



EPIDEMIOLOGICAL AND CLINICAL FEATURES OF COVID-19 PATIENTS AT DATU BERU DISTRICT GENERAL HOSPITAL, ACEH, INDONESIA

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Abstract

Emergency hospitals aim to prevent community transmission of COVID 19 by isolating asymptomatic, mild, and moderately symptomatic patients. This study evaluated the clinical characteristics and outcomes of COVID 19 patients admitted to this facility. This retrospective study reviewed data from patients treated at the Datuberu District General Hospital in Takengon, Aceh, Indonesia, from June to September 2021. Oropharyngeal preparation) was compared between severity groups. 19 cases of COVID of 413 were analyzed, of which 190 (46%) were asymptomatic, 93 (22.5%) were mild, and 130 (31.5%) were moderate. Most asymptomatic cases were male, young and free of comorbidities. Mild cases were predominantly female and younger, while most moderate cases were male and older. The number of patients with comorbidities was high in mild and moderate cases.

Introduction

When the World Health Organization (WHO) declared a COVID 19 pandemic in early March 2020, the disease had already spread to many countries around the world, including Indonesia. Indonesia is a middle-income country and one of the countries with the lowest per capita health care costs in this category.¹ The COVID19 pandemic was expected to have the greatest impact on low- and middle-income countries (LMICs). The low socio-economic status of the population, characterized by overcrowded living conditions, restricted access to basic daily needs (eg food, clean water), and dependence on daily income, is a physical distance. And make the blockage almost impossible. In addition, caring for COVID 19 patients is a challenge, as the already limited medical capacity is quickly overwhelmed.

Confirmed COVID-19 was first reported in Indonesia on March 2, 2020;² since then, Indonesia became the first and ongoing epicenter. At the time of writing this manuscript, the number of positive cases exceeded 250,000, with 9,800 deaths, the highest in Southeast Asia.³ In the early stages of the pandemic, Indonesia faced difficult situations such as a shortage of personal protective equipment (PPE), medical supplies and diagnostic tools, unequal distribution of medical services, and lack of standardized national guidelines.^{4,5} This situation is complicated by insufficient / inconsistent public information from the government. One of the recommendations for dealing with the COVID 19 pandemic in a resource-constrained environment is to relocate public facilities to an emergency hospital.⁶ The emergency hospitals in Wuhan, China (such as Huoshenshan Hospital and Leishenshan Hospital) proved to approach disease containment successfully.⁸ The characteristics of patients in this kind of emergency hospital in LMICs settings are still largely unknown, especially during the early phase of the pandemic.

In this study, the clinical characteristics of COVID-19 patients treated in the hospital were evaluated.

Method

Study Design and Population

This retrospective study used data from all confirmed COVID-19 patients admitted to the Datu Beru District General Hospital, Takengon, Aceh, Indonesia, from June to September 2021. Patients were diagnosed according to the criteria of World Health Organization (WHO) interim guidance. Patients with complete data of clinical, radiological, basic laboratory results were included in the analysis. The laboratory-confirmed case was defined as a case with a positive result on real-time reverse transcription polymerase chain reaction (RT-PCR) for SARS-CoV-2 in either the nasal or pharyngeal swab specimens irrespective of the clinical signs and symptoms.



Data Collection

Data from all patients during the study period were extracted from paper-based medical records into an electronic database. Age was recorded as continuous data, but was divided into three groups. 019 years old, 2049 years old, 50 years old and over. Data on the presence of signs and symptoms and comorbidities were collected at admission. Recorded symptoms were cough, sputum production, fever, dyspnea, sore throat, rhinorrhea / runny nose, and anosmia. Comorbidities such as hypertension, diabetes, heart disease, asthma, and arthritis were recorded based on medical history. Peripheral blood tests were performed on admission and measured hemoglobin, lymphocytes, white blood cell differences, and platelets. Serological tests to detect IgG and IgM antibodies against severe acute respiratory syndrome coronavirus 2 (SARSCoV2) are performed using commercially available immunochromatography (ICT) tests and are reactive with IgG, IgM. , Or both. Chest x-ray (CXR) was used as a simple imaging test for all new cases in the facility and was reported as normal, elevated bronchial vascular markers, and consistent pneumonia. Real-time reverse transcriptase polymerase chain reaction (RTPCR) for SARSCoV2 detection performed on swab samples in the nose or throat at the Central Laboratory based on the WHO standard protocol. The RTPCR test was measured on days 1 or 2, 14, 14 and 15 as the end date of the isolation period. The

