagnosed with COVID-19 with the highest mortality rate were in the age group 55-64. This age range can cause a decrease in the immune system so that it is very susceptible to the COVID-19 virus (8).

Tabel 1. Characteristic Patients (n=232)

Characteristic		n(%)
Age (years)	17-25	10 (4.31%)
	26-35	31 (13.36%)
	36-45	42 (18.10%)
	46-55	46 (19.83%)
	56-65	54 (23.28%)
	>65	49 (21.12%)
Sex	Woman	118 (50.86%)
	Man	114 (49.14%)
Jobs	Housewife	75 (32.33%)
	Private sector	43 (19.40%)
	Farmer	43 (18.53%)
	Civil servant	33 (14.22%)
	Teacher	8 (3.45%)
	Student	8 (3.45%)
	Others	20 (9.00%)

The number of female patients was slightly more (50.86%) than the male patients. This is inversely proportional to a meta-analysis study which states that men have a higher

risk of being infected with COVID-19 compared to women (9,10). Men have a higher expression of ACE2 which is related to sex hormones that cause men to be more at risk of being infected with SARS-Cov-2 (11).

The patient's work characteristics show that housewives (32.33%) and private sector (19.40%) are the most jobs confirmed by COVID-19 (Table 1). Several studies in other locations also stated that the work of most confirmed Covid patients was also in the Housewives and Private Sector (12). The risk of transmission of SARS-Cov-2 is faster in people who work indoors than in people who work outdoors (13).

Prevalence of symptoms in COVID-19

The study showed that the most common symptom in COVID-19 patients was lethargy (76.29%), and the most common comorbidity was hypertension (10.34%). From the research data in Table 2, it was found that the five most common symptoms in confirmed COVID-19 patients were weakness (76.29%), cough (67.67%), shortness of breath (65.52%), flu (43.10%), and fever (42.24%). The results of this study are almost the same as several studies in several locations. This study obtained data that clinical symptoms that often occur in patients with confirmed COVID-19 are shortness of breath, fever, myalgia and dry cough (14,15).

Table 2 Frequently Occurring Symptoms of COVID-19 Patients (n=232)

Symptoms	n(%)
Lethargy	177 (76.29%)
Cough	157 (67.67%)
Out of breath	152 (65.52%)
Flu	100 (43.10%)
Fever	98 (42.24%)
Nauseous	49 (21.12%)
Anosmia	49 (21.12%)
Headache	47 (20.26%)
Myalgia	18 (7.76%)
Vomite	17 (7.33%)
Shivers	16(6.90%)
Cough	15 (6.47%)
Heartburn	15 (6.47%)
No appetite	10 (4.31%)

Pain in Hands and Feet	9 (3.88%)
Diarrhea	7 (3.02%)

From the research data (Table 3), it was found that patients with the most comorbid hypertension (10.34%). The results of this study differ from studies in several locations where the most common comorbid found in COVID-19 patients were hypertension (16). The severity of the symptoms and conditions of a COVID-19 patient will increase if they have comorbidities. The most common comorbidity found in COVID-19 patients in China is hypertension (9). Hypertension greatly affects the prognosis of COVID-19 patients due to the effects of taking hypertension drugs such as ACE Inhibitors and ARBs (17). Treatment of patients who have comorbidities must be carried out rationally and precisely. Rational treatment will improve patient recovery.

Table 3. Comorbid events of COVID-19 Patients (n=232)

Comorbidities	**n (%)**
Hypertension	24 (10.34%)
Diabetes mellitus Type 2	14 (6.03%)
Accute Respiratory Distress Syndrome Hematocrit	8 (3.45%)
Hypercoagulable Chronic Obstructive Pulmonary Disease	6 (2.59%)
Asthma	2 (0.86%)
Others (Kidney Disorders, CAD, HHD, CHF, CKD, Gallstones,	2 (0.86%)
CNF, Heart Disorder)*	8 (3.45%)
N/A	105 (45.26%)

* CAD (Coronary Artery Disease) ; HHD (Hipersensitive Hearts Disease) ; CHF (Congestive Heart Failure) ; CKD (Chronic Kidney Disease) ; CNF (Cutaneous Neuro Fibroma).

