CHEST IMAGING FOR EARLY DIAGNOSIS OF COVID-19 ON A PATIENT WITHOUT RESPIRATORY SYMPTOMS: A CASE REPORT

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ABSTRACT

Background: The Coronavirus 2019 disease (COVID-19) is transmitted through droplet and aerosol from the respiratory tract of an infected person; and fomites from infected linen and surface. On August 1, 2020, in Yogyakarta, there were 741 confirmed positive cases of COVID-19, and it is still possible to increase. In the time of understanding COVID-19, there are many cases with atypical presentation, including gastrointestinal symptoms.

Objective: To describe a COVID-19 case without respiratory symptoms and the role of radiology in detecting COVID-19.

Case Description: A 55-year-old male patient came to the hospital complaining of nausea and loss of appetite. Based on the results of the physical examination, there was flatulence. Initial investigations revealed a non-reactive SARS CoV 2 IgG and IgM result. Further non-contrast MSCT Thorax showed infiltrates with bilateral sub-pleural posterolateral consolidation, particularly the left, showing typical pneumonia. Multiple blebs were also found, denoting bronchiectasis. Confirmatory RT-PCR result was positive for SARS CoV 2.

Conclusion: COVID-19 usually presents with common respiratory symptoms. However, some patients also experience gastrointestinal symptoms that initially were not detected as COVID-19. In time of COVID-19 pandemic, persistent gastrointestinal symptoms in a high-risk patients warrant further chest imaging and RT-PCR of SARS CoV-2 to detect or exclude the possibility of COVID-19 diagnosis.

Keywords: COVID-19, Digestive Signs and Symptoms, X-ray Computed Tomography, Electrochemical Techniques, Reverse Transcriptase Polymerase Chain Reaction

INTRODUCTION

On December 31, 2019, China reported a case of mysterious pneumonia with no known cause. Within 3 days, the number of patients with this case numbered 44 patients and continues to grow until now 25. On February 11, 2020, the World Health Organisation named the new virus Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) and the name of the disease. as Coronavirus disease 2019 (COVID-19) 25. As is well known, the coronavirus disease (COVID-19) outbreak is transmitted through direct contact with droplets from the respiratory tract of an infected person (which comes out through coughs and sneezes). People can also become infected by touching a surface contaminated with this virus and then touching their face (eg, eyes, nose, mouth) 25. On August 1, 2020, in Yogyakarta, there were 741 confirmed positive cases of COVID-19, and it is still possible to increase. This case report describes an atypical COVID-19 case without respiratory symptoms and the role of radiology in detecting COVID-19.

CASE DESCRIPTION

Patient Information

A 55-year-old male patient came to the hospital on 27/07/2020 with complaints of nausea and no appetite. He had had nausea in the last 3 days without vomiting.

Clinical Findings

Based on the results of the physical examination, it was found that the

general condition was moderate and GCS Compos Mentis (E4V5M6). Vital signs were within normal limits. On examination of the localis status of the abdomen, the results were flatulence while the head, neck, thorax, vertebral column, and extremities were within normal limits. Examination of the rectum and external genitalia was not performed.

Diagnostic Assessment

When the investigations were carried out, the laboratory results showed decreased levels of leukocytes, increased levels of SGPT, SGOT, and CRT (C-reactive protein). There was no lymphopenia, thrombocytosis, increased Prothrombin Time and ESR. SARS COV 2 with the ECLIA method obtained non-reactive IgG and IgM results. Abdominal ultrasound showed gastritis.

On the second day of hospital admission, a chest X-ray was performed with bilateral broncho-pneumonia images, especially the left with bilateral pleural reactions. On the third day of hospitalization, a non-contrast MSCT Thorax scan was performed. The results showed an infiltrate with bilateral sub-pleural consolidation of the lateral and posterior pulmonary aspects, particularly the left, leading to typical pneumonia signs accompanied by multiple blebs and bilateral pulmonary bronchiectasis, especially the right. There was bilateral pleural reaction. On Day 5 of hospital admission, an RT PCR examination was carried out with positive result for SARS COV 2.