Cases were divided into three different clinical classifications based on sign, laboratory and radiological findings. H. Asymptomatic, mild and moderate. Asymptomatic cases are defined as having a positive SARSCoV2 RTPCR test but no symptoms with normal laboratory and CXR findings. Mild cases are positive SARSCoV2 RTPCRs with acute nonspecific upper respiratory tract symptoms but no evidence of pneumonia. Moderate cases are defined as positive SARSCoV2 RTPCR with clinical findings consistent with mild pneumonia, but patients do not require hospitalization and can still perform routine activities. This clinical classification of COVID19 was under the direction of the COVID19 guidelines of the Ministry of Health of the Republic of Indonesia. At that time, nationally recognized guidelines had not yet been established, so the clinical management of COVID 19 in the early stages of the pandemic was carried out by Indonesia in five local specialized institutions (5OP / 5 Organisasi Profesi), namely the Indonesian Respiratory Society. Was based on the consensus of the Indonesian Society of Internal Medicine, the Indonesian Cardiac Society, the Indonesian Anesthesiologist and Intensive Care Medicine Society, and the Indonesian Pediatric Society. Data on dosing and clinical outcomes during hospitalization were recorded.

Data Analysis

Patients' demographic information and clinical cha-

racteristics were tabulated based on clinical classification of the disease for descriptive purposes. Differences between asymptomatic, mild, and moderate cases of COVID-19 were evaluated and tested either using one-way ANOVA or Kruskal-Wallis for continuous variables and either using Pearson's Chisquare or Fisher's exact test for categorical variables, where appropriate. Statistical significance was considered to be a two-sided p-value <0.05. All analyses were performed using SPSS Version 25.0 for Mac (SPSS Inc., Chicago, IL, USA).

Result

Presenting Characteristics

There were 1,070 cases admitted early in the pandemic, with 828 cases classified as COVID-19 confirmed cases and 415 discarded COVID-19 based on WHO case definition. Of the total confirmed cases, 382 cases had no CXR, 17 cases with no lab test, and 16 cases had no clinical baseline data. Four hundred thirteen cases were included in the analysis with a complete data set, with 55.4% (229) male and 44.6% (184) female. The mean age was 39.9 years old, with the majority belonging to the productive-age group (20-49 age range). Older cases (>50 years) were more likely to be classified as moderate cases as compared to the younger groups. In general, the most common symptoms reported at onset were cough, followed by fever, dyspnea, sore throat, runny nose, and anosmia. Both in mild and moderate cases, the most common symptoms found were cough, fever, and dyspnea. The 10% of cases had pre-existing comorbidities, of which hypertension and diabetes were the commonest. Those without comorbidity were more likely to be in the asymptomatic group, as seen in Table 1.



Table 1. Clinical Characteristics of COVID-19 Patients Admitted to Datu Beru District General Hospital.

Characteristics	Total (n=413)	Clinical degree			p-value
		Asymptomatic (n=190)	Mild (n=93)	Moderate (n=130)	
Sex					0.03 ¹
Male	229 (55.4)	103 (54.2)	43 (46.2)	83 (63.8)	
Female	184 (44.6)	87 (45.8)	50 (53.8)	47 (36.2)	
Age (in years)	39.9 (14.2) ²	38.3 (14.7)	37.1 (11.5)	44.3 (14.1)	<0.001 ³
Age					<0.001 ¹
0-19 years	30 (7.3)	20 (10.5)	4 (4.3)	6 (4.6)	
20-49 years	267 (64.6)	122 (64.2)	75 (80.6)	70 (53.8)	
>50 years	116 (28.1)	48 (25.3)	14 (15.1)	54 (41.5)	
Symptoms					
Cough	93 (22.5)	0 (0.0)	61 (65.6)	32 (24.6)	<0.001 ⁴
Sputum production	15 (3.6)	0 (0.0)	13 (14.0)	2 (1.5)	<0.001 ⁴
Fever	59 (14.3)	0 (0.0)	39 (41.9)	20 (15.4)	<0.001 ⁴
Dyspnea	27 (6.5)	0 (0.0)	14 (15.1)	13 (10.0)	<0.001 ⁴
Sore throat	22 (5.3)	0 (0.0)	15 (16.1)	7 (5.4)	<0.001 ⁴
Cold/runny nose	20 (4.8)	0 (0.0)	10 (10.8)	10 (7.7)	<0.001 ⁴
Anosmia	6 (1.5)	0 (0.0)	5 (5.4)	1 (0.8)	0.002 ⁴
Pre-existing comorbidity					<0.001 ¹
Yes	43 (10.4)	7 (3.7)	18 (19.4)	18 (13.8)	
No	370 (89.6)	183 (96.3)	75 (80.6)	112 (86.2)	
Comorbidities					<0.001 ¹
None	370 (89.6)	183 (96.3)	75 (80.6)	112 (86.2)	
Hypertension	17 (4.1)	1 (0.5)	7 (7.5)	9 (6.9)	
Diabetes					
and Hypertension	4 (1.0)	2 (1.1)	0 (0.0)	2 (1.5)	
Diabetes	8 (1.9)	3 (1.6)	1 (1.1)	4 (3.1)	
Heart disease	3 (0.7)	0 (0.0)	2 (2.2)	1 (0.8)	
Asthma	2 (0.5)	0 (0.0)	2 (2.2)	0 (0.0)	
Arthritis	1 (0.2)	0 (0.0)	1 (1.1)	0 (0.0)	

