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

ARTICLE INFO

Article history:
Received 15 April 2020
Received in revised form 16 April 2020
Accepted 16 April 2020

Keywords:
Eyes
Acute conjunctivitis
COVID 19
SARS-CoV-2 virus pandemic

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 mucosa 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.

© 2020 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

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 Coronavirus family of viruses, it was decided to
perform a naso-pharyngeal swab in all these five subjects. It is important to note however that none of one 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 Battaglia: acquisition of data, analysis and/or interpretation of data, Drafting the manuscript.

Acknowledgements

All persons who have made substantial contributions to the work reported in the manuscript (e.g., technical help, writing and editing assistance, general support), but who do not meet the criteria for authorship, are named in the Acknowledgements and have given us their written permission to be named. If we have not included an Acknowledgement, then that indicates that we have not received substantial contributions from non-authors.

References

[1] Coronavirus disease 2019 World Health Organization. Retrieved 8 April 2020.
[2] Coronavirus COVID-19 global cases by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). ArcGIS. Johns Hopkins CSSE; 2020 Retrieved 8 April 2020.
[3] Guo YR, Cao QD, Hong ZS, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak - an update on the status. Mil Med Res 2020;7(March (1)):11, doi:http://dx.doi.org/10.1186/s40779-020-00240-0 Review. PubMed PMID: 32169119; PubMed Central PMCID: PMC7068984.
[4] Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395(February 10):497–506, doi:http://dx.doi.org/10.1016/S0140-6736(20)30183-5 Epub 2020 Jan 24. PubMed PMID: 31986264.
[5] Seal I, Agrawal R. Can the coronavirus disease 2019 (COVID-19) affect the eye? A review of coronaviruses and ocular implications in humans and animals. Ocul Immunol Inflamm 2020:August(3)391–5, doi:http://dx.doi.org/10.1080/09292665.2019.1673850 Epub 2020 Mar 16. PMID: 32175797; PMCID: PMC7103678.
[6] Robbins SC, Detrick B, Hooks J. Ocular tropisms of murine coronavirus (strain JHM) after inoculation by various routes. Invest Ophthalmol Vis Sci 1991;32(5)May (6):1883–93 PubMed PMID: 1851734.
[7] Xia J, Tong J, Liu M, Shen Y, Guo D. Evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. J Med Virol 2020(February), doi:http://dx.doi.org/10.1002/jmv.25725 [Epub ahead of print] PubMed PMID: 32100876.
[8] Wu P, Duan F, Luo C, Liu Q, Xu X, Liang L, et al. Characteristics of ocular findings of patients with coronavirus disease 2019 (COVID-19) in Hubei province, China. JAMA Ophthalmol 2020(March), doi:http://dx.doi.org/10.1001/jamaophthalmol.2020.1291 e102191, Epub ahead of print. PMID: 32232433; PMCID: PMC7110919.
[9] Belser JA, Rota PA, Tunpey TM. Ocular tropism of respiratory viruses. Microbiol Mol Biol Rev 2013;77(March (1))144–56, doi:http://dx.doi.org/10.1128/MMBR.00058-12 Review. PubMed PMID: 23471620; PubMed Central PMCID: PMC3591987.
[10] Raboud J, Shigaeva A, McGeer A, et al. Risk factors for SARS transmission from patients requiring intubation: a multicentre investigation in Toronto, Canada. PLoS One 2010;5(May (5)), doi:http://dx.doi.org/10.1371/journal. pone.0010717 e10717, PubMed PMID: 20502660; PubMed Central PMCID: PMC2873403.
[11] Nishiuura H, Kobayashi T, Suzuki A, et al. Estimation of the asymptomatic ratio of novel coronavirus infections (COVID-19). J-Pre-Proof 2020, doi:http://dx.doi.org/10.1016/j.jid.2020.03.020.
[12] Raoult D, Zumla A, Locatelli F, Ippolito G, Kroemer G. Coronavirus infections: epidemiological, clinical and immunological features and hypotheses. Cell Stress 2020(March), doi:http://dx.doi.org/10.15698/cst2020.04.216 PMID: PMC7064018.
Li J0, Lam DSC, Chen Y, Ting DSW. Novel coronavirus disease 2019 (COVID-19): The importance of recognising possible early ocular manifestation and using protective eyewear. Br J Ophthalmol 2020;104(March (3)):297–8. doi:http://dx.doi.org/10.1136/bjophthalmol-2020-315994 PubMed PMID: 32086236.

Loon SC, Teoh SC, Oon LL, et al. The severe acute respiratory syndrome coronavirus in tears. Br J Ophthalmol 2004;88(July (7)):861–3. doi:http://dx.doi.org/10.1136/bjo.2003.035931 PMID: 15205225; PMCID: PMC1772213.

S.Z. Scalinci, E. Trovato Battagliola //IDCases 20 (2020) e00774