



Experience in handling COVID-19 patients in remote areas and limited resources

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Coronavirus-19 (COVID-19) has been declared a world pandemic by WHO. District hospital had several challenges to manage this disease. The limited capacity of existing inpatient rooms, limited medical personnel, no intensive care settings, limited isolation rooms, incomplete laboratory equipment, and no radiology services available make the disease management become challenging. The following reported a case of a COVID-19 patient who was treated in limited facilities. A 49-year-old male patient presented with complaints of breathlessness. The shortness of breath occurring since six days before hospital admission. Shortness of breath comes slowly, got worse with activity, and relieved with rest. High fever was felt since six days before admission to hospital. The cough also found with whitish sputum. The patient's lips turned to be bluish. Patient also felt pain in throat. Rapid COVID-19 test found reactive on IgM. From the COVID-19 Early Warning Score (COVID-19 EWS), the score was 13. The initial diagnosis was pneumonia, with suspicion of COVID-19. Polymerase chain reaction (PCR) swab examination was undergone. In the fourth day of treatment, the result of the swab was positive. Patients diagnosed with COVID-19, by confirmation of PCR. Patients are given fluid therapy, oxygenation, broad-spectrum antibiotics, and antipyretics for 5 days. After fourteen days, the swab test was repeated and the results were negative. The patient was discharged in a good condition. This case report illustrated that the handling of COVID-19 case could be done in limited facilities and infrastructure.

Keywords: COVID-19, Oksibil, Limited Resources, Remote

Coronavirus-19 (COVID-19) saat ini adalah pandemi berdasarkan *World Health Organization* (WHO). Rumah sakit tingkat daerah memiliki beberapa tantangan untuk menangani penyakit ini. Terbatasnya kapasitas ruang rawat inap yang ada, tenaga medis yang terbatas, tidak adanya perawatan intensif, ruang isolasi yang terbatas, peralatan laboratorium yang tidak lengkap, dan tidak tersedia layanan radiologi membuat penanganan penyakit menjadi tidak mudah. Berikut ini dilaporkan kasus pasien COVID-19 yang dirawat di fasilitas kesehatan yang terbatas. Seorang pasien laki-laki berusia 49 tahun datang dengan keluhan sesak napas. Sesak napas terjadi sejak enam hari sebelum masuk rumah sakit. Sesak napas datang secara perlahan, memburuk dengan aktivitas, dan membaik dengan istirahat. Demam tinggi dirasakan sejak enam hari sebelum masuk rumah sakit. Batuk juga ditemukan dengan dahak keputihan. Bibir pasien berubah menjadi kebiruan. Pasien juga merasakan sakit di tenggorokan. Tes *rapid COVID-19* ditemukan reaktif pada IgM. *Early Warning Score* COVID-19 (COVID-19 EWS) didapatkan skor dengan total 13. Diagnosis awal adalah pneumonia, dengan dugaan COVID-19. Dilakukan pemeriksaan usap *polymerase chain reaction* (PCR). Pada pengobatan hari keempat, didapatkan hasil usapan positif. Pasien terdiagnosis COVID-19, dengan konfirmasi PCR. Pasien diberikan terapi cairan, oksigenasi, antibiotik spektrum luas, dan antipiretik selama lima hari. Setelah empat belas hari, tes usap diulang dan didapatkan hasil negatif. Pasien dipulangkan dalam kondisi baik. Laporan kasus ini memberikan pandangan mengenai penanganan kasus COVID-19 dapat dilakukan di sarana dan prasarana yang terbatas.

Kata kunci: COVID-19, Oksibil, sumber daya terbatas, daerah terpencil.

BACKGROUND

Coronavirus-19 (COVID-19) has been declared a world pandemic by WHO.¹ Coronaviruses are zoonoses or known as viruses that are transmitted between animals and humans.² This virus and disease are known to have started in Wuhan City, China since December 2019.³

The COVID-19 pandemic has spread in many lower middle income countries.⁴ Under normal circumstances, these countries also faced serious health problems with limited facilities, resources and access.⁵ This will be even worse when the current pandemic occurs.⁶ More than 69% of the world's population aged 60 years or over are living in developing countries. These elderly people have a high risk of death from

COVID-19.⁷

Developing countries have limited resources of money and time to update their technology, including rapid test kits, antivirals, other related drugs, and vaccines. Medical personnel must continue to work during a pandemic despite all the limitations that exist.⁸

