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# Covid-19 Manifestation in The Adult and Paediatric Eyes

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## 1. Abstract

Majority of mild Covid-19 patients are respiratory problems, however, patients with serious infections manifest some other organs in the body, including eyes. About 20% patients show conjunctivitis. Among children about 15% show eye infections. Prolonged sick patients also show changes on retina.

## 2. Introduction

Severe Acute Respiratory Syndrome (SARS) was identified much earlier; however, the newest in this family SARS CoV-2 was first identified on 17 November 2019. December 2019 in Wuhan, China and has resulted in an ongoing pandemic. Since, it belongs to the family of respiratory disease-causing virus, its primary targeted organ is Lungs, however it also effects various other organs such as heart, kidney, brain and other nervous system including the eye [1,2]. Earlier during outbreak of SARS in 2003, ophthalmologist detected SARS-CoV in tear samples of SARS patients [3].

## 3. Mini Review

Corona does not usually interfere greatly with eyesight. But if the front of the pupil and the iris is also affected, there can be some blurring of vision. The conjunctiva of the eye provides protection and lubrication to the eye by the production of mucus and tears. It prevents microbial entrance into the eye and plays a role in immune surveillance. It lines the inside of the eyelids and provides a covering to the sclera [4]. Infective conjunctivitis is most commonly caused by a number of viruses. WHO has reported that many of Covid-19 patients infected with SARS-CoV2 (corona) suffer with conjunctivitis or sometimes pink or red eye [5]. When small blood vessels in the conjunctiva become inflamed, they're more visible. Bacterial infections, allergies, other irritants and dryness are other common causes. Both bacterial and viral infections are contagious, passing from person to person or spread through contaminated objects or water [6]. Viral conjunctivitis is most commonly caused by contagious viruses associated with the common cold. It can develop through exposure to the coughing or sneezing of someone with an upper respiratory tract infection and therefore, SARS CoV-2. For similar regions infect the eyes and can cause conjunctivitis. Ocular complications such as viral conjunctivitis may occur with COVID-19, but the virus may not be detected in the conjunctiva in the early stages of the disease. conjunctival sampling might not be useful for early diagnosis because the virus may not appear initially in the conjunctiva. SARS-CoV-2 is capable of causing ocular complications such as viral conjunctivitis in the middle phase of illness [7].

During COVID-19 pandemic many ophthalmologists

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examined eyes of the patients suffering with SARS CoV-2. SARS-CoV-2-RNA was detected in tears of 24% of laboratory proven moderate to severe COVID 19 patients. Conjunctival swab remains the gold standard of tear collection for RT-PCR assay. There is significantly higher possibility of viral transmission through tears in moderate to severe COVID-19 patients. Repeated tear sampling revealed a downward trend which matched a gradual improvement of ocular symptoms. A recent study of 30 patients (60 eyes) hospitalized for COVID-19 in China reported SARS-CoV-2 in the ocular secretions of both eyes of the only patient with conjunctivitis, but not in the 29 patients (58 eyes) without signs of conjunctivitis [8].

## 4. Conclusion

Ocular Abnormalities are seen in One-Third of COVID-19 Patients. The authors evaluated a small cohort of 27 children (aged 8 days to 210 months) with confirmed COVID-19 at a hospital in Rome, Italy. Nasopharyngeal and conjunctival swabs with reverse transcriptase-polymerase chain reaction (RT-PCR) were obtained at baseline and every 2 to 3 days during hospitalization [9]. Ocular manifestations consistent with mild conjunctivitis were present in 15% (4 patients), but only 1 of these 4 patients had a positive conjunctival swab for SARS-CoV-2. However, 2 patients without clinical signs of conjunctivitis did have positive conjunctival swabs. The authors conclude that viral transmission of SARS-CoV-2 through tears is possible even in the absence of ocular signs.

Paula M Marinho et al. also reported retinal changes by Optical Coherence Tomography (OCT) in 12 adults (six men and six women, aged 25 to 69 years), examined 11 to 33 days after COVID-19 symptom onset [10].

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