Antivirals Therapy in COVID-19

Antivirals are the main therapy for COVID-19 patients, but antibiotics are often given. The most used antiviral in this study was Favipiravir (49.56%). The results showed that for antiviral therapy in COVID-19 patients using Favipiravir, Remdesivir, and Oseltamivir. Research on antivirals in COVID-19 patients in other locations also shows that Favipiravir is the most used (18). However, quite several patients were not given antivirals (Table 5). Giving antivirals to COVID-19 patients takes into account the severity of the patient's condition.

A COVID-19 patient who was hospitalized at RSUD Dr. M. Yunus Bengkulu City, is a patient with a diagnosis of moderate to severe severity. Favipiravir and Redemsivir are more widely used as therapy in patients with critical severity, while Oseltamivir is mostly given to patients with moderate severity (Table 6). According to the COVID-19 management guidelines issued by various medical organizations in Indonesia, Favipiravir, and Redemsivir can be given to patients with moderate and severe degrees of severity (2).

Table 5. Antivirals used in COVID-19 patients (n=232)

Antiviral Drugs	n (%)
Favipiravir	115 (49.56%)
Remdesivir	46 (19.82%)
Oseltamivir	36 (15.51%)
Without Antiviral therapy	35 (15.08%)

Table 6. Antiviral therapy based on severity (n=232)

Severity	Antiviral n(%)			N/A Antiviral
	Favipiravir	Remdesivir	Oseltamivir	
Light	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Medium	14 (6.03%)	10 (4.31%)	5 (2.16%)	0 (0.00%)
Critical	42 (18.10%)	17 (7.33%)	1 (0.43%)	0 (0.00%)
N/A Severity	59 (25.43%)	18 (7.76%)	30 (12.93%)	35 (15.09%

Antibiotic Theraphy in COVID-19

The study results showed that the types of antibiotics most commonly used in COVID-19 patients were Azithromycin (53.02%) and Ceftriaxone (24.57%) which can be seen in Table 7. Other studies also found significant use of Azithromycin, up to 74.2%.[19] In accordance with the 2021 COVID-19 Management Protocol, the antibiotics used for treating COVID-19 patients with moderate to severe/critical symptoms are Ceftriaxone and Azithromycin.[2] At the start of the COVID-19 pandemic, the World Health Organization's recommended the use of empirical antibiotics in cases of COVID-19 pneumonia.[20]

The data from this study showed that Azithromycin was mostly given to cases of COVID-19 with critical severity (Table 8). However, the administration was also found in patients whose degree of disease severity was not written down. The management of COVID-19 states that antibiotic therapy is used as an alternative treatment if there are signs of bacterial infection or suspicion of co-infection with atypical microorganisms is Ceftriaxone with Azithromycin (2).

Table 7. Types of Antibiotics Used in COVID-19 Patients (n=232)

Antibiotic	n(%)
Azitromycin	123(53.02%)
Ceftriaxone	57(24.57%)
Cefixime	43(18.53%)
Levofloxacin	34(14.66%)
Ampicilin Sulbactam	9(3.88%)
Meropenem	6(2.59%)
Cefotaxime	1(0%)
N/A	23(9.91%)

Tabel 8. Antibiotic therapy based on severity (n=232)

Severity	Antibiotic n(%)							
	Azitromicin	Levofloxacin	Ceftriaxone	Meropenem	Cefixime	Ampicilin Sulbactam	Cefotaxime	N/A Antibiotic
Light	0 (0%)	0(0%)	0(0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Medium	13 (5.60%)	6 (2.59%)	14 (6.03%)	0 (0%)	3 (1.29%)	0 (0%)	0 (0%)	2 (0.86%)
Critical	37 (15.95%)	9 (3.88%)	22 (9.48%)	3 (1.29%)	15 (6.47%)	6 (2.59%)	0 (0%)	3 (1.29%)
N/A Severity	73 (31.47%)	19 (8.19%)	21 (9.05%)	3 (1.29%)	25 (10.78%)	3 (1.29%)	1 (0,43%)	18 (7.76%)

CONCLUSION

Antiviral therapy for COVID-19 patients in this study was Favipiravir, Remdesivir, and Oseltamivir. Favipiravir is the most widely used antiviral drug. Meanwhile, the most widely used antibiotic therapy for COVID-19 patients is Azithromycin.

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458

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