RSUD Oksibil is the only hospital in Oksibil, Pegunungan Bintang district, Papua Province. Oksibil is located in a valley area with cold weather every day, can be reached by pioneer plane for 45 minutes from Jayapura City. There is no land route to go to the provincial capital or to some of the existing districts. All access can only be reached by plane. This hospital is an improvement from the existing puskesmas and has only been established for the last 5 years. The capacity of all existing inpatient rooms is only for a maximum of 50 beds, limited medical personnel, no ICU or HCU, limited isolation rooms for four patients, incomplete laboratory equipment, and no radiology services available.

The following will report a case of a COVID-19 patient who was treated at the Oksibil Hospital during this pandemic. This article provide insight that the handling of COVID-19 patients in the limited setting and remote area could also be done, with the aim of patient recovery.

CASE ILLUSTRATION

A 49-year-old male patient presented with complaints of breathlessness. The shortness of breath occurring since six days before hospital admission. Shortness of breath comes slowly, got worse with activity, and relieved with rest. High fever was felt since six days before admission to hospital. The cough is also found with whitish sputum. The patient's lips turned to be bluish. Throat pain is also felt.

Previous history of serious illness in this patient was denied. The patient had no history of asthma, allergies, TB, HIV, hepatitis, syphilis, or malaria. The patient only has a history of stomach ulcers and only takes medication if complaints arised. Previously, 25 days ago the patient had traveled to Jayapura, which is the red zone, to visit his family.

From physical examination, the patient GCS was E4V5M6. The blood pressure was 120/80 mmHg, pulse rate 102 times/minute, regular, respiration rate 30 times/minute, axillary temperature 38.6°C, SpO₂ 92%. Lung auscultation obtained crackles in the right lung. Laboratory tests obtained WBC 21.97x10³/μL, neutrophils 11.16 x10³/μL, Lymphocytes 0.83 x10³/μL, Hb 11.91 g/dL, Platelets 203.70x10³/μL. Examination of ALT, AST, BUN, and creatinine not available in the laboratory. Random blood sugar was 122 mg/dL. Sodium, potassium, and chloride electrolytes were absent. Laboratory examination of AGD also not available. ECG could not be done because the tool was not properly worked. Chest X-ray was not performed for the radiological installations still



Figure 1. A). The COVID-19 isolation room and B). Patient room in COVID-19 isolation room at Oksibil Hospital.

not yet functioning. For rapid COVID-19 test, the patient was reactive for IgM. From the COVID-19 Early Warning Score (COVID-19 EWS), the patient was 13. The initial diagnosis was pneumonia, with suspicion of COVID-19. Polymerase chain reaction (PCR) swab examination was performed. Patient was given therapy of NaCl 0.9% infusion for 20 drip per minute, oxygen simple mask 6 liter per minute, levofloxacin 1x750 mg intravenous (IV), oral paracetamol 3x500 mg, omeprazole 1x40 mg IV, vitamin C 3x500 mg oral, ambroxol 3x30 mg oral. The patient admitted in isolation room (Figure 1).

On the first day of treatment, the patient level of consciousness was E4V5M6, complaints of breathlessness decreased, blood pressure 120/80 mmHg, pulse rate 100 times/minute, respiratory rate 24 times/minute, oxygen saturation 97% with simple mask. The patient complained about abdominal pain and nausea. Additional therapy of sucralfate 3x15 ml and ondancetron 3x4 mg IV if necessary were given. On the second day of treatment, the pulse rate and respiratory rate got better. The oxygen saturation was 96% with 2 liter per minute on oxygen nasal. Other complaints do not exist. Therapy was continued. On the third day of treatment, patient had complaint of breathlessness, oxygen saturation was 95% without any additional oxygen therapy. Therapy was resumed as previous. The patient waited for the swab result and remained in the isolation room. The fourth day of treatment the result of the swab was positive and the patient was still treated until the fifth day of treatment. The patient was in stable condition, the complaints improved. The patient then transferred to an independent isolation area provided by the government. After fourteen days, the swab test was repeated and the results were negative.