Figure 1. A 55-year-old man with complaints of nausea and no appetite. (A) Plain chest radiograph showed bilateral bronchopneumonia, especially left with pleural bilateral reaction. (B), (C), (D), (E) CT scan of the axial showed chest section infiltrates with sub-pleural consolidation of bilateral lateral and posterior pulmonary aspects, particularly the left, leading to typical pneumonia signs accompanied by multiple blebs and bilateral pulmonary bronchiectasis, especially the right pleural bilateral reaction.

Based on the results of radiological examinations (chest x-rays, non-contrast MSCT Thorax Scan) and RT PCR, the patient was confirmed to be diagnosed with COVID-19.

Therapeutic Intervention

The patient was treated with antiviral (oseltamivir) and antibiotics (levofloxacin). To treat the respiratory symptoms, he was given cetirizine,

pseudoephedrine and montelukast. Gastrointestinal symptoms were treated with pantoprazole, ciproheptadine, ondansetron and pancreatic enzyme supplement. Medications were also given for pre-existing cardiac condition (clopidogrel, atorvastatin, ezetimibe, and amlodipine). The patient also received multivitamins and immune boosters.

Table 1. Follow-up Timeline of patient's condition during in-hospital treatment for COVID-19

Day	Description
Day 0	<ul style="list-style-type: none"> • Patient presented with nausea and vomiting, loss of appetite, without dyspnea • Vital sign within normal limit with SpO₂ 96%, presence of abdominal distention • Abdominal ultrasound suggested gastritis. • Initial laboratory examination for SARS Cov-2 with ECLIA method showed non-reactive of SARS IgG and IgM
Day 1	<ul style="list-style-type: none"> • Persisting symptoms and signs with normal vital signs • Chest X-Ray suggested bilateral bronchopneumonia with bilateral pleural reaction
Day 3	<ul style="list-style-type: none"> • Chest MSCT without contrast showed an infiltration with subpleural consolidation (laterobasal and posterior of both lungs), suggesting pneumonia with multiple bleb and bronchiectasis bilateral.
Day 4, 7, 12, 20	<ul style="list-style-type: none"> • Positive PCR result of nasopharyngeal swab for SARS COV-2 • Treatment for SARS COV-2 infection
Day 7, 12, 20	<ul style="list-style-type: none"> • Positive PCR result of repetitive nasopharyngeal swab for SARS COV-2 • Clinically, symptoms and signs were reduced.
Day 22	<ul style="list-style-type: none"> • Follow-up Chest X-Ray shows alleviation indicating mild bronchitis
Day 29, 36, 41	<ul style="list-style-type: none"> • Positive PCR result of follow-up nasopharyngeal swab for SARS COV-2
Day 44	<ul style="list-style-type: none"> • Patient was discharged without any symptoms
Day 47	<ul style="list-style-type: none"> • Negative PCR result of follow-up nasopharyngeal swab for SARS COV-2

Follow-Up and Outcomes

On the fourth day after admission, the patient was diagnosed with COVID-19 without any respiratory symptoms with an oxygen saturation level of 98%. The complaint of nausea eased on the 10th day after hospitalization. The chest X-ray image on the 22nd day of hospitalization showed an improvement in lung conditions. The patient was discharged 44 days after hospital admission. He had immune booster and cardiac medications to take home. Three days after discharge, the patients underwent RT PCR examination with negative results.

DISCUSSION

COVID-19 is a disease that mainly targets the respiratory system. However, symptoms widely vary among patients. The patient described above did not have any

respiratory symptoms, instead complaining of nausea. COVID-19 does have common respiratory symptoms.^{1,2} However, some patients also experience gastrointestinal symptoms such as gastroenteritis which was initially not detected as COVID-19.^{3,4} A small proportion of people infected with SARS-CoV-2 remain asymptomatic as long as the disease acts as a carrier.^{5,6,7} If we look closely at the clinical manifestations of COVID-19, it is extensive so that it has non-specific signs and symptoms.^{8,9,10} Rapid test is a test to detect the presence of antibodies in the blood of people who are believed to have been infected with COVID-19.¹³ In this patient, the ECLIA method (Electrochemiluminescence Immunoassay). ECLIA is a method for detecting the presence of an antigen or antibody by utilizing the reaction between the antigen and the antibody that produces.¹² antibody light will be generated after a few days or weeks after a viral infection, the body

