OCULAR SYMPTOMS AND SIGNS ASSOCIATED WITH COVID- 19 INFECTION

Mahmoud Hassan Moursy, Eiman Mahmoud Abd El-Latif, Mostafa Abdallah Mostafa Samak
Department of Ophthalmology, Faculty of Medicine, Alexandria University

INTRODUCTION

COVID-19, caused by the novel coronavirus SARS-CoV-2, emerged in Wuhan, China, in late 2019 and rapidly escalated into a global pandemic. The virus, a positive-sense single-stranded RNA betacoronavirus, enters human cells via the ACE2 receptor, primarily affecting the respiratory system. Its high transmissibility and ability to mutate have led to concerning variants (e.g., Alpha, Beta, Delta, Omicron), complicating containment efforts.
Severe cases often involve a dysregulated immune response ("cytokine storm"), leading to acute respiratory distress syndrome (ARDS) and multi-organ failure. Risk factors include advanced age, cardiovascular disease, diabetes, and immunosuppression. Epidemiological data reveal higher mortality rates among men and racial/ethnic minorities, likely due to socioeconomic and biological disparities.
Transmission occurs via respiratory droplets, aerosols, and fomites, with ocular surfaces potentially serving as an entry point. While systemic symptoms dominate, emerging evidence suggests ocular manifestations (e.g., conjunctivitis, retinal changes) may occur. Understanding SARS-CoV-2's pathogenesis remains critical for treatment and prevention strategies amid evolving variants.

AIM OF THE WORK

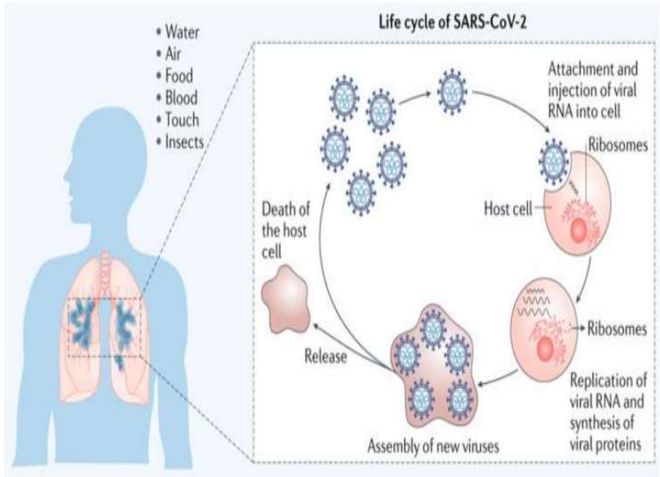
The aim of this study is to retrospectively study the ocular manifestations in a group of hospitalized patients suffering from COVID-19 infection.

PATIENTS AND METHODS

This retrospective study analyzed medical records of 80 hospitalized COVID-19 patients (160 eyes) at Damanhur Public Chest Hospital from March 2020 to November 2023.
Inclusion Criteria:
- Patients of any age or sex with confirmed COVID-19
- No prior history of ocular diseases, trauma, surgery, or autoimmune disorders (e.g., SLE, Behçet's disease)

Examinations Performed:
1. Demographic & Medical History: Collected via electronic records and questionnaires
2. Ophthalmic Evaluation:
- Symptoms (redness, blurred vision, tearing)
- Slit-lamp examination (conjunctival/corneal changes)
- Fundoscopy (retinal hemorrhages, optic nerve changes)
- Imaging (OCT, fluorescein angiography if needed)
3. RT-PCR Testing: Nasopharyngeal swabs for SARS-CoV-2 detection
Statistical Analysis:
- Data analyzed using SPSS v20.0
- Shapiro-Wilk test for normality
- Chi-square and t-tests for group comparisons
Ethical approval was obtained, and patients provided informed consent. The study aimed to identify COVID-19-associated ocular manifestations in hospitalized cases

RESULTS



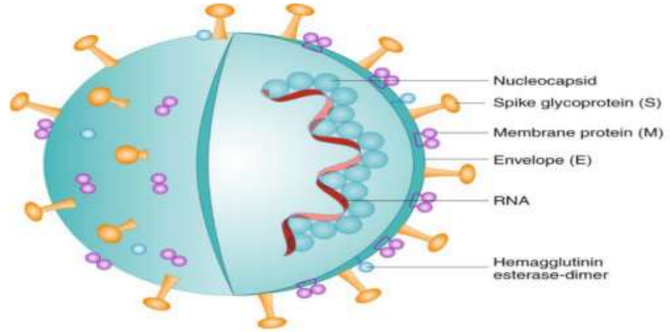


Figure (1): Covid-19 virus structure. [2]

CONCLUSION

The study demonstrated a clear association between COVID-19 infection and ocular manifestations, including conjunctivitis, retinal vein occlusion (RVO), uveitis, and optic nerve inflammation. These findings suggest that SARS-CoV-2 may directly or indirectly affect ocular tissues, possibly through vascular inflammation, hypercoagulability, or immune-mediated mechanisms. Patients with severe systemic symptoms were more likely to exhibit ocular involvement, emphasizing the need for ophthalmic screening in high-risk COVID-19 cases.
Given the potential for vision-threatening complications, clinicians should maintain a high suspicion for ocular symptoms in COVID-19 patients, especially those with pre-existing risk factors. Further research is needed to determine whether the virus persists in ocular tissues and its long-term effects on vision. Preventive measures, such as eye protection for healthcare workers and timely ophthalmic referrals for symptomatic patients, could help mitigate COVID-19-related eye complications.