DISCUSSION

The clinical features of SARS-CoV-2 or COVID-19 were similar to SARS such as fever, myalgia, dry cough, shortness of breath, fatigue, and radiological evidence on chest X-ray / CT Scan without contrast showed a ground



glass opacity (GGO) imaging with atypical pneumonia consolidation.^{6,9} The incubation period for COVID-19 is estimated to be within 14 days after exposure, with most cases occurring around four to five days after exposure.⁹ A high suspicion of being infected with COVID-19 needs to be considered in all patients who present with fever and / or acute respiratory distress and who live or have a history of traveling to areas with local transmission or close contact with suspected sufferers or confirmed cases within 14 days before symptoms appear.¹⁰ Pneumonia appears to be the most serious manifestation of infection, characterized primarily by fever, cough, shortness of breath, and bilateral infiltrates on chest imaging.¹¹ The most common laboratory abnormalities in hospitalized patients with pneumonia include leucopenia, lymphopenia, and leucocytosis. Other findings are including neutrophilia, thrombocytopenia, and decreased hemoglobin.¹² At present, there is no evidence that there is a potential therapy that can improve clinical outcome of treatment from randomized clinical trials in both suspected and confirmed cases of COVID-19.^{13,14}

The problem that exists at Oksibil Hospital at this time is the absence of a special isolation room for COVID-19 patients. The room does not have negative pressure nor central oxygen. Limited facilities and infrastructures made it very challenging during this pandemic.

Limited tools for screening and diagnosis are also obstacles in patients' management. Rapid tests are limited and most hospital unable to perform PCR swabs independently. To do the swab, a team from the Jayapura health laboratory was brought in. Deliveries were using pioneer aircraft the following day. The fastest results were obtained 7 days later.

Not all available special drugs for handling severe pneumonia cases and confirmed COVID-19 are available according to existing recommendations. Intensive care wards such as HCU and ICU are also not yet available. The availability of adequate personal protective equipment (PPE) is also limited. Surgical masks and google are rarely available. The N95 is also not available in sufficient quantities. Washing hands is a challenge in itself when it not raining for a long time. This is because the availability of water only comes from rainwater. Not all rooms have PPE. PPE is generally only available in isolation rooms, COVID out-patient clinic, and emergency room. Other rooms are not having adequate PPE.

The process of referring patients with severe pneumonia to Jayapura is also difficult. Apart from the absence of ground access, the pilot airlines were unwilling to transport patients with positive reactive results or severe pneumonia leading to COVID-19.

The patients are given therapy according to the availability of existing drugs. The medicines used specifically

for COVID-19 cannot be delivered from Jayapura because Oksibil Hospital is not a referral center hospital for COVID-19. Antivirus also not available. Antibiotics used are from the quinolone group. Azithromycin and chloroquine unable to be used since not available. A damaged ECG device makes evaluation of the two drugs difficult. Anticoagulant drugs are also not given because they are not available. The patients then are given supportive therapy and in accordance with the symptoms that arise.

The following will describe all the limitations and challenges for treatment during a pandemic in remote areas. The resource limitation include infrastructure, monitoring/testing treatment, PPE, personnel, information, and transport. The problem in infrastructure is limited number of isolation beds (with no negative pressure room) for suspected and confirmed COVID-19 patients. The other are limited number of test labs/sites and lack of sufficient mobile test sites. In the treatment setting, no ICU ventilators, insufficient oxygen supply, and insufficient medications. The PPE and availability for staff also limited. Misleading information also become a challenge. The transport only limited to air transport.

With all the existing limitations, health workers are expected to provide the best service for the patient's recovery and to keep ourselves healthy. Inter-sectoral cooperation is needed so that the health services provided can run optimally.

SUMMARY

The current case described a 49-year-old male patient breathlessness. The patient was diagnosed with COVID-19, confirmed by PCR. Patients were given fluid therapy, oxygenation, broad-spectrum antibiotics, antipyretics for 5 days. The PCR test result was negative for COVID-19. The patient was discharged in good condition. This case report illustrates that the handling of COVID-19 cases in areas with limited facilities and infrastructure could also be done.

CONFLICT OF INTEREST

There is no competing interest regarding the manuscript.

ETHICS CONSIDERATION

This case report has obtained informed consent from the patient as well as the following COPE for publication ethics guidelines.

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AUTHOR CONTRIBUTIONS

Author contribute to the study from selecting a case, evaluating the laboratory results until interpreting the case study through publication.

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