COVID-19 Presenting as Penile Pain in a Child

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Abstract

Background. SARS-CoV-2 is a novel pathogen that has caused widespread illness with a variety of clinical presentations over the past two years. Although researchers and clinicians have focused on the respiratory symptoms as the common presentation of SARS-CoV-2, there has been an increase in reported cases of genitourinary symptoms as a component of the disease in adult patients. In this article, we describe a case of SARS-CoV-2 infection where the presenting symptom is a genitourinary complaint in a child. We provide a brief review of the current literature, and discuss the genitourinary tract as a possible target for SARS-CoV-2 and the importance of identifying these patients to prevent further complications of the disease.

Key words: SARS-CoV-2, COVID-19, infectious diseases, genitourinary symptoms

A 29-month-old boy presented to an outpatient pediatric clinic via telehealth for a 2-day history of penile pain. The mother of the patient said he had 2 instances where he reported pain while holding his penis. She noted a couple of instances where he held his penis for a while before releasing it to urinate. She reported a low-grade fever for 2 days and denied any redness, swelling, discharge, or rashes around the penis. She also described that the patient had been making more wet diapers over the past 2 days, but they had been less full. She said she had not noticed any abdominal discomfort, upper respiratory infection symptoms, gastrointestinal (GI) symptoms, foul-smelling urine, blood in the urine, or discoloration of urine. Five days prior to the telehealth visit, the patient's father tested positive for COVID-19, the patient's mother tested negative, and the patient had not been tested at the time of the visit.

Physical examination

The physical examination was limited because it was a telehealth visit; however, on video, the patient appeared active and in no acute distress. On local examination, no visible rashes, redness, swelling, or discharge was noted in the genitourinary region.

The patient's PCR test was positive for COVID-19. The results of a urinalysis and urine culture were negative for urinary tract infection.

Upon follow-up, the mother reported that the patient's genitourinary symptoms resolved in about 2 to 3 days, but he developed a runny nose after the telehealth visit that lasted about 4 days. About 2 months following the positive COVID-19 test, the patient reported no residual genitourinary symptoms or complications.

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Discussion

Over the past 18 months, COVID-19 has been known for causing a wide variety of symptoms, with the most recognizable being loss of taste and smell, fever, respiratory symptoms, and GI symptoms. More recently, there have been reports of COVID-19 patients developing genitourinary symptoms, including increased urinary frequency, nocturia, and hematuria.[1,2] Although these genitourinary symptoms have been identified and briefly studied in adults, there have been only a few reports of similar findings in the pediatric population thus far. For example, Almeida and colleagues[3] reported the presence of hematuria in conjunction with upper respiratory symptoms in a 10-year-old child with positive COVID-19 infection.

With increasing COVID-19 infection prevalence and severity in the pediatric population, it is important to identify the different possible presentations and complications of this disease. There has been ongoing research and clinical data analysis on the multisystem inflammatory syndrome in children (MIS-C), which is caused by postinfectious immune dysregulation following COVID-19 infection.[4] MIS-C is an example of a COVID-19–related condition that needs to be quickly and accurately identified in the pediatric population to avoid negative outcomes.

A study by Mumm and colleagues[5] was one of the first to identify urinary frequency as a possible symptom of COVID-19 infection, which has prompted further research on the topic. There are several proposed pathophysiology mechanisms for the SARS-CoV-2 involvement of the urinary tract. It has been suggested that the bladder and kidney urothelium harbor cells expressing angiotensin-converting enzyme 2, which is the receptor for the viral spike protein that SARS-CoV-2 uses to infect its host's cells.[5] Another proposed mechanism is that COVID-19 results in release of proinflammatory cytokines in the urine or in the bladder due to the inflammatory nature of COVID-19 disease.[1]

In a retrospective review, Mumm and colleagues[5] found that 7 adult men of 57 patients with COVID-19 infection reported increased urinary frequency during the illness. Three of the 57 patients also had microhematuria, which supports the hypothesis of viral involvement in the urothelium cells. In response to the study by Mumm and colleagues, Luciani and colleagues[2] reported the presence of gross hematuria in 3 patients with COVID-19 infection, thereby encouraging additional research focus on genitourinary symptoms as possible manifestations of the disease.

The case we have presented, along with the current available literature, supports the necessity for increased awareness regarding the relationship between genitourinary involvement and COVID-19 infection. It is important to identify all cases of COVID-19 to control the spread of infection, and clinicians need to be aware of all types of presentations to diagnose the illness accurately and swiftly. This is especially important in young children due to their inability to express urinary symptoms as effectively as adults. Clinicians must also be aware of the specific organ systems that were mainly affected by infection in their patients to monitor for further complications.

Conclusion

There are case reports recognizing the genitourinary tract as a possible target of SARS-CoV-2; however, most of these case patients are between the ages of 23 and 84 years.[5-7] The case discussed in this report should bring awareness to the presentation of common genitourinary symptoms, including urinary frequency, nocturia, dysuria, and hematuria, when evaluating pediatric patients for COVID-19 infection.[2,5,6]

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