

COVID-19 Associated Eye Problems in the Pakistani Population

COVID-19
Associated Eye
Problems

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ABSTRACT

Objective: To assess for Covid -19 related eye problems in the Pakistani population

Study Design: Retrospective cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Ophthalmology, Unit- I, Dow University of Health Sciences, Karachi from November, 20 to October, 21.

Materials and Methods: Hundred patients having Covid -19 were included in the study. A Google questionnaire was prepared and sent to people online. Their feedback was then collected in the form of a cvs sheet. They were put in MS Excel. SPSS (version 26 IBM for PC) was used. The data were analyzed using descriptive statistics and summarized by frequency and percentages.

Results: Out of 100 patients included in study 35 had eye problems. 3% had pain in the eyes, 13% had red eye, foreign body sensation occurred in 11%, watering in 11%, decreased vision in 7% and dryness of eyes in 3% patients.

Conclusion: 35% patients in our study had eye problems related to COVID Most problems occurred in the initial weeks of infection and resolved with minor treatment

Key Words: conjunctivitis, watering, foreign body sensation

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INTRODUCTION

Covid-19 is a viral illness that mainly affects the lungs and respiratory system. Patients affected by this illness have fever and cough. In eye-related problems, conjunctivitis is the most common⁽¹⁾. Another important aspect is that the eyes can act as portal of entry for the virus into the body⁽²⁾. The virus causing this disease was discovered to be Sars- CoV -2 according to its nucleic acid code⁽³⁾. In animals many of these coronaviruses cause disease but in human only a few varieties can do so.

Initially, it was thought that the virus enters the body through the conjunctiva, later it was discovered, conjunctiva has the receptors but priming protein is absent⁽⁴⁾. The other mode of entry is through the tears from where it will pass into the lacrimal duct, then the into the lungs⁽⁵⁾.

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Coronavirus nasopharynx and henceforth can cause a variety of ailments such as breathlessness, body aches, anosmia, reduced appreciation of taste, pruritis, blepharitis and watering of eyes⁽⁶⁾.

Those having severe respiratory problems due to Sars CoV -2 were the ones to manifest eye problems such as conjunctivitis⁽⁷⁾. Other eye-problems that were seen to occur were uveitis and retinitis. Also, the eye disease is due to the virus itself and not because of immune mediated response⁽⁸⁾. In our study, we have conducted a survey for presence of eye problems such as redness, watering, decreased vision or foreign body sensation in the Pakistani population.

For prophylaxis from this virus, eye-wear is found to be important by Lai et al. in a study conducted in Hong Kong. In a study by Xia et al it was observed that PCR yielded presence of corona virus in tears and conjunctival secretions of patients suffering from conjunctivitis along with covid pneumonia. In patients that didn't have conjunctivitis, virus was not detected. Therefore we should be alert that when patients present with conjunctivitis and they also have cough and chest problems, they might be suffering from covid⁽⁹⁾.

The SARs-CoV-2 targets the angiotensin converting enzyme 2 receptors in the body. These ACE 2 receptors in the eye are present in the aqueous humour. This makes another indication for the role of eye in transmission of being a portal for the virus⁽¹⁰⁾.

MATERIALS AND METHODS

The study is based on an on-line questionnaire which was composed on google forms. Covid positive patients from the Pakistani population in different parts of the country were part of the research. It was conducted for 12 months from November 2020 to October 2021. Age and gender were taken into consideration and the participants were inquired about eye problems such as discharge, reduced vision, pain in the eyes and foreign body sensation. The onset of eye symptoms in accordance with the time duration of corona disease was also documented.

The information collected was then transferred to excel sheets. It was then analyzed by our expert statistician.

