

THE PANDEMIC OF COVID-19 AND THE USE OF CONTACT LENSES

Abstract

In December 2019, a coronavirus (CoV) epidemic broke out in China, causing severe acute respiratory syndrome. Today it has become a pandemic of coronavirus 2019 (COVID-19). According to the article so far written by the pandemic in the world, we have more than 850,000 cases with more than 44,000 deaths in 178 countries (The numbers may vary when you read these lines) [1,2]. Since then, there have been repeated reports of eye infections. Of course, the eye effects of human infections with CoVs in general, have not been widely investigated. However, CoVs are known to cause various eye infections in animals. On January 30, the World Health Organization (WHO) [3] issued an emergency international public health warning (PHEIC) [5]. It included a set of recommendations for personal protective equipment (PPE) based on the experience of previous epidemics, such as Previous MERS-CoV [4] and SARS-CoV1 [6]. This set of guidelines includes the use of goggles or face shield to protect against eye transmission of CoV. However, there is currently no evidence to suggest an increased risk of exposure in Covid-19 through contact lens use compared to spectacles. Also, spectacles cannot be used as protective goggle. So far the scientific data on eye transmission have not been thoroughly studied. Of course, from the ophthalmological scientific community, there are some reports indicating that CoVs also affect the eye [6,7,8].

Keywords: COVID-19, Contact Lense, SARS-CoV-2, MERS-CoV , Pandemic, Public Health, Protective equipment (PPE).

Introduction

In December 2019, a coronavirus (CoV) epidemic broke out in China, causing severe acute respiratory syndrome. Today it has become a pandemic of coronavirus 2019 (COVID-19). According to the article so far written by the pandemic in the world, we have more than 850,000 cases with more than 44,000 deaths in 178 countries (The numbers may vary when you read these lines) [1,2]. Since then, there have been repeated reports of eye infections. Of course, the eye effects of human infections with CoVs in general, have not been widely investigated. However, CoVs are known to cause various eye infections in animals.

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spectacles cannot be used as protective goggle. So far the scientific data on eye transmission have not been thoroughly studied. Of course, from the ophthalmological scientific community, there are some reports indicating that CoVs also affect the eye [6,7,8].

A greater concern to health professionals produced the announcement about a number of cases that have highlighted the RNA presence of the SARS-CoV virus in tears [8]. In 2004, tear samples collected from 36 SARS-CoV patients and were sent for SARS-CoV detection tests. RNA of SARS-CoV was detected in three patients. Of these three, one patient had RNA identified on all samples, respiratory smears and tears. The findings of this study suggest that SARS-CoV may occur in tears and confirm the need to be taken appropriate precautions to prevent transmission through ocular tissues and secretions [8,9].

Furthermore, have been reported some cases of eye infections in the recent CoVid-19 pandemic. On January 22, 2020, Guangfa Wang, a member of China's national pneumonia experts' group, developed conjunctivitis during an inspection of Wuhan, the midpoint of the outbreak. He then tested positive for the new virus, but eventually later he recovered from the infection [17,18]. This led to an international awakening for new research on eye infection as a possible alternative transmission route for CoVid-19 [9,17].

Since the epidemic is still in early stages, not much has been published about the pathogenic mechanisms of SARS-CoV-2, especially in regard to ocular tissues infection. However, genetic and structural analyses [10] have been reported that SARS-CoV-2 (the well-known COVID-19) use a similar way of binding to the receptor such as SARS-CoV, which allows to infect host cells through its enzyme-converting angiotensin-2 (ACE2) [11,12].

COMMON CONCLUSIONS FOR CoVs AND HUMAN EYE INFECTION

As CoVs can cause eye infection in various animals, the possibility of human eye complications due to SARS-CoV-2 cannot be ignored. However, examples in animals also point out that CoVs are a heterogeneous group of viruses that can cause eye effects through a wide variety of mechanisms. Some of these mechanisms are extremely different from those adopted by CoVs affecting humans [11]. Nevertheless, there are didactic conclusions from the study of these infections. Above all, CoVs are able to produce a wide range of ocular manifestations, ranging from mild pathological conditions of the anterior segment, such as conjunctivitis and anterior uveitis to threatening vision conditions, such as retinal detachment [19,20]. Subsequently, we must also recognize that CoVs can develop in-vivo mutations that dramatically alter disease manifestations.

As the current pandemic continues, a better understanding of the virus will emerge, hoping that the global scientific community will focus more on research on the relationship between CoVs and the eye. This understanding will not only help with guidelines and control measures for infections, but can also provide the scientific community with information on the suitability of using eye tissue or even tears as diagnostic methods. Meanwhile, vision scientists as well as other healthcare workers should always be careful and continue to take precautions for possible transmission of

CoVs through the eye tissue by taking appropriate measures to prevent the contamination and the spread of the disease [13,16].

