

Data reporting in ophthalmology during COVID-19 pandemic: need for a Canadian registry



Registries assist public health in documenting the incidence of new infections and gathering clinical data about patients to inform clinicians on presentation and evolution of emerging diseases. This becomes even more important during the coronavirus disease 2019 (COVID-19) pandemic.

At the end of 2019, the World Health Organization first picked up on cases of a new viral pneumonia reported in Wuhan, China. Among the first to raise the alarm about this disease was ophthalmologist Wenliang Li, who later succumbed to the disease caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly referred to as COVID-19. By March 2020, the World Health Organization declared this outbreak a pandemic with identification of progressively increasing human-to-human transmission in multiple countries. Since then, the spread of COVID-19 has grown exponentially with 61 877 685 confirmed cases and 1 447 246 deaths worldwide with 364 552 cases and 11 959 deaths in Canada as of November 28, 2020.¹

In the scientific community, research has taken place at an astounding pace to improve diagnostics, therapeutics, and prevention of this disease. Given the highly infectious nature of COVID-19, multiple measures have been implemented in outpatient clinics in attempts to contain the spread of the virus. Patients with more urgent conditions were prioritized and seen preferentially to protect both personnel and patients while preserving personal protective equipment. As we learn to live with this virus, ophthalmologists must be ready to treat patients presenting with acute ocular complications of ongoing COVID-19 or patients bearing sequelae after recovery from the virus. Infection risk must be balanced with the risk for vision loss in symptomatic patients by triaging patients based on the urgency of their ocular presentation and using appropriate personal protective equipment and hygiene measures with patients. Many ophthalmologic societies have proposed guidelines to address these issues.^{2,3} As a measure of public health, our view is that the ophthalmology community should also maintain an open record of ocular manifestations to better describe the presentation and trends related to the acute and chronic ocular findings of COVID-19 and perhaps contribute to knowledge regarding ocular transmission of the disease. Therefore, we call all Canadian ophthalmologists to action and encourage colleagues to share clinical data on patients who are currently infected with or have recovered from COVID-19. Building a registry with this clinical data will permit the analysis of these cases to enable a better

understanding of disease manifestations and ways to mitigate the visual effects of this pandemic.

COVID-19

The new SARS-CoV-2 responsible for the potentially fatal COVID-19 disease causes a primarily respiratory illness and asymptomatic community transmission is the leading cause of infection with most patients not demonstrating symptoms. Twenty to 30% of patients may present with acute respiratory distress syndrome, sometimes requiring admission to intensive care units and ventilation. The COVID-19 death rate in hospitalized patients is around 14% and increases with age and comorbidities such as hypertension, diabetes, coronary heart disease, and chronic kidney disease.⁴ Ocular manifestations of COVID-19 have been described (e.g., epiphora, conjunctivitis, conjunctival congestion, and chemosis).⁵ However, the extent of ocular manifestations is largely unknown as data from complete ophthalmologic examinations in infected patients is limited. There are hints from our understanding of other coronaviruses that there may be a wide range of findings including not only conjunctivitis at the onset of infection (reported in up to one-third of patients), but also uveitis, retinopathy, and neuropathy.⁶

Owing to the large number of asymptomatic patients, this virus has reached pandemic proportion not seen with other related coronaviruses like SARS and Middle East Respiratory Syndrome. It can create an important inflammatory reaction with widespread thrombogenic processes with reports of these complications in multiple organ systems, including the eye.⁷ Many medical societies have established registries to track manifestations affecting their organ system, such as the American Association of Dermatology and the American Heart Association. It is important that the Canadian ophthalmology community now do the same.

Much is yet to be discovered about the possible ophthalmologic manifestations of COVID-19 and its effects on our most vulnerable patients. For instance, hyper-reflective lesions of the retina have been described on optical coherence tomography of the retina in addition to cotton-wool spots and microhemorrhages, although the clinical effects of this are unclear.⁷ Retina involvement is not surprising given the finding of viral RNA in the retina of deceased patients.⁸ Additionally, orbital emphysema after mechanical ventilation⁹ and bilateral optic neuritis simultaneously positive for myelin oligodendrocyte glycoprotein antibodies¹⁰ have been described in patients with COVID-19. Not only is it likely that more signs and symptoms will be found in the acute setting such as inflammatory vasculitis, uveitis, and thromboembolic vessel occlusions in the eye, but also that

subtle underlying chronic sequelae of disease may be found if specifically investigated with appropriate imaging including optical coherence tomography.

Importance of public reporting

As we continue to learn more about COVID-19, early diagnoses may assist in self-isolation before the onset of symptoms with appropriate contact tracing to inform others of their risk. Registries will also prove useful to help the ophthalmology and wider eye care community to better appreciate the variety of eye manifestations and the occurrence of ocular complications. Being aware of possible subtle findings may prompt clinicians to investigate COVID-19 patients. Patients infected with COVID-19 may otherwise have underlying undiagnosed visual or ocular issues. An important benefit of a registry is to enable the ophthalmology community to better treat the millions of COVID-19 patients who may develop lasting ocular sequelae when the worst of the pandemic will be behind us. As such, the COVID-19 Eye Registry (COVER) was created. This multi-institution, pan-Canadian national effort will allow clinicians to submit data for COVID-19 patients who may or may not have a preexisting ocular condition. Accepted cases include patients who developed ocular manifestations during or after an infection with COVID-19 that may or may not be related to the illness, and patients with preexisting ocular conditions who contracted COVID-19. Only non-identifying information will be collected in the database and all the information will be stored on a secure REDCap server hosted by the Centre intégré universitaire de santé et de services sociaux of the Est-de-l'Île-de-Montréal region. The success of this collaborative effort depends on the active participation of the health care community to obtain comprehensive, accurate, and reliable data. To contribute to the registry and submit clinical data for a patient, a case report form can be filled out at the following address after having obtained a signed consent form to be kept in the patient's file: <https://redcap.cemtl.rtss.qc.ca/redcap/surveys/?s=X8TKWPH38A>. The link will be distributed to members of the Canadian Ophthalmological Society to increase awareness of and access to this initiative.

Moving forward, regular updates on the results of the registry provided on the behalf of the Canadian Ophthalmological Society will hopefully guide future COVID-19 recommendations in ophthalmology and allow clinicians to tailor their care of patients with prior infections of COVID-19.

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Footnotes and Disclosure

The authors have no proprietary or commercial interest in any materials discussed in this article.