RESULTS

Out of 100 patients included in the study 35 had eye problems. 3 patients had pain in the eyes which worsened on eye movements. Pain started in the first week of onset of COVID and lasted for 3 days in 2 patients and 2 weeks in 1 patient. All three of these were female patients and only one patient took analgesics for it. 13 patients complained of redness of eyes. In 5 of these patients this redness lasted for 3 days and the onset was in the first week. In one patient it lasted more than 1 month, in 5 patients it lasted for 1 week whereas in 2 patients redness persisted for 2 weeks. Treatment taken for redness was Visine eye drops, antibiotic eye drops, lubricants and simply washing the eyes. Foreign body sensation occurred in 11 patients. It lasted for less than 3 days in 5 patients, for a week in 3 patients, more than 1 month in 3 patients. Lubricants, Fluorometholone eye drops and rose water were used for treatment. Watery discharge was complained of by 11 patients. It occurred for 3 days in the first week for 5 patients and more than a week in the second week for 6 patients. Most patients just washed their eyes for it. Decreased vision occurred in 7 patients. In 3 patients it was for 3 days in the first week and 2 patients experienced decreased vision a month after COVID, whereas 2 patients had persistent decreased vision. Those patients with persistent decreased vision are above 55 years and other causes such as cataract will be looked into. Dryness of eyes was complained of by 3 patients. It lasted for less than 3 days in 2 patients and more than 2 months in one patient. No treatment was taken by 2 patients and 1 patient with longer duration of dry eye used rose water.

Table No.1: Demographical Characteristics of COVID-19 Patients

Gender	Frequency	Percentage
Male	37	38
Female	59	61
Age Category		
25-40	46	47
41-55	27	28
more than 55	24	25

Onset of eye symptoms		
First week	19	19.6
2nd week	7	7.2
None	31	32.0
Duration of eye problems		
First week	19	19.6
2nd week	7	7.2
None	31	32.0
Duration of eye problems		
Less Than 3 days	12	12.4
1 week	8	8.2
2 weeks	4	4.1
more than 2 weeks	4	4.1
none	18	18.6
Redness of eyes		
Yes	14	14.4
No	83	85.6
Foreign body		
Yes	12	12.4
No	85	87.6
Decrease Vision		
Yes	8	8.2
No	88	90.7
Other Eye Problem		
No	74	76.3
Yes	9	9
Watering		
Yes	13	13.4
No	84	86.6
Any Other Treatment		
No	83	86.0
Yes	9	9

Table No.2: Eye Problems with responses

Eye Problems	Responses	Age			p-value
		25-40	41-55	More than 55	
Onset of eye symptoms	1 st week	40.7%	23.5%	30.8%	0.738
	2 nd week	11.1%	17.6%	7.7%	
	None	48.1%	58.8%	61.5%	
Duration of eye problems	Less than 3 days	31.6%	23.5%	20.0%	0.091
	1 week	31.6%	0.0%	20.0%	
	2 weeks	15.8%	5.9%	0.0%	
	More than 2 weeks	0.0%	17.6%	10.0%	
	None	21.1%	52.9%	50.0%	
Redness	Yes	17.4%	7.4%	16.7%	0.472
	No	82.6%	92.6%	83.3%	
Decrease vision	Yes	0.0%	22.2%	8.3%	0.004
	No	100.0%	77.8%	91.7%	
Watering	Yes	13.0%	11.1%	16.7%	0.84
	No	87.0%	88.9%	83.3%	

DISCUSSION

Although eye problems in animals have been mentioned in studies, there are a very few studies about eye-related problems in man. One such research was

conducted in children and it reported occurrence of conjunctivitis⁽¹¹⁾. Some case reports also concluded that keratoconjunctivitis was how COVID initially presented itself⁽¹²⁾. Some such studies were conducted in China and Singapore⁽¹³⁾. They are similar to our study in that the sample size is less than 100 and there is approximately 4 % prevalence of conjunctivitis.

Another problem associated with COVID is thromboembolic disease which can affect arteries and veins⁽¹⁴⁾. This was reported in an OCT based study in the eye. Emboli were found in the vessels as hyper reflective lesions. There was however no effect on vision⁽¹⁵⁾. In a study conducted in Thailand in March 2020 on 48 patients, detailed eye assessment was done. Nothing significant was identified⁽¹⁶⁾.

On review of research work done to look for eye problems, the most common problem came out to be conjunctivitis. Some of these studies were carried out on man⁽¹⁷⁾ and the rest were done on animals⁽⁹⁾. