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Case Report

A Case of COVID 19 and *Staphylococcus* Coinfection

Seyedeh Sedigheh Hamzavi, MD[1,2]; Mohammad Amin Gholami[2]; Anahita Sanaei Dashti, MD[1,2*]

[1]Professor Alborzi Clinical Microbiology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
[2]School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Since December 2019, we have seen a significant number of cases of a novel coronavirus (2019-nCov), first identified in Wuhan China. Coronavirus might coexist with other infections such as *Staphylococcus*.

Keywords: Coinfection, COVID 19, *Staphylococcus*

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Introduction

Since December 2019, we have seen a significant number of cases of a novel coronavirus (2019-nCov), first identified in Wuhan China. Around 1 700 000 confirmed cases of coronavirus disease 2019 (COVID-19) and 105 000 deaths were reported worldwide until April 12, 2020.[1]

The most common clinical manifestations are fever, cough, sore throat and breathlessness.[2] The disease has been reported to be significantly milder in children than adults; common cases and severe symptoms such as pleural effusion and respiratory failure are infrequent.[2,3] However, in some cases, the disease might progress to moderate symptoms like cough and fever.[4] Here, we report a case of COVID-19 infection in a child presenting with respiratory distress and pleural effusion.

Case Report

A 14-year-old male previously healthy affected by cerebral palsy presented to our hospital with fever and cough from 20 days and dyspnea and lethargy for three days before admission to the hospital. On physical examination, his vital signs were: pulse rate 150/min, respiratory rate 35/min, blood pressure 85/50 mm Hg and temperature 40°C. Further examination revealed scoliosis and limb deformity. Lung sounds auscultation confirmed decreased respiratory sounds in the left lung. Hematologic investigations on the first day revealed total WBC 48.7 thousand/μL, Hb 13.3 g/dL, MCV 82.5 fL/cell, and platelet: 605 thousand/μL. On the next day, the hematologic findings were total WBC 25.6 thousands /μL (neutrophil: 79.1%, lymphocyte: 16.3%), HB 16.5 g/dL, MCV 80.9 fL/cell, and platelet 365 thousands/μL. ESR and CRP was 10 mm/h and 132 mg/L, respectively. Biochemical investigations showed BUN 5 mmol/L, creatinine 0.8 mg/dL, Ca 9.4 mg/dL, Na 133 mEq/L, and K 5.5 mEq/L. Urinalysis was normal, and there was no bacterial growth in urine culture. Thoracentesis was performed and the results showed total cell count 9600/mm^3 (segment: 67%, lymphocyte: 33%), total WBC 1700/mm^3, protein 4.9 mg/dL, LDH 350 U/L, and glucose 114 mg/dL. Pleural fluid culture and smear were negative.

Two swab samples were taken from the nasopharynx and pharynx for coronavirus 2019 PCR, and the result was positive. Also, blood culture revealed *Staphylococcus aureus* infection with sensitivity to vancomycin.

Chest X-ray showed blunting in the cardiopulmonary and cardiophrenic angle before thoracocentesis; after the pleural tap, chest X-ray revealed decreased blunting in the chest (Figure 1). Echocardiography and ultrasonography suggested severe pleural effusion. The patient was intubated and placed on the ventilator due to the low O_2 saturation (80%) and severe chest retraction and tachypnea on the day of admission. Vancomycin, meropenem and inotrope (dopamine) were administered to the patient. The vital signs became stable. The next day, his urine output decreased; therefore, he was hydrated again. Unfortunately, the patient suffered from cardiac arrest and respiratory arrest twice and expired.

Discussion

In this report, we presented a case of coinfection of COVID-19 and *Staphylococcus aureus*, which seems to be the first report of such coexistence. Co-infections has an essential role in infectious diseases, especially respiratory tract infections. This type of infections can exacerbate the course of the primary infection and lead to frequent clinical and laboratory confusion. Therefore, more specific diagnostic tests are required in order to

***Corresponding Author:** Anahita Sanaei Dashti, MD; Professor Alborzi Clinical Microbiology Research Center, shiraz university of Medical Sciences, Shiraz, Iran. Email: anahitasanaei@gmail.com

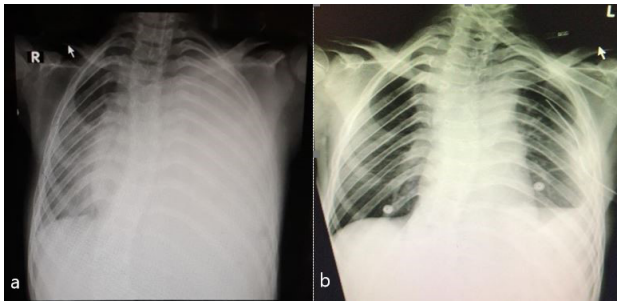

Figure 1. Chest X-ray showing a blunt area on the left side of the chest **(a)**. Chest X-ray after thoracocentesis **(b)**.

detect the coinfection. These tests include blood culture, a polymerase chain reaction of nasopharyngeal samples and serology tests for COVID-19 and other respiratory coinfections.

A recent report from northern California, the USA, suggests that the rate of coinfection is increasing; however, it is not useful to run additional tests for non-SARS-COV-2 respiratory pathogens unless the results have an essential role in management and approach.[5] In another report, the coinfection of novel coronavirus 2019 and *Mycoplasma pneumoniae* in a 36-year-old Chinese man has been published.[6] Furthermore, the interesting coexistence of COVID-19 and influenza virus in four patients has been reported from Iran.[7] These reports demonstrate that the exact pathophysiology of co-infections in the clinical course of COVID-19 is unknown and further investigation is still needed. In order to achieve better results in treatment, the correlation of novel coronavirus and other infections must be understood.[7,8]

Authors' Contribution

SSH and ASD collected all data and co-wrote the article. ASD supervised the project. All authors discussed the results and wrote the final article. The final version was approved by all authors.

Conflict of Interest Disclosures

None.

Ethical Statement

Informed concent was taken from the patient's parents.

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