Notes: Values are means with standard deviations for continuous variables and n (%) for frequencies. ¹Pearson Chi-square, ²The median with the interquartile range is presented, ³ANOVA, ⁴Fisher's Exact Test

Laboratory and Radiologic Findings

Abnormal laboratory findings, such as rapid reactive serological tests, increased NLRs and lymphopenia was commonly reported. Other notable laboratory findings were thrombocytopenia and leukopenia. However, as shown in Table 2, these laboratory findings did not differ based on the clinical classification. Normal x-ray findings were found in almost half of all initial chest x-rays, and all moderate cases had a CXR consistent with pneumonia. Elevated bronchial vascular markers were more frequent in mild cases than in asymptomatic cases.



Table 2. Laboratory and Radiologic Findings of COVID-19 Patients Admitted to Datu Beru District General Hospital.

Characteristics	Total (n=413)	Clinical degree			p value
		Asymptomatic (n=190)	Mild (n=93)	Moderate (n=130)	
Thrombocytopenia (<150000/uL)	7 (1.7)	2 (1.1)	1 (1.1)	4 (3.1)	0.39 ¹
Leucopenia (<4000/uL)	2 (0.5)	1 (0.5)	0 (0.0)	1 (1.1)	0.50 ¹
Lymphopenia (<20%)	45 (10.9)	17 (8.9)	9 (9.7)	19 (14.6)	0.25 ²
Increased NLR (>3.13)	76 (18.4)	31 (16.3)	15 (16.1)	30 (23.1)	0.25 ²
Reactive rapid serology test	202 (48.9)	89 (46.8)	44 (47.3)	69 (53.1)	0.782
Chest X-ray Consistent with Pneumonia	130 (31.5)	0 (0.0)	0 (0.0)	130 (100)	<0.001 ¹
Increased broncho vascular markings	110 (26.6)	71 (37.4)	39 (41.9)	0	0
Normal	173 (41.9)	119 (62.6)	54 (58.1)	0	0

Notes: Values are n (%) for frequencies, ¹Fisher's Exact Test, ²Pearson Chi-square

Discussion

Confirmed COVID-19 Case Proportion

There were 828 confirmed cases of COVID-19 from a total of 1070 suspected cases admitted to the national emergency hospital during the early phase of the pandemic. A confirmed case is based on the WHO COVID case definition, of which positive SARS-CoV-2 RT-PCR must be detected from nasopharyngeal/oropharyngeal swab.¹¹ The number of cases not included in the analysis was 415 cases due to incomplete data collection. During the early phase of the pandemic in this emergency hospital, the data management of all patients was based mainly on manual/paper-based records since the paperless system was still in preparation and most health care providers were volunteers.

