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Case report

An infant with a mild SARS-CoV-2 infection detected only by anal swabs: a case report

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ABSTRACT

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China and has spread rapidly worldwide. We present a mild SARS-CoV-2 infection in a baby with non-productive cough and normal chest computed tomography, in whom only anal swabs tested positive by real-time PCR testing for SARS-CoV-2. She was given atomization inhalation therapy with recombinant human interferon alfa-1b for 10 days. Her anal swabs remained positive for eight days, whereas her throat swabs were persistently negative by real-time PCR testing. Mild and asymptomatic cases, especially in children, might present with PCR negative pharyngeal/nasal swabs and PCR positive anal swabs. Those patients are potential sources of infection via fecal–oral transmission for COVID-19.

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan and has spread rapidly in China, South Korea, and worldwide. Since December 2019, more than 120,000 people have been infected.[1–3] The SARS-CoV-2 genome has a nucleotide identity of 89% with bat SARS-like-CoVZXC21 and 82% with human SARS-CoV.[4]

The most common symptoms of infection are fever (43.8% on admission and 88.7% during hospitalization) and cough (67.8%). Diarrhea is uncommon (3.8%). The median incubation period is four days (interquartile range 2–7). On admission, ground-glass opacities are the most common radiological finding on chest computed tomography (CT) (56.4%). No radiographic or CT abnormality was found in 157 of 877 patients (17.9%) with non-severe disease or in 5 of 173 patients (2.9%) with severe disease. Lymphocytopenia was present in 83.2% of the patients on admission.[5] The diagnosis is confirmed by testing pharyngeal or nasal swabs for viral nucleic acids.

In a Chinese Center for Disease Control and Prevention (CDC) report, the overall case-fatality rate was 2.3%, with 1023 deaths among 44,672 confirmed cases.[6] The pandemic has caused many social public health problems, leading to economic recession and panic.[7] This is a global health problem and not just a problem in China.

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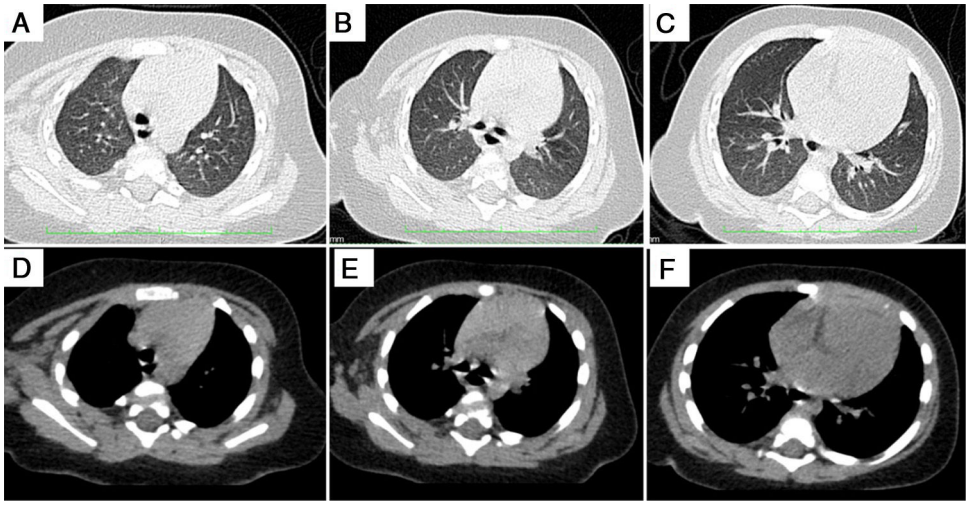

Fig. 1 – Normal chest CT findings at different sections: A and D, B and E, and C and F represent the same levels.

While patients with positive pharyngeal or nasal swabs have received much attention, asymptomatic or mildly ill patients with positive anal swabs have not. We know little about these patients, who may be shadows in the sun. However, they are potential sources of infection via fecal–oral transmission. Here, we present an asymptomatic baby in whom anal swabs were positive while pharyngeal swabs were persistently negative by real-time PCR testing.

