

Novel coronavirus disease pandemic and ophthalmologist's perspectives

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Abstract

Ophthalmologists are among those healers facing a higher risk of acquiring novel coronavirus disease 2019, called COVID-19, during their professional duties since they have close physical contact with their patients. Some patients with COVID-19 may present with or may develop conjunctivitis during the course of the illness. The ocular secretions and tears have been identified to have positive results to COVID-19 tests and as such could be a source of spread. This review aims at providing the useful guidelines to ophthalmic professionals for their own safety, and safety of their patients based on the available current literature, and also based on personal experience and observations. Literature search was made on PubMed for COVID-19 in relation to ophthalmology in the limited period of the last quarter of 2019 and first quarter of 2020. Research also included access to current guidelines published by various ophthalmic societies. Accordingly, present and future ophthalmic practice patterns need to be modified.

Keywords: SARS-CoV-2, COVID-19, Pandemic, Conjunctivitis, Ophthalmologist.

DOI: <https://doi.org/10.5455/JPMA.18>

Introduction

Dr. Li Wenliang was the first ophthalmologist to die at 34 years of age in Wuhan city of China on 7th February 2020 after getting infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), termed as coronavirus disease (COVID-19). He had warned his colleagues, prior to his death, about the possibility of a disease outbreak and had also advised to take precautionary measures while attending those patients. Very little is known about this outbreak, which has globally spread so fast that WHO termed it pandemic. Till today there are several health professionals who have become patients and have even lost their lives while performing their professional duties.^{1,2}

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COVID-19 is an illness which characteristically affects lungs and airways. It may progress to severe acute respiratory syndrome (SARS). The cause is a newly discovered virus called SARS-CoV-2 that presumably originated from bats and transmitted on to humans in Wuhan city of China in December 2019. It then went on to spread in the form of a pandemic, causing alarming situation throughout the world.³

SARS-CoV-2 is highly contagious in human though it appears to be comparatively less virulent (3.4% estimated mortality) than SARS (mortality of 9.6%) and Middle East Respiratory Syndrome (MERS) (mortality 35%).^{3,4} The virus is transmitted through direct or indirect contact of infected people or contaminated surfaces.³ This virus is said to spread by the carriers or patients through droplets produced when they breath, cough, sneeze or talk to people at a close distance. These droplets enter the eye, nose and mouth of nearby people and are then inhaled into the lungs.³ Patients have been reported to develop conjunctivitis and keratoconjunctivitis during the course of the disease.⁵ The conjunctival secretions and tears have also been reported to be positive in the infected individuals.⁶ The virus is said to pass through the nasolacrimal duct from the upper respiratory tract to the eye.^{7,8} A large number of affected persons may be asymptomatic but can transmit the virus to healthy individuals.^{2,9}

Ophthalmologists are at a high-risk as they are very close to patients during the examination. The distance is less than 12 inches when patients are examined on the slit lamp, an essential tool for ophthalmic assessment nowadays. There is hardly any distance between the examiner and patient during direct ophthalmoscopy, although it is infrequently done these days in actual practice.

Ophthalmologists also have heavy daily outpatient clinics and a high volume of both elective and emergency surgeries. It is risky for ophthalmic care providers as well as for the patients to carry on with normal services as was provided in the pre-COVID-19 era. A large number of ophthalmic patients are elderly and often with comorbidities like diabetes and cardiac diseases, which are additional risk factors.⁷ In response to this pandemic

most of the ophthalmic organisations have recommended treatment of only acute sight-threatening conditions in order to reduce chances of spread of the virus.⁷ The present practice is to assess the risk, have telephonic and virtual conversation along with use of telemedicine with the patients to decide how essential it is to call them to hospital and clinic settings.¹⁰ The non-urgent cases can be delayed and only urgent cases undergo interventions and surgical procedures.

Based on the recommendations and present practice pattern in ophthalmology following guidelines could be helpful.^{1,2,6}

Decision to see the patients at the clinic or hospital settings

Patients do not like to go to clinics and hospitals during pandemics to avoid getting affected by the virus. During chart reviews prior to their planned visits, all patients with stable ocular conditions are deferred for up to 12 weeks. For stable patients prescription refill can reduce their visit to the clinic or hospital. Patients who are in the process of having their treatment are called in the clinic or hospitals. They should be attended as soon as possible so as to reduce their exposure time. Diabetic patients who need pan-retinal photocoagulations or focal lasers or intra-vitreous anti-vascular endothelial growth factor (anti-VEGF) injections, those who need similar injections for subretinal neovascular membranes, post-operative patients who have undergone complicated retinal surgeries with silicone oil internal tamponade, infected corneal ulcers, leaking blebs with shallow anterior chamber after drainage surgery or any other ophthalmic procedure that needs necessary follow-up should be attended to immediately. Services like retinopathy of prematurity (ROP) screening and necessary treatment in babies with ROP will have to be continued.