Additionally, 413 with a complete data set were analyzed. Clinical classification presenting in this study mainly was asymptomatic cases (46%), followed by moderate and mild cases, respectively. The high proportion of asymptomatic COVID-19 confirmed cases might be due to the nature of this national facility that intended to take care of asymptomatic, mild, and moderate cases. A study by Young et al., Michelen et al., Zhao et al. conducted in general hospitals in each country showed about 60-80% of cases reported asymptomatic to the mild clinical condition.¹¹⁻¹³ Another study in an emergency hospital setting showed a different clinical condition proportion in which asymptomatic cases were less than 10%.^{11,13}

General Characteristic of the Confirmed Case

In this study, the confirmed prevalence of cases in men was about 1.24 times higher than in women. This result was consistent with two other previous studies that showed higher prevalence in the male population.^{12,14} Almost 92% of the cases were younger than 60 years old with a mean age of 39,94±14,17 years old. This characteristic was slightly different from what Ma et al. reported in their studies where the median age of 49.8 years old.¹⁴ In that study, severe cases were also included. Age as a predicting factor of COVID-19 severity was also reported (≥ 50 years old).¹⁴ This was consistent with the fact that younger people tended to have a stronger immune response and less infection than older people.¹⁵ Therefore, is it likely that most asymptomatic covid confirmed cases were relatively younger.^{12,14,16} This study showed that almost 90% of cases had no known comorbidity. Of the patients with comorbidities, hypertension and diabetes were the most common. This characteristic is consistent with a systematic review by Ma et al., which indicates cerebrovascular disease, hypertension, and diabetes, was the most common comorbidity of COVID19, with rates of 6.75%, 4.48%, and 4.43%.¹⁴

Clinical, Imaging, and Laboratory Characteristics of Confirmed Cases

In this study, the most common symptoms were cough and fever in approximately 22.5% and 14.3%, respectively, followed by dyspnea, sore throat, and cold, respectively. Noor et al. Nearly 80% of cases had respiratory symptoms and reported that cough and fever were the most common.¹⁷ Another systematic review reported gastrointestinal and neurologic symptoms following respiratory symptoms.¹⁴ The differences between studies might be affected by country demography, population subjectivity, and subject honesty in each study setting.



This study did not record other gastrointestinal and neurological symptoms because it was based on early manual medical records limited to basic main symptoms.

Chest x-rays showed that about 40% of cases had a normal explanation and 30% of all moderate cases were consistent with pneumonia. Study by Ma et al. Reported 33% of abnormal imaging findings of infiltration and crepitus based on CT scans.¹⁴ High-resolution CT scan of the chest was not possible in these facilities. Therefore CXR was conducted as a simple and affordable imaging modality. This study showed that CXR could be used as a baseline imaging in resource-limited settings. It was found that the reactive result of rapid serology test only in 50% of confirmed cases. This finding then led to differences in previous studies results reporting rapid serology test sensitivity, about 62.2%-83.8% for asymptomatic and symptomatic cases.^{18,19} Differences between results might be affected by the examination method as well as the sensitivity and specificity of the examination tools in each study.

Routine laboratory tests in this study were mainly within normal limits. About 20% of cases with abnormal findings included lymphopenia, leucopenia, and thrombocytopenia. This finding was in line with other studies.^{11,12,14,20} Interestingly, an NLR value of more than 3.13 was also found in asymptomatic and mild clinical degree cases. Contrary to recent study findings, which reported that NLR value >3.13 could be used as a reliable indicator of severe COVID-19.²¹ The different results found might be related to the variability of country demography, clinical degree, and/or individual systemic immune response used in each study.

This study found no significant association between clinical status and the aforementioned laboratory findings. Previous systematic reviews reported thrombocytopenia, lymphopenia, and increased dimer as poor prognostic factors.¹³ However, most cases were asymptomatic and mild, so this study could not be completed. Lymphocytopenia and elevated NLRs were not statistically significant, but appeared to be higher in moderate than in asymptomatic and mild cases. Another study also reported lymphopenia (8.1%) and thrombocytopenia (2.7%) in asymptomatic cases.¹⁸ What might be interesting is that the proportion of lymphopenia and thrombocytopenia in asymptomatic case reporting was 37.8% and 28.6%, respectively, higher than previously reported. Innate and adaptive immunity in this study population might differ in response to SARS-CoV-2, especially in asymptomatic and mild cases. Further study is needed to delineate this assumption.

