SARS-CoV-2 Complicated by Sinusitis and Co-Infection with Human Metapneumovirus

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ABSTRACT

A previously healthy 25-year-old Asian male was admitted with acute respiratory failure due to COVID-19 pneumonia to our intensive care unit. He received empiric therapy and higher level of respiratory support via a high flow nasal cannula. Notably, human metapneumovirus was detected from the nasopharyngeal swab by RT-PCR. Six days post-ICU admission, sinusitis was clinically and sonographically detected. SARS-CoV-2 was detected in the fluid aspirated from the antrum. The patient has made an uneventful recovery. Further studies are required to investigate co-infections with SARS-CoV-2 and other viruses.

KEYWORDS: COVID-19, human metapneumovirus, high flow nasal cannula, sinusitis

Dear Editors:

We have read with interest the article by Touzard-Romo et al regarding the co-infection with SARS-CoV-2 and human metapneumovirus that was recently published in the Journal.1 We present a patient with SARS-CoV-2 disease (COVID-19) and co-infection with human metapneumovirus (HMPV). Considerations regarding oxygen support therapies are also discussed.

A previously healthy 25-year-old Asian male was admitted to the emergency room with three days fever (37.9°C; 100.22°F), dry cough, wheezing, and chest pain. His saturation of peripheral oxygen (SpO2) was 75% on room air but he did not show any respiratory distress. He mentioned contact with his brother who has recently recovered from COVID-19 without sharing any further details. Physical examination revealed decreased breath sounds at the lung bases. Laboratory findings were within normal limits apart from lymphocytopenia (0.79×10^9/liter; normal: 1.1–3.2×10^9/L), and increased levels of C-reactive protein (656 mg/liter; normal: 0–5 mg/liter). Chest X-ray (Figure 1) revealed bilateral interstitial pneumonia. Nasopharyngeal swabs confirmed COVID-19 by Real-Time-Polymerase-Chain-Reaction (RT-PCR).

The patient was admitted to our intensive care unit (ICU). He underwent a full diagnostic work-up for other viral, bacterial and systemic disorders. A higher level of respiratory support via a high flow nasal cannula (HFNC) was initiated (flow: 60 L/minute, fraction of inspired oxygen 40%) along with awake prone positioning (16 hours daily). The rate of oxygenation index [oxygen saturation / (fraction of inspired oxygen x respiratory rate)] was maintained over 6 for the upcoming 48 hours indicating successful oxygenation.2 Empiric therapy with lopinavir/ritonavir, ribavirin and interferon beta-1b for 14-days, dexamethasone for 10 days, and prophylactic anticoagulation was administered.

Interestingly, RNA of HMPV was detected from nasopharyngeal specimens by RT-PCR after four days; however, no genotype was identified (types A and B) as phylogenetic analysis was not available. No treatment changes were made as ribavirin has shown some efficacy against HMPV.3 Six days post-ICU admission, the patient developed new fever (38.9°C, 101.2°F). He complained of pain due to the application of HFNC. He had sensitivity over the right paranasal sinus. Ultrasound examination depicted a fluid collection...
Figure 2. Ultrasound showing hypoechoic area in the right paranasal sinus (“sinusogram”) consistent with fluid collection.

[Figure 2]. Antral aspiration revealed clear fluid. RT-PCR performed on the fluid revealed SARS-CoV-2. Our patient has made an uneventful recovery. All work-up for systemic and other viral diseases was negative. He was discharged to home isolation after 22 days.

HMPV may cause lung infection in adults, especially elderly and immunocompromised patients as well as patients with underlying cardiopulmonary disorders. Diagnosis relies on RT-PCR, while treatment is mainly supportive. Co-infection with SARS-CoV-2 has only been recently reported. Apart from the co-infection with HMPV, our patient has developed sinusitis while receiving oxygen via HFNC, which delivers high flow, warmed and humidified gas through the nasopharynx. Whether this might facilitate recirculation and shedding of the viral particles in the upper airway is obscure. Further studies are required to investigate co-infections with SARS-CoV-2 and other viruses along with potential side effects of higher level oxygen therapies.

References

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