

PRIMARY eyecare

The Eyes and COVID-19

While it is widely known that the highly contagious virus can cause a severe respiratory disease more information is emerging which suggests a connection with the tear film and conjunctiva in some infected people.

Evaluation of coronavirus in tears and conjunctival



secretions of patients with SARS-CoV-2 infection

In February a team of researchers in China published a paper reporting on their evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. Xia et al. ([Jianhua Xia MM](#)) performed a prospective interventional case series study involving 30 confirmed novel coronavirus pneumonia (NCP) patients at the First Affiliated Hospital of Zhejiang University from January 26, 2020 to February 9, 2020. At an interval of 2–3 days, tear and conjunctival secretions were collected twice with disposable sampling swabs for reverse transcription polymerase chain reaction (RT-PCR) assay.

Twenty-one of the patients were identified as common type and nine as severe type novel coronavirus pneumonia. The severe-type diagnostic criteria used were:

1. respiratory distress (respiratory rate ≥ 30 cycles/minute)
2. oxygen saturation $\leq 93\%$ or arterial partial pressure of oxygen (PaO₂)/oxygen concentration FiO₂ ≤ 300 mmHg in the resting state
3. respiratory failure requiring mechanical ventilation shock
4. other forms of organ failure requiring monitoring and treatment at the intensive care unit.

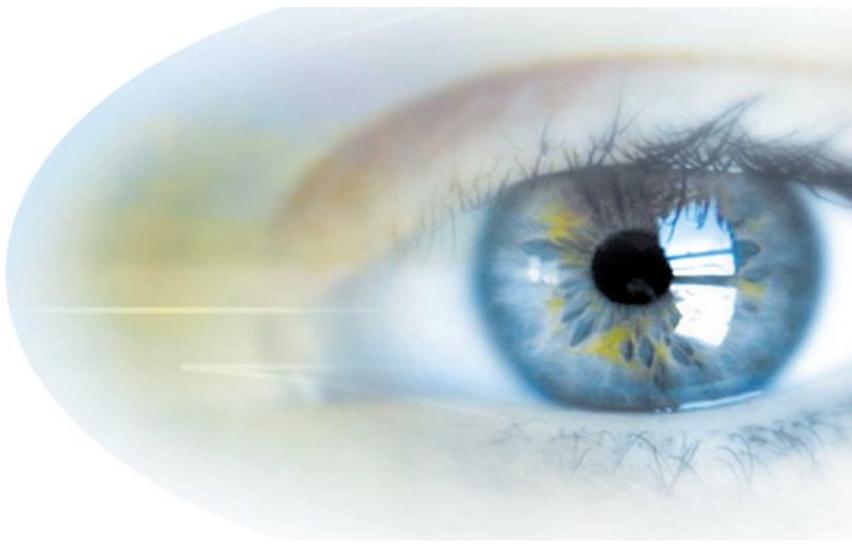
Patients diagnosed with the disease but not showing the criteria for severe-type disease were included in the common type group.

One of the 21 patients with common type was also diagnosed as having conjunctivitis and two conjunctival swab samples from this patient yielded positive RT-PCR results and his sputum samples were also positive. Samples from all other patients were negative.

Despite there being only one patient where SARS-CoV-2 was found in ocular secretions the authors consider that the disease may be detected in the tears and conjunctival secretions in other novel coronavirus pneumonia patients with conjunctivitis.

Involvement of ocular fluids among patients diagnosed with COVID-19 is confirmed

A [large study published in the New England Journal of Medicine](#) confirms there may be involvement of ocular fluids among patients diagnosed with COVID-19. The authors of the paper, Clinical Characteristics of Coronavirus Disease 2019 in China reported conjunctival congestion in 9 of 1,099 patients with laboratory-confirmed COVID-19 from 30 hospitals across China.



Early ocular manifestation in COVID-19 and the importance of using protective eyewear

And an [editorial In the British Journal of Ophthalmology](#) warns of recognising possible early ocular manifestation in COVID-19 and highlights the importance of using protective eyewear.

Li et al. note there is evidence that some coronavirus can occasionally cause conjunctivitis in humans. The virus is believed to spread primarily via person-to-person through respiratory droplets produced when an infected person coughs or sneezes, however, it is possible that SARS-CoV-2 is transmitted by aerosol contact with the conjunctiva.

Transmission to healthcare worker despite being fully gowned with protective suit and N95 respirator

A healthcare worker who was part of the expert task force who visited Wuhan, became infected by the virus despite being fully gowned with a protective suit and N95 respirator. Ji-Peng et al. report that the first symptom of this person was unilateral conjunctivitis, followed by development of fever a few hours later. Since this reported incident, healthcare professionals in China have been urged to use eye protection when they are in close contact with patients.

The editorial in BJO recommends strict measures to protect mouth, nose and eyes for all healthcare professionals to prevent COVID-19 infection.

Dr Li Wenliang – is his death a warning

Perhaps Dr Li Wenliang, the Chinese doctor who first raised concerns about the corona virus outbreak in Wuhan was the canary in the coal mine on conjunctival involvement in COVID-19. Since his death it has been reported that he was infected by an asymptomatic glaucoma patient who later developed the disease.

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While so much remains unknown about COVID-19 it would be highly prudent to both recognise the potential for transmission of SARS-CoV-2 via ocular fluids and in considering early manifestation of COVID-19, be mindful of viral conjunctivitis as a possible presentation.