produces antibodies in response. Strength depends on several factors, such as age, nutritional status, severity of disease, and treatment or certain infections such as HIV weakens the immune system. Sensitivity ECLIA Anti-SARS-CoV-2 on days 0-6 from the onset of symptoms was 65.5%; days 7-13, 88.1%; and days $\geq 14 - 40$ were 90-100%. While the specificity was 99.81%. RT-PCR test has a sensitivity of 79% with a specificity of 100%.¹³

In most COVID-19 patients confirmed by molecular tests (such as RT-PCR), the antibody response is reported to be weak, late, or does not occur.¹³ Research indicates that most patients only respond to antibodies in the second week after the onset of symptoms.¹³ Therefore, in these patients there has not been an antibody response so that the result shows a non-reactive picture while the RT-PCR is positive.

Another point that is raised in this case report is the importance of radiology in diagnosing COVID-19 patients. Radiology plays an important role in detecting COVID-19 patients. Several radiological organisations have stated that CT should not be used as a diagnostic / screening tool for COVID-19.^{11,14,15,16,17} However, CT findings have been used controversially as surrogate diagnostic tests by approximation.^{18,19,20}

Although chest X-ray is less sensitive than chest MSCT, chest radiographs are usually the first-line imaging modality used for patients with suspected COVID-19.²⁶ Chest radiographs may be normal in early / mild disease. In cases of COVID-19 requiring hospitalization, 69% had abnormal chest radiographs at baseline, and 80% had radiographic abnormalities during hospitalization.²⁶ Findings are most widespread about 10-12 days after symptom onset.²⁶ Findings are mostly

widespread. The most frequently findings are airspace opacities which are described as consolidated or, less frequently, ground-glass opacities (GGO) with the distribution most frequently being bilateral, peripheral, and dominantly in the lower zone.²⁶ Pleural effusions rarely occur (3%).²⁶

When the findings in this case study was compared with the above criteria, the chest X-ray examination on the second day of hospital admission met two of the three available criteria, namely bilateral pulmonary bronchovascular streaks increased and rough with bilateral paracardiac infiltrates, especially the left, accompanied by blunt bilateral costophrenic sinus.

The main findings on CT in adult COVID-19 patients have been reported as: (a) Ground-glass opacities (GGO), (b) crazy paving appearance (GGO and intra- / intra-septal thickening). lobular), (c) airspace consolidation, (d) bronchovascular thickening in the lesion, (e) traction bronchiectasis, (f) Ground-glass and / or consolidative opacities usually distributed bilaterally, peripherally, and basically.^{9,21,22,23,24} Sensitivity chest CT in diagnosis COVID-19 is 96% and specificity is 27%.^{18,19}

When compared with the existing theory, this patient had bilateral lateral and posterior pulmonary air space consolidation and accompanied by bilateral pulmonary bronchiectasis which supports the suspicion of SARS COV 2 infection, so it is necessary to do an RT-PCR examination to confirm the diagnosis.

CONCLUSION

The COVID-19 disease usually presents with common respiratory symptoms. However, some patients also experience gastrointestinal symptoms that initially were not

detected as COVID-19. If we look closely, the clinical manifestations of COVID-19 are broad so that they have non-specific signs and symptoms. To detect the presence of antibodies in the blood of a person who is believed to have been infected with COVID-19, a rapid test can be carried out using the ECLIA method. However, antibodies will be produced several days or weeks after the onset of viral infection and are influenced by several factors, including age, nutritional status, disease severity, and certain medications or infections such as HIV that weaken the immune system. Therefore, a rapid test cannot be used as a determinant for diagnosing someone with the SARS CoV 2 virus infection. Radiological images in COVID-19 patients can support suspicion of SARS CoV 2 infection but it is necessary to carry out a RT PCR examination to confirm the diagnosis.

CONFLICT OF INTEREST AND FUNDING RESOURCES

The authors stated no conflict of interest.

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