CASE REPORT

Bronchial Asthma, Hypertension and COVID-19: A Case Report

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ABSTRACT

Bronchial asthma is mentioned as a factor that worsens the condition of COVID-19 and vice versa. Hypertension is also comorbid that aggravates SARS-COV-2 infection. The aim of this case report is to present that bronchial asthma and hypertension may not worsen COVID-19 patients. We report a woman, 53 years old, positive swab RT-PCR result, comorbid uncontrolled hypertension, and partially controlled asthma. During treatment, there is anxiety, but bronchial asthma and hypertension can be controlled. Some of the drugs administered include antiviral favipiravir, systemic steroids, anti-IL-6 (tocilizumab), antihypertensives, bronchodilator inhalers, anti-anxiety, plasma convalescence, anticoagulants, vitamins, and other anti-oxidants. Multidisciplinary management accelerates the improvement of the patient's condition. Good bronchial asthma and hypertension management will control the patient's condition and will not cause worsening during treatment due to COVID-19. Bronchial asthma and hypertension may not worsen COVID-19 if the therapy of COVID-19 and all comorbid can be controlled.

Keywords: Asthma, Hypertension, COVID-19, Anxiety, Infection Disease

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INTRODUCTION

The spread of COVID-19 is considered very fast and globally, so the WHO declared a pandemic status. This rapid spread is possible because Severe Acute Respiratory Syndrome Corona virus-2 (SARS CoV-2) is transmitted human to human through droplets and causes COVID-19. In globalization, human mobilization is very high, in line with transportation and communication advancement. These conditions have had an impact on the spread of COVID-19 (1). Individual responses to exposure to SARS CoV-2 were not always the same. Some are exposed but not sick, or just subclinical; some become sick with mild, moderate, severe, critical, even some are fatal.

Various factors influence the course of exposure to SARS CoV-2. Comorbidity is a condition that needs to be watched out for and anticipated in the era of the COVID-19 pandemic. The following are some of the factors that make it easier to become infected with SARS-COV2, namely bronchial asthma, hypertension, elderly, diabetes mellitus, malignancy, chronic liver disease, chronic renal failure, HIV, undergoing chemotherapy treatment, taking immunosuppressant drugs. The facts in the field are that some individuals with comorbidity have become fatal targets of SARS CoV-2. Asthma bronchial and COVID-19 have the same target organ, namely the lungs, so; naturally, people with bronchial asthma are predicted to be potentially fatal if COVID-19 attacks them. If not appropriately managed, hypertension will also impact the heart and indirectly even on the lungs through pulmonary edema if the heart is affected due to hypertension. COVID-19 is one of the manifestations of infection, and it can increase the metabolism and catabolism of exposed individuals. This situation can aggravate hypertension and heart disease. Are asthma, bronchial, and hypertension always worsening COVID-19 infection? Following are reported cases of people with asthma, bronchial, and hypertension who were attacked by COVID-19 (2,3). This case report aims to present that bronchial asthma and hypertension may not worsen COVID-19 patients.

CASE REPORT

Mrs. RIN. A woman, 53 years old, was admitted to the Universitas Airlangga hospital on December 25, 2020. Discharged from the hospital on January 7, 2021. The patient has agreed to be reported in the scientific case report.

History: The main complaint is body weak. Weakness felt during the last two days. Apart from weakness, there are also stomach aches, nausea, decreased appetite, cough with phlegm, and difficulty sleeping. Previous medical history, suffering from asthma for two months

and hypertension, taking regular medication.

On physical examination: Looks very sick, GCS 456, shortness of breath. Blood pressure 156/123 mmHg, pulse 114 times per minute, temperature 36.3 degrees Celsius, frequency of breath 22 times per minute Spo2 97%. Head: Looks worried. Chest: Heart: no murmur, regular rhythm. Lungs: there is a sign of consolidation of the right and left lungs, no wheezing. Abdomen: within normal limits.

Results of laboratory tests using hematology analyzer Sysmex NX-550: Hemoglobin 15,1 g / dl; leukocytes 6,170; platelets 251,000. SGOT 65 IU/L; SGPT 88 IU/L; BUN 15,4 mg/dL; Serum Creatinine 1,14 mg/dL; Albumin 3,70 g/dL; Potassium 3,9 mmol/L; Sodium 133 mmol/L; C-Reactive Protein 14,35 mg / L; Procalcitonin <0,05 ng / ml; Ferritin 1336 (30-400 ng / mL); Interleukin-6 33,63 ng / L (<7); D-dimer: 0,52 ug / ml. PCR COVID-19 Positive with Gene E 24,42; RdRp 25,44; N 21,54. Blood Gas Analysis: PH 7,431; PO2 74,6; PC02 33,0; SpO2 95,2%; HCO3 21,4. BE -2,0.

Radiological examination: X-ray: The heart did not appear abnormal. There is pneumonia right-left—Thorax CT scan: Pneumonia COVID-19 severity classification 2 (Figure 1).