OPTOMETRISTS, EYEGLASSES, CONTACT LENSES AND FACE MEASUREMENTS

In a statement issued on March 18, the American Optometric Association (AOA) provides instructions to Optometrists based on recommendations providing basic health care to US Centers for Disease Control and Prevention (CDC). In today's patient care environment, physicians and their primary care staff are responsible for ensuring that all guidelines and requirements for the care of all patients are strictly adhered to.

In addition to the general measures taken by the state to reduce the risk of spreading the disease, such as good hand cleaning with soap or antiseptic, customers can enter the store in pairs and be at least 2 meters apart and not try pointless pairs of glasses, the Panhellenic Association of Optics and Optometrists with a guidelines letter, addressed on March 15, added some more rules:

- *The optician or optometrist and all optical store staff are required to wear gloves, a protective mask and goggles during all retail operations.*
- *Also they must clean and disinfect contact surfaces such as tables, cash desks, door knobs, desks, telephones, handles, tap and sink, as well all items that have come in contact with the customer.*
- *Also, if the surfaces are dusty, first clean them with detergent or soap and water before the antiseptic.*

Of course, remains yet a point that has not been clarified, such as the necessary contact with the patient during the dispensing of glasses on the face and contact lenses on the eye. Of course, in contact with the customer, the Optometrist should wear a mask, surgical gloves and goggles. But also has to follow the general instructions of the responsible for the public health authorities.

However, if you try the Internet search engines, such as Google and for instance type "COVID-19 and use of contact lenses" it is possible that conflicting tips may appear. Moreover, many newspapers appear with ambitious headlines such as "Can you be infected with coronaviruses from your contact lenses?". On the other hand, there are some organizations that, although advise that "by removing the glasses and using contact lenses we can reduce the number of facial contacts, and therefore the exposure of the eyes to the risk of infection", at the same time easily cause anxiety to users whether the use of contact lenses may not be safe during the COVID-19 pandemic. Nevertheless, same Google search, among other things, presents a few results from contact lens experts, providing reassuring advice, based on collected medical data. So what are the facts that eye professionals and contact lens users need to know? What is the truth and where is the misinformation?

WHAT IS FAKE AND WHERE IS THE TRUTH?

Recently, under a joint directive to the eye professionals [14], Lyndon Jones, director of the Center for Eye Research and Education (CORE) at the University of Waterloo

(Canada) and Philip Morgan, director of Eurolens Research at the University of Manchester (UK) as well as Jason Nichols, Vice President for Research and Professor at the University of Alabama at the School of Optometry in Birmingham (United States) and Editor-in-Chief of Contact Lens Spectrum, provide the following information:

The use of Contact Lenses is safe. Despite the myths and misinformation that have emerged in recent announcements, the use of contact lenses remains a safe and extremely effective method of correcting vision for millions of people worldwide.

Of course, properly hand washing, especially at this stage, is still much essential. When using contact lenses or glasses, wash your hands thoroughly with soap and water followed by hand drying with disposable paper towels. For people wearing contact lenses, this must be done before each lens insertion and removal.

Contact lenses need daily disinfections. Users who wear contact lenses must either discard disposable dailies lenses every night or regularly disinfect the monthly or bimonthly lenses, according to the manufacturer's and the professional dispensers' instructions. In today's conditions, proper daily cleaning is not only for the lenses but also for the storage bottles and contact lenses cases, very important [14].

Vision professionals, among other things, should consider advising patients to reduce or eliminate sleeping in their contact lenses. Furthermore, should consider ways to communicate with the patients at this time and decide how to deal with clinical issues when normal clinical settings may not be available.

Regular disinfections of eyeglasses are also required. Some viruses, such as COVID-19, can remain on hard surfaces for many hours, during which time the virus may be transmitted to the fingers and face of the person wearing glasses. This is especially true for reading glasses (for people generally over 40 years old). Most presbyopic people need reading glasses and may put them on and take off many times during the day and expose their face to infection. Then again, this age group seems to be among the most vulnerable populations because they are more severely affected by COVID-19 compared to contact lenses users, which are typically younger.

Continuing the common guideline, the experts recommend to stop using contact lenses only in people who are infected with the virus [14] . At last, did not provided any evidence that glasses offer protection against the virus.

Numerous contact lens suppliers have made similar reassuring statements and are instructing users for a better cleaning and care of contact lenses. Some contact lens manufacturing companies are also organizing videoconference to inform and awaken dispensers and users, as well, in relation to the guidelines for dealing with the current situation of COVID-19.

Recently, various professional bodies around the world have been providing advice, both with recommendations for maintaining safe clinical practice in general and in some cases with the use of contact lenses. These include scientific updates from the American Optometric Association, the Canadian Optometrists Association, the British College of Optometrists. Furthermore, many other professional bodies, like academic

institutions and contact lens manufacturers are expected to follow, with similar advice.

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