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Pneumonia in COVID-19 Without Lower Respiratory Symptoms: A Case Report

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Abstract

Introduction: The main symptoms of new coronavirus in patients are fever or chills, tiredness, and dry cough. In this case, we reported a woman who got involved in COVID-19 pneumonia with gastrointestinal instead of lower respiratory symptoms.

Case Presentation: A 67 years old woman was referred to an outpatient clinic in Tehran with fever, chills, sneezing, tiredness, severe nausea, anorexia, and diarrhea. She did not have a cough, dyspnea, or chest pain and her lung sound was normal. According to the blood O_2 saturation decreasing, C-reactive protein increasing, and the lung imaging findings, she was admitted with COVID-19 pneumonia diagnosis in the infectious care department of a hospital. The 2019-nCoV real-time polymerase chain reaction (PCR) intranasal assay was negative. She was treated with intranasal oxygen therapy, anti-inflammatory drugs, and prednisone. After one week she was discharged in generally good condition and quarantined for two weeks later. After 25 days the COVID-19 IgM and IgG antibodies were in positive ranges.

Conclusion: Severe fatigue, mainly in elders caused the inability to cough, and light inspiration force especially in the lower lung lobes could explain the normal lung sounds in the physical examination. Also, we hypothesized that reverse circulation of the virus may occur from the gastro intestine to the respiratory system. The gut-lung microbial imbalance may affect the severity in patients with extrapulmonary symptoms, especially in old ages. Furthermore, damage to the vagus nerve along the path in the proximity to lungs infected with COVID-19 can cause nausea without gastrointestinal involvement.

Keywords: COVID-19, Lung Inflammation, Gastrointestinal Disease

1. Introduction

The COVID-19 virus outspreads mainly from person to person by respiratory aerosols or droplets (talks, coughs, sneezes, breathes, and sings). According to World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) instructions, people with COVID-19 have had many symptoms, wide-ranging from asymptomatic, mild to severe illness.[1,2] The main symptoms include fever or chills, tiredness, and dry cough.[3] Other less common signs and symptoms usually involve the respiratory, digestive, or nervous systems[4] (Table 1). The new coronavirus can cause short- and long-term lung complications such as pneumonia, acute respiratory distress syndrome (ARDS), and pulmonary fibrosis.[5,6] Frequent signs and symptoms of pneumonia are cough, shortness of breath, rapid breathing, chest pain, and dyspnea.

One of the vital tasks of the physicians and other health care workers in the COVID-19 pandemic is that of promptly detecting early signs of illness and preventing severe respiratory problems. In this report, we introduced a patient without apparent respiratory symptoms, who got involved with COVID-19 pneumonia.

2. Case Presentation

On March 11, 2020, a 67 years old woman, three days after taking care of her elderly mother, who had pneumonia, was referred to an outpatient clinic in Tehran. She had fever, chills, sneezing, tiredness, slight sore throat, right side earache, morning nausea, anorexia (loss of appetite), and body aches, especially in her low back and legs. She did not have a cough, dyspnea, or chest pain. She felt the weakness from one week ago. She had a history of cervical and lumbar disc herniation and migraine for more than 10 years ago and denied a history of diabetes, hypertension, heart disease, tuberculosis, and hepatitis. Vital signs: Blood pressure = 120/80, Pulse rate = 76/min, Respiratory rate = 11/min, and Oral temperature = 38.1°C. Her lung sound was normal. General Practitioner with a simple common cold diagnosis recommended her: resting, consuming warm soap, drinking plenty of liquids, fresh fruit juices, oral analgesic, and anti-fever drugs. Two days later, she came back again and suffered from headache, persistent nausea, severe anorexia, and four times watery stools. Vital signs: Blood pressure = 90/70, Pulse rate = 82/min, Respiratory rate = 12/min, Oral temperature = 38.8°C. She denied any respiratory symptoms and her lung sound was normal again. The doctor prescribed physiologic

normal saline serum and anti-fever intravenously. Her anorexia and fatigue were getting worse every day, so she was referred to a specialist referral hospital in Tehran on March 19, 2020. In the hospital, her O_2 saturation was 91 %. Vital signs: Blood pressure = 110/70, Heart rate = 98/min, Respiratory rate = 12/min, and Oral temperature = 37.8℃. The white blood cells count, lymphocyte count and D-dimer were in the normal range. C-reactive protein increased and her lungs were involved in high-resolution computed tomography (HRCT) imaging. According to the imaging findings of clearly multifocal, ill-defined, bilateral, white patchy areas of ground-glass opacities (GGO) and density and fuzzy edge consolidations (The first row in Figure 1) in the periphery of lower lung lobes, she was admitted with COVID-19 pneumonia diagnosis in the infectious care department. The 2019-nCoV real-time polymerase chain reaction (PCR) intranasal assay was negative. On the other hand, her sputum sample, and blood culture were negative in terms of bacterial pathogens. She was treated with intranasal oxygen therapy, anti-inflammatory drugs, and prednisone. Her symptoms, vital signs, and also adherence and tolerability to treatments were evaluated every day by nurses and resident physicians in the hospital.

After one week she discharged in generally good condition, without any precious symptoms and O_2 saturation was 96%. She was recommended to be quarantined for two weeks later, resting and revisiting after one month. After 25 days (The second row in Figure 1) chest HRCT images showed the lesions' absorption with multiple residual fiber stripes. The COVID-19 IgM and IgG antibodies were in positive ranges.

3. Discussion

It was reported that the sensitivity of chest CT scan (97.0%) noticeably was more than RT-PCR throat swab samples method (30% to 60% sensitivity) due to the limitations of sample collection and detection method.[7] Also, the ground glass shadow has been the most common CT manifestation (56.4%).[8] In this case, HRCT presented typical signs of COVID-19 pneumonia.

The severity of novel coronavirus pneumonia varies from person to person. The first and most accessible diagnostic information is from symptoms, experienced by patients and signs, evaluated by clinical examination. Nevertheless, the WHO and CDC consider digestive symptoms to be infrequent, a new investigation from the Wuhan medical treatment expert group for COVID-19 declares that 50.5% of patients were experiencing one or more digestive symptoms, which may be more prevalent than specialists had thought. They found that lack of appetite was 78.6% and vomiting was 3.9% cases. Patients with gastrointestinal symptoms had a remarkable long time from beginning

Table 1. Symptoms and Signs of COVID-19*

Common Symptoms	Less Common Symptoms
• Fever or chills • Dry cough • Fatigue	• *Respiratory:* Congestion or runny nose, sore throat, shortness of breath or difficulty breathing, chest pain or pressure • *Digestive:* Loss of appetite, nausea or vomiting, diarrhea • *Nervous:* New loss of taste or smell, headache, dizziness, irritability, reduced consciousness, anxiety, depression, sleep disorders, loss of speech or movement • *Others:* Conjunctivitis (also known as red eyes), body muscle or joint pain, different types of skin rash or discoloration

*WHO and CDC online pages.[1,2]

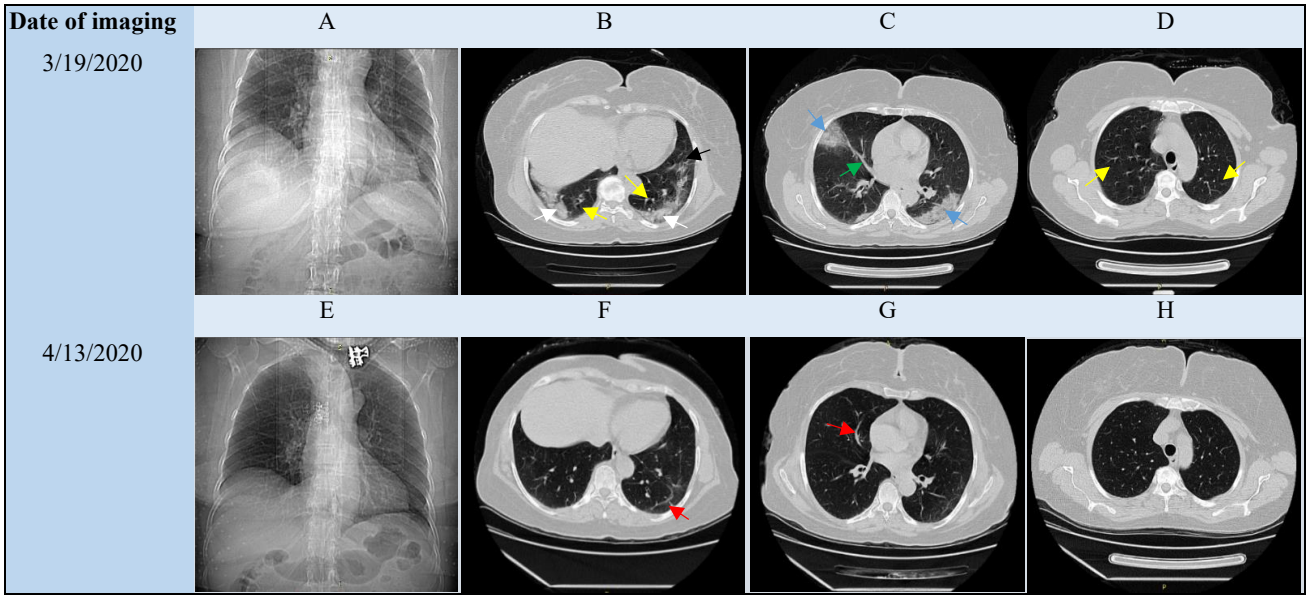

Figure 1. The Chest X-Ray PA View (A,E) and Axial HRCT Imaging (B,C,D,F,G,H) at Admission (First Row) and After 25 Days (Second Row). Bilateral posterior subpleural irregular lesions of ground-glass opacification with the reticular sign (black arrow), consolidation (white arrows), reticular "crazy paving" pattern (blue arrows), dilated widening vessels (green arrows), and traction Bronchiectasis (yellow arrows) are in right middle and lower lobes and left lower lobe. The lesions were absorbed with multiple residual fibrotic stripe bands (red arrows) in both lower lung lobes and the right middle lobe.

to admission than patients without digestive complaints (9.0 days vs 7.3 days). In 6 cases, there were digestive symptoms, but no respiratory symptoms. Around 100% and 69.2% of severe and moderate patients, respectively, had a lack of appetite on symptoms. As the severity of the disease increased, digestive symptoms became more exacerbated.[9] In our case, the time between the patient going to the outpatient clinic until referral to the hospital was 8 days. Recently, researchers at Stanford University discovered that one-third of patients with a mild case of COVID-19 had symptoms affecting the gastrointestinal system such as loss of appetite, nausea, and diarrhea even in the absence of other flu-like symptoms.[10] Another study published in Beijing found that from 3% to 79 % of people with COVID-19 represent digestive symptoms. They reported that 39.9% to 50.2% of people suffer a loss of appetite and 1 to 29.4% nausea especially in children.[11] Larsen et al[12] in the modeling of the onset of symptoms of COVID-19 declared that the upper gastrointestinal tract (i.e., nausea/vomiting) seems to be affected before the lower GI tract (i.e., diarrhea) similar to this case report. While cough didn't occur before nausea/vomiting in our case opposite the Larsen et al study.[12]

Both ACE2 receptor and type II transmembrane serine protease proteins for entering the virus to the host cell coexpressed in lung tissue as well as enterocytes in the ileum and colon and gland cells and epithelial in the esophagus. Growing evidence indicates the gut-lung microbiota crosstalk maintains host homeostasis and disease development with the corporation of the immune system.[13] The microbial imbalance (dysbiosis) during COVID-19 may affect the severity in patients with extrapulmonary symptoms, especially in old ages. Aktas and Aslim[14] proposed that disruption of the gut barrier integrity due to dysbiosis may lead to displacement of coronavirus from the lung into the intestinal lumen through the lymphatic and circulatory system. According to the patient's symptoms, we hypothesized that reverse circulation of the virus may occur from the gastro intestine to the respiratory system. The bacterial transposition from the gut to the lungs has been ascertained in ARDS and sepsis because of a possible barrier dysfunction.[15] In addition, adjacent movement from the gastric wall to the lower lung lobes can be examined in further research. However, it would be too strong to figure out the mechanism of action COVID-19 brought in; gastrointestinal-respiratory infection; along with of limitation on sample size, only 1 patient. Also, it is not clear whether enteric symptoms are the consequence of direct viral infection or inflammation associated.

The leading symptoms, in this case, were nausea and severe anorexia. The underlying mechanisms implicated in nausea are complicated and include gastric dysrhythmias, autonomic nervous system, the central nervous system, and endocrine system. Stimuli giving rise to nausea and vomiting initiate from vestibular, visceral, chemoreceptor trigger zone inputs, and gastric dysrhythmia.[16,17] Although nausea is more likely because of gastric involvement, damage to the vagus nerve along the path in the proximity to lungs infected with COVID-19 can also be justified.[18] Accordingly, lung involvement can cause nausea without gastrointestinal involvement.

4. Conclusion

Lower respiratory involvement is the most serious and deadly complication of COVID-19 are. Common signs and symptoms of pneumonia are cough, shortness of breath, rapid breathing, chest pain, and dyspnea. This case report highlighted the importance of gastrointestinal complaints without respiratory symptoms in COVID-19 pneumonia. According to the blood sampling test, the lung imaging findings, and COVID-19 IgM and IgG antibodies she got involved in COVID-19 pneumonia. We suggest that severe fatigue, mainly in elders caused the inability to cough. Besides the normal lung sounds in the medical report of the physician could be due to light inspiration force in weak patients or less attention to lower lung lobes in the examination. The false-negative real-time PCR could be the result of the nose than throat sample and woolen than Dacron swab technical error, or interpretive errors. Reverse circulation of the virus from the gastro intestine to the respiratory system, the gut-lung microbial imbalance, or damage to the vagus nerve along the path in the proximity to lungs are presumed for gastrointestinal symptoms in this COVID-19 pneumonia report.

New information about COVID-19 is emerging rapidly. As researchers collect more data, it's possible that clinicians recognize earlier at-risk patients presenting with gastrointestinal symptoms rather than expecting respiratory symptoms to proceed. However, further studies with a large sample are needed to affirm these findings. Since a definitive cure for this highly contagious and deadly disease has not yet been found, we hope to inform the medical managers toward a rapid diagnosis of lung disease, even without obvious respiratory signs.

Authors' Contributions

RA is a major contributor to the conception and writing the manuscript. MS interpreted the patient data. Both authors read and approved the final manuscript.

Conflict of Interest Disclosures

The authors have no financial and non-financial conflicts of interest to declare.

Ethical Approval

This case presentation was approved by the Committee of Research Ethics at Baqiyatallah University of Medical Sciences. Even though, the Committee does not allocate the ethical approval code for case reports.

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