Case report

An 8-month-8-day-old girl was hospitalized with one day history of cough and runny nose on Feb 25, 2020. The patient was afebrile with no shortness of breath, clubbing, cyanosis, or abdominal distension. The patient was given oral ambroxol hydrochloride solution 15 mg, three times per day, with no improvement. The patient's mother, diagnosed with SARS-CoV-2 2 days earlier, had positive pharyngeal swab by real-time PCR testing and chest CT showing ground-glass opacities.

On physical examination, the patient had a body temperature of 38 °C, pulse of 116 beats/min, respiratory rate of 30 breaths/min, and oxygen saturation in room air of 99%. She was conscious and appeared acutely ill. There were no fluctuations in the nasal wings but some secretion in the nasal cavity, with redness, congestion, and a normal voice was observed. The breath sounds were normal in both lungs, with no dry or wet rales. Heart auscultation was normal. The abdomen was soft, and bowel sounds were normal.

Laboratory tests were negative for influenza A and B viral antigens. The leukocyte count was 11.91×10^9/L, with a neutrophil count of 2.91×10^9/L (24.4%) and lymphocyte count of 7.87×10^9/L (66.1%). The C-reactive protein level was 3.49 mg/L. The prothrombin time and D-dimer level were normal, as well as alanine transaminase, alanine transaminase, urea nitrogen, and creatinine levels. Chest CT results had no abnormal findings (Fig. 1). Recombinant human interferon alfa-1b via atomization inhalation (20 μg, twice/day) was initiated.

Anal swabs were positive on February 27 and March 4. The symptoms improved on March 7, and anal swabs were negative on March 9 and 10. The patient was discharged on March 11. Throat swabs were persistently negative throughout the hospital stay. Real-time PCR for COVID-19 on pharyngeal and anal swabs were performed by the Pengzhou (Sichuan Province, China) CDC. The Chengdu CDC repeated the PCR testing and obtained the same results.

Discussion

Diagnosis of SARS-CoV-2 depends on imaging, epidemiological history, and nucleic acid testing. During the early stage of the pandemic, most patients were in China, especially in Wuhan, Hubei Province.[8] As the number of patients grew geometrically, the Chinese government locked down Wuhan and effectively isolated infected people from non-infected people. In early March 2020, the disease was effectively controlled in China.[9,10] However, many confirmed and suspected cases have appeared in other regions and countries.[11] It has become a global pandemic, and its rapid spread and high lethality require special attention.[12]

Although the infection and mortality rates are lower in infants and young children than in adults,[8] young patients cannot communicate effectively, which limits the ability to obtain their medical history. Our patient developed a sudden onset cough, and her mother was confirmed to be infected. Although the baby's pharyngeal swabs and chest CT were negative, her anal swabs remained positive for eight days.

Not enough attention is given to asymptomatic or mildly infected patients with positive anal swabs. Here, we present a mildly ill baby whose anal swabs were real-time PCR positive for SARS-CoV-2, while many pharyngeal swabs were negative. SARS-CoV-2 was stable under the conditions tested.[13] The main host receptor is angiotensin converting enzyme 2, which is located on gastrointestinal epithelial cells, and the feces of 20% of SARS-CoV-2 patients remain positive for viral RNA after negative conversion of viral RNA in the respiratory tract.[14] Wang et al. detected live SARS-CoV-2 in stool samples from two confirmed patients.[15] Unfortunately, our laboratory

lacked the capacity to determine whether the stool virus was still active.

Physicians should be aware that asymptomatic or mildly ill children with history of exposure and negative pharyngeal/nasal swabs and positive anal swabs are potential sources of infection via fecal–oral transmission for COVID-19. In addition to nasal/pharyngeal swabs, we believe that children should be tested for SARS-CoV-2 using anal swabs.

Conclusion

Infants with a history of SARS-CoV-2 exposure and mild symptoms should be tested using anal swabs.

Ethical approval

The study was approved by Pidu District People's Hospital (Batch 2020-03-18-001).

Funding

No founding.

Conflicts of interest

The authors declare no conflicts of interest.

Informed consent

This study was a retrospective observational nature study, patient identity remained anonymous, and have no invasive procedure, so the ethics committee waived informed consent.

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