



Case report

Conjunctivitis can be the only presenting sign and symptom of COVID-19



Sergio Zaccaria Scalinci*, Edoardo Trovato Battagliola

DIMEC (Department of Medical and Surgical Sciences), University of Bologna, Bologna, Italy

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ABSTRACT

Five cases of non-remitting conjunctivitis turned out to be the sole presenting sign and symptom of COVID-19. These patients tested positive on RT-PCR of naso-pharyngeal swabs and developed no fever, malaise, or respiratory symptoms throughout the course of their illness. They all fully recovered. In the current efforts to fight the spread of this virus, authors want to emphasize that atypical clinical presentations of COVID-19 can occur and a high level of suspicion should be maintained. Ocular involvement and transmission of SARS-CoV-2 should never be overlooked. In fact, conjunctival mucosae are susceptible to respiratory viruses and remain an important point of entry. For this reason, eye protection in the form of goggles or a face shield should be considered essential for all healthcare providers, even when taking care of patients who are not showing typical symptoms of COVID-19.

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Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a novel virus that emerged in the Hubei province of China in December 2019 and rapidly spread throughout the world causing an ongoing pandemic. As of 8 April 2020, approximately 1.44 million cases of COVID-19 have been reported in 209 countries and territories, resulting in approximately 83,400 deaths. About 308,000 people have recovered [1,2].

SARS-CoV-2 belongs to the Coronavirus family of viruses, the same family of SARS-CoV and MERS-CoV viruses and causes Coronavirus Disease 2019 (COVID-19). Transmission occurs during close contacts when small droplets reach mucosal surfaces, namely the mouth, nose or eyes. Small droplets are released in the environment every time someone sneezes, coughs, or talks. Common symptoms include fever, cough, and shortness of breath. Clinical course varies from complete asymptomatic presentation to pneumonia and severe acute respiratory distress syndrome [3,4].

Coronaviruses can affect the eyes of both humans and animals. Ocular manifestations in animals include acute conjunctivitis, anterior uveitis, retinitis, and optic neuritis [5,6]. In humans, acute conjunctivitis is the only ocular manifestation described in literature [7,8]. The eyes also represent an important point of entry for respiratory viruses, including coronaviruses [9]. In fact, a lack of wearing eye protection were both associated with an

increased risk of SARS coronavirus transmission from infected patients to health care workers during the 2003 Toronto SARS outbreak [10].

In this article, authors describe five atypical clinical presentations of COVID-19 that involved the eyes. What makes these cases especially relevant from an epidemiological standpoint is that conjunctivitis remained the only sign and symptom of active COVID-19. In fact, these patients never developed fever, general malaise, or respiratory symptoms. Infection was confirmed by RT-PCR on naso-pharyngeal specimens.

Cases

Four middle-aged males and one female (Table 1) with signs and symptoms of acute conjunctivitis – conjunctival hyperemia, epiphora, discharge, and photophobia – were referred to our Eye Clinic by their general practitioners as their conditions did not seem to improve after several days. We confirmed the diagnosis of acute conjunctivitis and counseled them to continue with symptomatic therapy and moxifloxacin eye drops four times a day for 5 more days.

In the context of the current SARS-CoV-2 pandemic, each subject was questioned about recent travels or close contacts with people diagnosed with COVID-19. They all said they had recently travelled to a region of the country, namely Lombardy, where a very high number of COVID-19 cases had been reported. Given their travel history, the current epidemiological emergency, and the fact that conjunctivitis has been described as a presenting sign of infection with Coronaviridae family of viruses, it was decided to

* Corresponding author.

E-mail address: sergio.scalinci@unibo.it (S.Z. Scalinci).

Table 1
Demographic characteristics, clinical symptoms and signs, and RT-PCR results of subjects.

Patient ID	Gender	age	Clinical Presentation	General symptoms	Recent travels	rt-pcr ct value
1	male	41	chemosis ++, epiphora, photophobia	none, no fever	milan (mi)	19
2	male	43	chemosis +, epiphora, photophobia	none, no fever	lodi (lo)	22
3	female	37	chemosis +, epiphora, photophobia	none, no fever	codogno (lo)	21
4	male	65	chemosis ++, epiphora, photophobia	none, no fever	varese (va)	17
5	male	48	chemosis, epiphora, photophobia	none, no fever	como (co)	19

RT-PCR CT value.

Cts <29 are strong positive reactions indicative of abundant target nucleic acid in the sample.

Cts of 30–37 are positive reactions indicative of moderate amounts of target nucleic acid.

Cts of 38–40 are weak reactions indicative of minimal amounts of target nucleic acid which could represent an infection state or environmental contamination.

perform a naso-pharyngeal swab in all these five subjects. It is important to note however that no one of them displayed fever, general malaise, or respiratory symptoms.

Results from the naso-pharyngeal swab using RT-PCR became available 24–36 h later and confirmed infection with SARS-CoV-2 virus. These five patients were instructed to self-quarantine until complete resolution of the infection and were followed-up by phone. During this time, none of them reported the development of fever, general malaise, or respiratory symptoms. In other words, conjunctivitis remained the only sign and symptom of COVID-19 throughout their illness.

Discussion

SARS-CoV-2 virus is representing an unprecedented challenge for healthcare authorities for four reasons: high transmissibility, high susceptibility of the general population, higher morbidity, and higher mortality rates than the common influenza virus. Despite exceptional measures such as nation-wide lockdowns, containing the spread of SARS-CoV-19 has been difficult. It has been questioned whether and to which extent asymptomatic or pre-symptomatic individuals contribute to the spread of the virus. The percentage of asymptomatic cases is also still debated, but according to a recent Japanese analysis, about 30 % (95 % confidence interval between 7.7 % and 53.8 %) of infected subjects might remain completely asymptomatic [11]. Patient zero of the Italian outbreak is believed to become infected via an asymptomatic or pre-symptomatic individual [12].

Ocular manifestation of COVID-19 and ocular transmission of SARS-CoV-2 are often overlooked but can still represent an important source of infection for both the general population and healthcare providers [13]. Ocular surfaces have in fact great tropism for respiratory viruses and coronavirus RNA has been found in tears [14]. For all healthcare providers, covering the eyes with goggles or a face shield should be considered as important as wearing mask and gloves, regardless of patient’s symptoms.

Conclusions

Authors described the atypical presentation of five patients infected with SARS-CoV-2 virus. In these patients, acute conjunctivitis was the presenting sign and symptom, but also remained the sole form of manifestation of COVID-19. As a result, authors emphasize the importance of eye protection, which can be sometimes overlooked, even if patients do not show typical signs of infection. Goggles or face shields are highly recommended for all health care workers, regardless of patients’ clinical presentation.

Authorship contributions

S. Z. Scalinci: Conception and design of study, acquisition of data, analysis and/or interpretation of data, Drafting the

manuscript, revising the manuscript critically for important intellectual content, Approval of the version of the manuscript to be published (the names of all authors must be listed

E. Trovato Battagliola: acquisition of data, analysis and/or interpretation of data, Drafting the manuscript.

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