Conclusion

Although the clinical features of mild and asymptomatic cases were similar, moderate cases with signs of pneumonia are common in this study. Cases confirmed with asymptomatic, mild and moderate COVID 19 were predominantly cured. Only a small percentage developed serious, progressive illnesses that required further hospitalization. COVID emergency care for mild / asymptomatic / moderate cases required monitoring the progression of the patient's illness and stopping community infections in a resource-constrained environment. Even moderate clinical conditions with signs of pneumonia can be safely treated / monitored in emergency hospitals, despite many challenges. Further research should be aimed at improving the quality of care during a pandemic and optimizing the role of acute care hospitals.

References

1. World Health Organization. Current health expenditure per capita (current US\$); 2020 [cited 2020 Sep 21].
2. Coronavirus Disease 2019 (COVID-19) situation report-1; 2020.
3. Worldometer COVID-19 coronavirus pandemic; 2020 [cited 2020 Sep 22].
4. Pinandita A (The JP. COVID-19: Indonesia calls for global cooperation to overcome medical supply shortage; 2020.
5. Ghalia G, Arbi IA. Shortage of PPE, medical workers hindering COVID-19 fight, says Terawan. The Jakarta Post; 2020
6. Kementerian Komunikasi dan Informatika Republik Indonesia. Miliki kapasitas 24 ribu orang, Presiden cek kesiapan
7. Wisma Atlet tampung pasien COVID-19; 2020 [cited 2020 Sep 22]. 7. Chen S, Zhang Z, Yang J, Wang J, Zhai X, Bärnighausen T, et al. Fangcang shelter hospitals: a novel concept for responding to public health emergencies. *The Lancet*. 2020;395(10232):1305–14.



8. Cai Y, Huang T, Xu G. The effects of “Fangcang, Huoshenshan, and Leishenshan” hospitals and environmental factors on the mortality of COVID-19. *PeerJ*. 2020;21(8):e9578.
9. Kementerian Kesehatan Republik Indonesia. Pedoman pencegahan dan pengendalian coronavirus disease (COVID-19); 2020
10. Burhan E, Susanto A, Nasution S, Ginanjar E, Pitoyo C, Susilo A, et al. Protokol tata laksana COVID-19. 3rd edition. Jakarta: PDPI, PERKI, PAPDI, PERDATIN, AIDAI press; 2020.
11. Zhao W, Yu S, Zha X, Wang N, Pang Q, Li D, et al. Clinical characteristics and durations of hospitalized patients with COVID-19 in Beijing: a retrospective cohort study. *medRxiv*; 2020.
12. Tian S, Hu N, Lou J, Chen K, Kang X, Xiang Z, et al. Characteristics of COVID-19 infection in Beijing. *Journal of Infection*. 2020;80(4):401–6
13. Michelen M, Jones N, Stavropoulou C. In patients of COVID-19, what are the symptoms and clinical features of mild and moderate cases?; 2020 [cited 2020 Sep 12]
14. Ma C, Gu J, Hou P, Zhang L, Bai Y, Guo Z, et al. Incidence, clinical characteristics and prognostic factor of patients with COVID-19: a systematic review and meta-analysis. *medRxiv*; 2020.
15. Swann O, Holden K, Turtle L, Pollock L, Fairfield C, Drake T, et al. Clinical characteristics of children and young people admitted to hospital with covid-19 in United Kingdom: prospective multicentre observational cohort study. *BMJ*. 2020;(370):m3249.
16. Tian S, Hu N, Lou J, Chen K, Kang X, Xiang Z, et al. Characteristics of COVID-19 infection in Beijing. *Journal of Infection*. 2020;80(4):401–6.
17. Noor F, Islam M. Prevalence of clinical manifestations and comorbidities of coronavirus (COVID-19) infection: a meta-analysis. *Fortune Journal of Health Sciences*. 2020;55–97
18. Long Q-X, Tang X-J, Shi Q-L, Li Q, Deng H-J, Yuan J, et al. Clinical and immunological assessment of asymptomatic SARS-CoV-2 infections. *Nature Medicine*. 2020;26:1200–4.
19. Wang X, Guo X, Xin Q, Pan Y, Hu Y, Li J, et al. Neutralizing antibody responses to severe acute respiratory syndrome coronavirus 2 in coronavirus disease 2019 inpatients and convalescent patients. *Clinical Infectious Diseases*. 2019;(71):2688–94.
20. Fu L, Wang B, Yuan T, Chen X, Ao Y, Fitzpatrick T, et al. Clinical characteristics of coronavirus disease 2019 (COVID-19) in China: A systematic review and meta-analysis. *Journal of Infection*. 2020;(80):656–65.