Case Report / Olgu Sunumu

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Coexistence of COVID-19 and AML-M5: A Pediatric Case Report

COVID-19 ve AML-M5 Birlikteliği: Bir Pediyatrik Olgu Raporu

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Abstract

Coronavirus disease-2019 (COVID-19) is an infection that firstly reported in China and spread rapidly and caused a pandemic all over the world and still continues to spread. Although lung infection is the main factor affecting mortality, it can creates multisystemic involvement. Even though the clinical course is relatively mild in children, it is more severe in patients who have underlying chronic disease. A 16-year-old patient, who was previously followed up due to Familial Mediterranean Fever, was admitted to the emergency department with cough and respiratory distress, and in the evaluation of the patient, to the best our knowledge, the first case in the literature was diagnosed with pneumonia due to COVID-19 and AML-M5, simultaneously. Even if there are signs of viral infection and laboratory tests suggestive of COVID-19, the changes of hematological parameters should be examined in terms of malignancy.

Keywords: COVID-19, AML, pneumonia, pancytopenia

Öz

Koronavirüs hastalığı-2019 (COVID-19), ilk olarak Çin'de bildirilen ve hızla yayılan, tüm dünyada pandemiye neden olan ve halen yayılmaya devam eden bir enfeksiyondur. Mortaliteyi etkileyen ana faktör akciğer enfeksiyonu olmasına rağmen multisistemik tutulum yaratabilir. Çocuklarda klinik seyir nispeten hafif olsa da altta yatan kronik hastalığı olan hastalarda daha şiddetlidir. Daha önce Ailesel Akdeniz Ateşi nedeniyle izlenen 16 yaşındaki hasta, acil servise öksürük ve solunum sıkıntısı ile başvurmuştu. Hasta şuanki bilgilerimize göre literatürdeki AML-M5 ve COVID-19 pnömonisinin eş zamanlı olarak tanı aldığı ilk olgudur. Viral enfeksiyon bulguları ve COVID-19'u düşündüren laboratuvar test sonuçları olsa bile hematolojik parametrelerdeki değişiklikler malignite açısından incelenmelidir.

Anahtar Kelimeler: COVID-19, AML, pnömoni, pansitopeni

Introduction

Coronavirus disease-2019 (COVID-19) started in China at the end of 2019 and caused a pandemic all over the world. Mortality occurs by causing severe lower respiratory tract infection. Although adults are more frequently affected, the pediatric cases are not uncommon. It can cause clinical syndromes in a variety of spectrum from asymptomatic disease to massive pulmonary involvement.[1] Symptoms are more manifest in adult patients and nasal swab polymerase chain reaction (PCR) and chest tomography are used for diagnosis. Clinical symptoms in children are subtle, but similar diagnostic methods are used. While upper respiratory tract infection is more common in healthy children, lower respiratory tract infection can be seen more frequently, especially in those patients who have chronic diseases.[2] Although patients with hematological malignancies may show typical pulmonary involvement, accompanying diseases may cause complexity in diagnosis.[3]

We presented a patient who applied with signs of acute lower respiratory tract infection. In this case, both COVID-19 disease and acute myeloid leukemia-M5 (AML-M5) were diagnosed at the same time and both diseases were successfully treated.

Case Report

A 16-year-old male patient, previously followed up with a diagnosis of Familial Mediterranean Fever (FMF) and receiving colchicine treatment, was admitted to our pediatric emergency clinic with the complaint of fever and cough for about 5 days. In his medical history, it was learned that his

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father complained of fever and cough about 10 days ago, so he applied for treatment and the COVID-19 test was negative.

On physical examination, his body weight was 51 kg (3-10 p) and height 162 cm (<3-10 p). Body temperature: 39 °C, respiratory rate: 30/minute, blood pressure: 100/70 mmHg, oxygen saturation: 78%. Diffuse ral and rhoncus were detected in bilateral lung auscultation. The patient had dyspnea and orthopnea and had petechial rashes on the lower extremity. Hepatosplenomegaly and pathological lymphadenopathy were not detected. In laboratory tests, hemoglobin: 5.5 g/dL, white blood cell count: 3.090/mm^3, absolute neutrophil count: 140/mm^3, platelet count: 10.000/mm^3, C-reactive protein: 31 mg/dL, sedimentation: 128 mm/h, alanine aminotransferase: 10 IU/L, aspartate aminotransferase: 23 IU/L, lactate dehydrogenase: 334 IU/L, uric acid: 5.15 mg/dL, troponin I: 0.01 ng/mL.

The chest radiography of the patient showed pneumonic consolidations in the middle and lower zones of both lungs, more in the right lung (Figure 1). Pneumonic consolidations consistent with viral pneumonia and diffuse ground-glass appearance were reported in both lung parenchyma in thoracic tomography, especially in the lower lobes (Figure 2). The patient's COVID-19 nasal swab PCR was found to be positive.

Favipiravir and azithromycin were started with the diagnosis of COVID-19 pneumonia. Bone marrow aspiration was performed on the patient, since 5% of myeloid blasts were observed in the peripheral blood smear. The patient was diagnosed with AML-M5, since 34% CD45 (mode) +/SSC low cell group (monoblast) was observed in flowcytometry.

On the 6th day of the treatment, control chest radiography and thorax tomography were performed. Significant improvement was observed in the infiltrative areas (Figures 3, 4). Fourteen days after starting treatment, the control nasal swab COVID-19 PCR test became negative.

Discussion

Due to the high infectivity of COVID-19, most people are vulnerable to this virus. Patients apply to pediatric emergency clinics with a considerable picture of lower respiratory tract infection during the pandemic. As is known, COVID-19 infection is often asymptomatic or mild in children. After the diagnosis of COVID-19, these patients are mostly isolated at home by treatment, depending on their clinical condition. However, underlying chronic diseases or immunosuppressive treatments worsen the clinic.[4] We thought that in this patient, the lower respiratory tract infection clinic emerged because of immunosuppression due to AML.

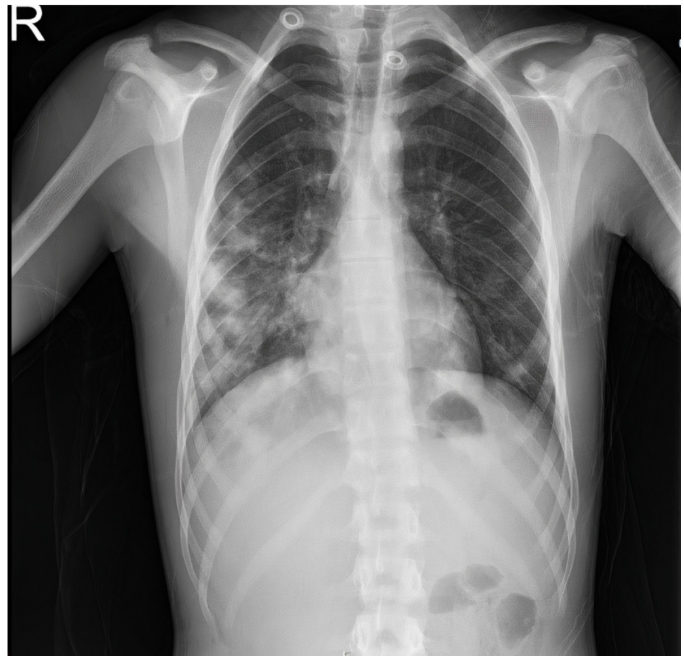


Figure 1. The chest radiography of the patient showed opacities consistent with pneumonic consolidations in the middle and lower zones of both lungs, more in the right lung

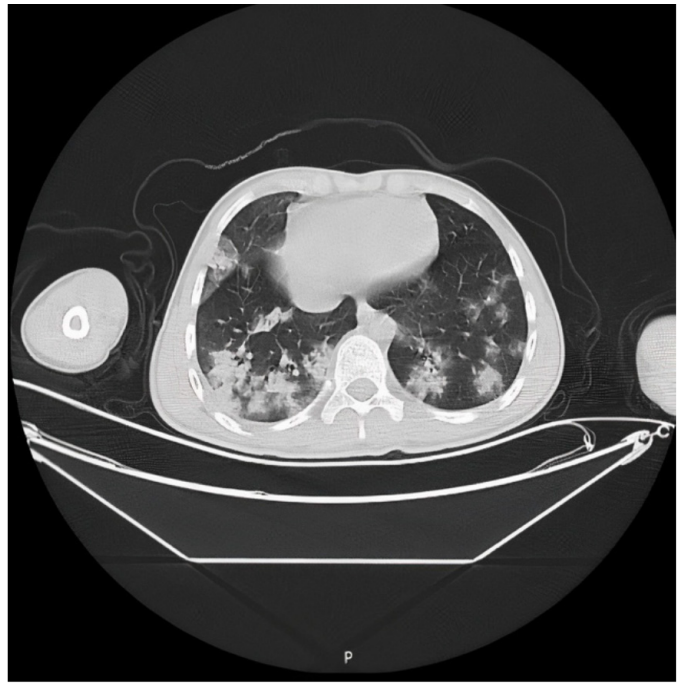
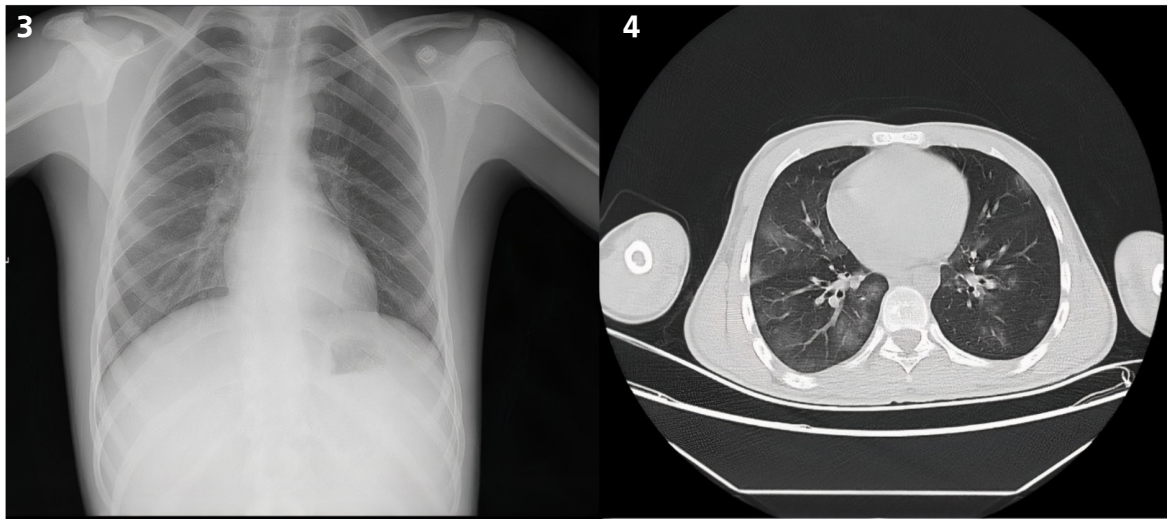


Figure 2. Pneumonic consolidations consistent with viral pneumonia and diffuse ground-glass appearance were reported in both lung parenchyma in thoracic tomography, especially in the lower lobes

Patients with underlying hematological malignancies are at higher risk for COVID-19 infection and disease progression. It is known that hematological patients have a more severe COVID-19 and higher mortality rate without correlating with the hematological type of cancer.[5] COVID-19 infection is frequently reported in the literature due to the



Figures 3, 4. On the 6th day of the treatment, control chest radiography and thorax tomography were performed. Significant improvement was observed in the infiltrative areas

immunosupression in patients with hematological malignancy and receiving chemotherapy.[6] To the best our knowledge, our case is the first report of the coexistence of COVID-19 infection in patients with just diagnosed hematologic cancer.

Therefore, an increasing number of patients with different hematological malignancies, including AML, are expected to present with concomitant COVID-19 at the time of diagnosis or during the course of the disease. The most current recommendations for COVID-19 screening aim to limit diagnostic testing to symptomatic, high-risk patients; others are instructed to isolate/quarantine. Complete blood count is only performed in patients with severe symptoms and confirmed COVID-19 infection. Since 50-75% of patients with acute leukemia have fever at the time of diagnosis, the risk of missed or delayed diagnosis is high.[7]

Patients with leukemia often have pulmonary infection, fever, and haemocytopenia similar to COVID-19 symptoms. Similarity in symptoms may confuse the diagnosis. In addition to delay in diagnosis, most patients may suffer from delayed chemotherapy due to a lack of isolation beds and blood products or a desire to avoid immunosuppressive treatments. Delay in the initiation of chemotherapy may adversely affect the prognosis, especially in young patients (<60 years) with intermediate risk disease.[8]

Detection of COVID-19 positivity, which results in a high risk of respiratory failure, may increase difficulties in the administration of optimal treatment, including delay for the underlying disease, the need for dose reduction, and drug-drug interactions.[8,9]

In our case, there was fever at the application. Fever is one of the first findings of FMF attack, leukemias, and COVID-19 infection. For this reason, this situation, which forces the clinician to make the correct diagnosis, resulted in the simultaneous diagnosis of two diseases thanks to laboratory tests and chest tomography imaging.

The patient's presence of pneumonia findings accompanying fever, the typical chest tomography findings for COVID-19, and pancytopenia in the blood tests helped us to diagnose to the association of hematological malignancies with COVID-19.

The increased case fatality rate of hospitalized patients with hematologic cancer and COVID-19, as determined in a 2-center study conducted in Wuhan, appears to be predominantly related to bacterial co-infections. This situation can be evaluated directly in terms of lower granulocyte concentration due to the diseases or their treatment. These informations suggest that protection of patients from secondary bacterial infections is more important than primary disease treatment in the coexistence of COVID-19 and leukemia.[9]

COVID-19 may have complex clinical findings in patients with hematological disease or may progress in a different clinical course than expected. The main goal we want to emphasize in our case presentation; deterioration in hematological parameters may occur due to systemic infection that develops in COVID-19 infection. This condition may be in a single blood cell series, or it may cause pancytopenia in the patients. However, the clinician should not ignore the possibility of malignancy in cases whose hematological parameters are severely affected.[10]

In conclusion, if there are signs of severe pneumonia and respiratory failure that require intensive care in an infection with milder symptoms compared to adults, especially in the childhood age group such as COVID-19, the underlying additional pathology should definitely be investigated.

Ethics

Informed Consent: Written informed consent was obtained from the mother of the patient.

Peer-review: Internally and externally peer-reviewed.

Authorship Contributions

Concept: Y.S., Design: Y.S., E.N.İ., Data Collection or Processing: Y.S., Analysis or Interpretation: Y.S., E.N.İ., Literature Search: Y.S., Writing: E.N.İ.

Conflict of Interest: No conflict of interest was declared by the authors.

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