Diagnosis: COVID-19 confirm plus Bronchial Asthma, Hypertension, and Anxiety. The treatment is carried out by a team of Internist, Pulmonologist, Psychiatrist, Clinical Microbiologist, Clinical Pathologist, Intensivist, and Cardiologist and supported by Robot Raisa.

Management: Infusion of futrolit: normal saline = 1: 1 (14 drops per minute). TKTP 2100 calories. Favipiravir loading dose 1600 mg / 12 hours / oral the first day, and then 2x 600 mg (days 2-5). Paracetamol 4x 500 mg if necessary. Ondansetron 3x4 mg. Dexamethasone injection at a dose of 6 mg / 24 hours for ten days. Acetylcysteine 5000 mg / 24 hours. Immunomodulator orally 2x1. Multivitamin orally 2x1. Vitamin C injection 1x1 gram during treatment. Vitamin D orally 2x 1000 international unit. Convalescen plasma therapy 2x 200 ml. Tocilizumab: 1x 400 mg. codeine 20 mg every 8 hours. Azithromycin 1x500 mg for five days. Metoclopramide 3x1 tablet. Fluoxetine 1x20 mg; lorazepam 1x1 mg. Amlodipine 1x 5 mg, Candesartan 1x 8 mg, injection fondaparinux 1x 2,5 mg subcutaneously, Heparin 2x 5000 units subcutaneously, Budesonide and Formoterol Fumarate inhaler 3x1puff.

DISCUSSION

Individuals exposed to the Severe Acute Respiratory Corona Virus-2 (SARS CoV-2) virus have different responses. Variations in the degree of illness to be mild, moderate, severe, critical, or even fatal. But most of them had no symptoms and recovered healthy again. Asthma bronchial is a disease with an allergic background in which the affected organ is the lungs. SARS CoV-2 transmission takes place quickly from human to human through droplets when coughing, sneezing. After a temporary transit in the upper airway through the Angiotensin-Converting Enzyme-2 (ACE-2) receptor, the virus moves to the lower airway. Alveoli replicate and produce cytokines: proinflammatory cytokines that are overproduced and secreted cause cytokine storms (1). In COVID-19, one of the main affected organs is the lungs. At first, individuals who had asthma bronchial were terrified of COVID-19. This is natural because asthma attacks mainly on the lungs, and COVID-19 also causes abnormalities in the lungs. However, several research results show that individuals who have asthma bronchial

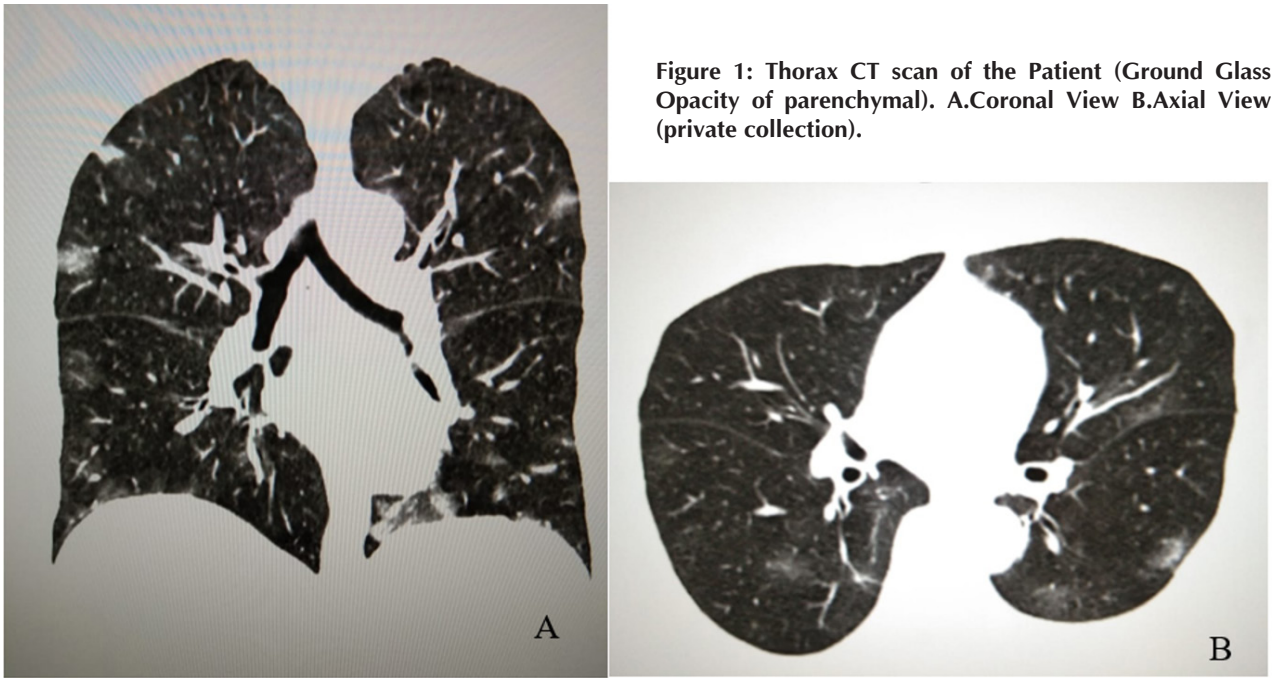

Figure 1: Thorax CT scan of the Patient (Ground Glass Opacity of parenchymal). A.Coronal View B.Axial View (private collection).

