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Clinical observations

COVID-19 and Telehealth: Prevention of Exposure in a Medically Complex Patient With a Mild Presentation


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A B S T R A C T

The novel coronavirus disease-2019 (COVID-19) was declared a pandemic by the World Health Organization on March 11, 2020. We discuss a less common presentation of COVID-19 in a patient where the use of telemedicine technology prevented the exposure of the healthcare team in an academic general pediatrics clinic. A medically complex 20-year-old male presented via virtual visit for unilateral eye redness and discharge. He received topical ophthalmic antibiotics for presumed acute bacterial conjunctivitis and was counseled on return precautions. Three days later, the patient developed shortness of breath, fever to 102.6°F, and chest pain. COVID-19 testing returned positive. Conjunctivitis is a presenting symptom in 32% of COVID-19 cases. Current evidence suggests that these patients may transmit their illness at the time of presentation. Using telehealth, we avoided exposure to a COVID-19–positive patient who would not have met criteria for testing or droplet precautions. Telehealth allows providers to triage patients, identifying those who need to be seen in person, thereby minimizing exposure. Transitioning toward virtual practice, particularly during a pandemic, prepares for the possibility of healthcare workers being quarantined but still able to provide care and minimizes exposure to asymptomatic patients or those with atypical symptoms.

IMPLICATIONS AND CONTRIBUTION

A telehealth examination of a patient presenting with a less common and thus unexpected coronavirus disease-2019 symptom prevented the exposure of the healthcare team in an academic general pediatrics clinic.

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The novel coronavirus disease-2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 [1,2]. As of June 2, 2020, the Centers for Disease Control and Prevention (CDC) reported 1,787,680 cases of COVID-19, with 104,396 deaths. Roughly 4% of the US cases have occurred in patients aged 18 years or younger. Patients aged 18–44 years comprise 40% of US cases [3].

Jin et al. were able to classify four different illness severity outcomes in infected patients: asymptotically infected persons (1.2%); mild to medium cases (80.9%); severe cases (13.8%); and critical cases (4.7%) [4]. A study of 41 hospitalized adult patients with COVID-19 found that the most common symptoms at illness onset were fever (98% of patients), cough (76%), and myalgia or fatigue (44%); less common symptoms included headache (8%), hemoptysis (5%), and diarrhea (3%) [5]. Current literature suggests that typical pediatric presentations tend to be milder than in adults, although there is emerging literature on multisystem inflammatory sequelae. Xia et al. noted in their study of 20 pediatric COVID-19 cases that 40% of patients presented without fever (defined as axillary temperature over 37.3°C) and 35% of patients presented without cough [6]. The

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remainder of patients had presenting chief complaints such as diarrhea, sneezing and rhinorrhea, sore throat, fatigue, and conjunctivitis. We discuss a less common presentation of COVID-19 in a patient where the use of telemedicine technology prevented the exposure of the healthcare team in an academic general pediatrics clinic.

Case Presentation

A medically complex 20-year-old young adult male presented via virtual visit for unilateral eye redness and discharge. His past medical history is significant for complex shunted hydrocephalus and congenital quadriplegia requiring intermittent self-catheterization. His history includes hospitalizations for complicated urinary tract infections, aspiration pneumonia, and shunt infections. The patient awakened with a “very red eye” with significant discharge. He denied fever, upper respiratory infection symptoms, or sick contacts. Virtual examination revealed a comfortable male at baseline medical complexity with significant left eye conjunctival injection without active discharge, although his eye had been recently cleaned. No eyelid erythema, foreign body, or edema was present. Extraocular movements were intact. The remainder of his virtual examination was unremarkable, including normal respiratory effort. He received topical ophthalmic antibiotics for acute bacterial conjunctivitis and was counseled on return precautions, including fever or worsening symptoms.

Three days later, the patient developed shortness of breath, fever to 102.6°F, and chest pain. He also developed urinary retention. He presented to the emergency department (ED) via ambulance where his workup was consistent with sepsis, and he was admitted to the intensive care unit. He underwent routine COVID-19 testing, which returned positive on the second day of hospitalization. Influenza and respiratory syncytial virus were both negative. Blood and urine cultures were positive for *Morganella morganii* and *Staphylococcus aureus*, respectively. He showed no hypoxia or evidence of compromised respiratory function, and there was no shunt malfunction. He received fluid resuscitation and broad spectrum IV antibiotics that were narrowed after culture results. After stabilization, he was transferred to the hospital wards and was discharged home on hospital day 8, after two negative COVID-19 tests 24 hours apart on the fourth and fifth day of hospitalization. His source of COVID-19 was never discovered.

Discussion

Our current understanding of the ocular complications in patients infected with COVID-19 is evolving. Conjunctivitis, as well as other mild signs commonly seen in pediatrics patients, can present several days before onset of respiratory symptoms. The amount of time between conjunctivitis and respiratory symptoms varies across literature but has been documented as long as several days [7]. A study in Hubei Providence, China, found that of 38 adult patients with clinically confirmed COVID-19, 12 (31.6%) had manifestations consistent with conjunctivitis. These included conjunctival hyperemia, chemosis, or increased secretions. Of those 12 patients, 11 had positive COVID-19

polymerase chain reaction from nasopharyngeal swabs and two also had positive conjunctival swabs [8]. This suggests that these patients may transmit their illness at the time of presentation. This patient’s encounter occurred before the implementation of universal masking at our institution. Using telehealth, we were able to avoid exposure to a COVID-19–positive patient who would not have met criteria for testing or droplet precautions.

A 2018 study was able to track information from virtual visits for 1,000 pediatric patients utilizing a nationwide health system [9]. The most common chief complaints included rash, upper respiratory symptoms, fever, gastrointestinal symptoms, and eye-related problems. A postvisit survey was provided to parents to measure satisfaction with their telemedicine experience. Of the 686 parent responders to the survey, 97.1% rated their provider with four or more (of 5) stars. Similarly, 91.3% rated the virtual platform with four or more (of 5) stars. Patients value telehealth and the access it provides, particularly during a public health crisis. It allows them to receive appropriate care while decreasing potential exposures.

Rapid growth in the utilization of telehealth in ambulatory settings has allowed us to maintain healthcare access for patients while potentially decreasing staff exposures to patients with COVID-19 [10]. This is accomplished by triaging patients and identifying those who need to be seen in person, minimizing the number of healthcare worker exposures. This also reduces exposure of patients to each other and allows quarantined providers to care for patients remotely. The limitations of the modality, much similar to limitations when care is delivered by telephone, messages, or email, are important to acknowledge. These include the risk of a negative patient outcome–related delayed treatment. This can be mitigated by creating scheduling protocols and educating patients and families regarding when to seek in-person treatment.

It is critical to acknowledge that symptoms of COVID-19 can mirror common complaints of patients using virtual medicine. Without a vaccine, physical distancing remains the primary strategy for decreasing transmission. In this case, telehealth effectively met the clinical need of the patient at the time he was seen while decreasing exposures to a patient with COVID-19 with an initially mild presentation. This protected both staff and other patients, allowing the safe practice of medicine.

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