American Academy of Ophthalmology (AAO) has published a list of ophthalmic emergencies that need to be attended to on urgent basis.⁹ Patients who present with acute onset conditions like that of orbital cellulitis, acute angle-closure glaucoma, lens-induced glaucoma, corneal ulcers, suspected endophthalmitis, dropped nucleus during cataract surgery, intraocular foreign bodies, perforating and penetrating injuries, sudden loss of vision caused by vitreous haemorrhage or retinal vascular occlusions and conditions like threatened or recently macula-off retinal detachments need to be seen on emergency basis and should be examined with all personal protective equipment (PPE). Special consideration should be given to one-eyed patients.

Patients presenting at clinic or outpatient hospital settings

The patients presenting at the clinic or hospital should undergo triage that includes asking questions about the COVID-19 symptoms like fever, cough, dyspnoea, myalgia, anosmia or fatigue or ocular discharge or red eye before entering into premises. Patients with increased risk that includes pregnant women, immunosuppressed people, patients on renal dialysis, diabetics and cardiac patients should be allocated to a lower risk area. The body temperature should be taken, hand sanitizer used and surgical masks as well as hand gloves should be given to all patients on their entry in the clinic or hospital. Patients with positive symptoms or ocular discharge and those with body temperature more than 37.3 C are screened for COVID-19.⁴ Patients are advised not to touch their faces and are also advised to use spectacles instead of contact lens (CL), though at present, there is no evidence of increased risk with CL wear for COVID-19.¹¹

Outpatient clinic settings, in-patients and operating rooms

Ophthalmologists directly see most of relevant features on their ocular examinations on the slit lamp. During this examination the distance between the patient and examiner is very small. A conscious attempt should be made to spend minimum time by doing quick relevant clinical examination with least possible conversation with the patient during slit-lamp examination. We use plastic sheets attached on the slit-lamps to act as breath shields although direct evidence of its effectiveness is lacking.¹ Direct ophthalmoscopy should be avoided and maximum use of indirect ophthalmoscope should be done for clinical examination. Minimum number of assistants and healthcare nursing staff should be involved in the process of examination of the patient, who should also follow all the safety precautions. If possible, the available staff should be divided in two teams working for one to two weeks. Any of the working staff who comes in contact with the COVID-19 patients should undergo the COVID-19 screening tests and should be sent to self-isolation for a period of fourteen days.²

Hand hygiene is important both for patients and ophthalmologists.¹³ It is essential that ophthalmologists use all PPEs that includes using hand gloves, masks and protective eye goggles. Although, hand hygiene can be carried out with soap and water, WHO recommends use of alcoholic gel and solutions. Because of high-associated mortality rate, ophthalmologists in a country like China are advised to wear full PPE including using N95 mask during examination of all patients. They call this approach

"make no mistake" approach.¹ Survival time of the virus and how long it lasts outside host is not definitely known. Ma et al have suggested the use of 75% ethanol or 3% hydrogen peroxide tampon to clean ophthalmic equipment.¹³ We use wipes with 2% chlorhexidine in 70% alcohol to clean the slit-lamp, automatic refractor, optical coherence tomography (OCT) machines and fundus camera.

Only ocular emergencies should be considered for admission. Every attempt should be made to have one person in one room with minimum attendants and visitors. Operating room is considered as a high-risk area for ophthalmologists, anaesthetists and all nursing staff. This warrants the practice and strict compliance of all the mentioned precautionary measures.

Conclusion

Both present and future ophthalmic practice needs major changes in view of current COVID-19 crisis. Ophthalmologists should restrict their services to urgent and emergency conditions and rearrange routine appointments both for their safety and for the safety of their patients. All the elective surgeries should be deferred and medical or surgical intervention should only be carried out in sight threatening conditions. "Make no mistake" approach in taking precautions should be adopted by ophthalmologists as they are at high risk of exposure. Otherwise they are likely to acquire the virus and transmit it or become a patient themselves, and risk their lives.

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