do not have more COVID-19 disease than individuals who do not have a background in bronchial asthma. About 37,469 subjects tested with the coronavirus test, 2,266 of whom tested positive for the coronavirus in China. Asthma disease was found in 153 patients or 6.75%, although it is said that further research is needed to prove this (4).

Regarding the potential for mortality, if COVID-19 attacks people with asthma bronchial, the mortality is not higher than those without bronchial asthma. The latest study written involved 153 asthma patients, only 6.75% were infected with COVID-19. People living with asthma have a lower risk of contracting COVID-19. The results also showed that people with asthma who were infected with corona had a lower risk of being hospitalized and needed a ventilator than COVID-19 patients who did not have asthma. Other research submitted by the American Academy of Allergy, Asthma & Immunology notes that those with asthma in the 18-49-year-old age range may be at increased risk of hospitalization owing to COVID-19 (4).

The risk of death from the coronavirus in asthma patients is also lower. Researchers at the Healthcare system in Boston studied 562 asthma and COVID-19 patients and 2,686 patients infected with the coronavirus without suffering from asthma. Both groups do require the same hospital care. However, 70% of people with asthma have experienced fewer deaths from the coronavirus. No Patients with severe asthma died from COVID-19. In this reported case, there was initially excessive concern because he had a background in asthma bronchial, contracting COVID-19 after attending an event that involved a large crowd of people. Concern that COVID-19 will aggravate asthma attacks. To anticipate this, immediately form a team that involves several disciplines, including internists, pulmonologists, and psychiatrists, to reduce anxiety fluctuations and the disease's worsening. Anti-anxiety drug support, psychological support, disease management explanations, and integrated and comprehensive COVID-19 therapy simultaneously succeeded in putting the patient in a physically and psychologically stable position. During hospitalization, there was no asthma attack (5).

The patient also suffered from long-term hypertension by taking the medication regularly. Hypertension is one of the COVID-19 comorbidities that can encourage the movement of COVID-19 to heavier degrees (4). Cardiologists are involved in managing these patients so that while in the hospital, the condition of blood pressure, pulse rhythm, and heart performance is maintained. On the 14th day of management at the hospital, the situation was getting better, complaints and symptoms related to COVID-19 disappeared, no asthma attacks occurred, blood pressure and heart were maintained, various laboratory parameters, radiology indicated improvement, the patient was allowed outpatient care.

CONCLUSION

Individual responses when exposed to SARS CoV-2 differed. Some experienced mild, moderate, severe, critical illness and some even died. But most remain asymptomatic and recover. Early literature states that it is feared that patients with asthma bronchial and COVID-19 will worsen both. This is because both diseases affect the same organ, namely the lungs. In this patient, this tense situation can be avoided. Hypertension as a comorbid that is worrying for COVID-19 has not always been proven to be burdensome to the degree of COVID-19. However, people with asthma, bronchial, and hypertension should always be well anticipated if COVID-19 attacks them. Asthma and hypertension sufferers are still advised to avoid the coronavirus spread not to become infected. Limit activities that involve many people using masks in the right way wash your hands diligently, and keep your body healthy by exercising and consuming nutritious foods (2,3,5).

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REFERENCES

1. Ejaz H, Alsrhani A, Zafar A, Javed H, Junaid K, Abdalla AE, et al. COVID-19 and comorbidities: Deleterious impact on infected patients. J Infect Public Health. 2020 Dec;13(12):1833–9.
2. Abrams EM, Szefler SJ. Managing Asthma during Coronavirus Disease-2019: An Example for Other Chronic Conditions in Children and Adolescents. J Pediatr [Internet]. 2020 Jul;222:221–6. Available from: https://doi.org/10.1016/j.jpeds.2020.04.049
3. Schiffrin EL, Flack JM, Ito S, Muntner P, Webb RC. Hypertension and COVID-19. Am J Hypertens [Internet]. 2020 Apr 29;33(5):373–4. Available from: https://academic.oup.com/ajh/article/33/5/373/5816609
4. American Academy of Allergy Asthma & Immunology. An Update on COVID-19 for the Practicing Allergist/immunologist [Internet]. https://education.aaaai.org/. 2021. p. 1. Available from: https://education.aaaai.org/resources-for-a-i-clinicians/Update-for-AI_COVID-19
5. Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. Qjm. 2020;113(8):229–35.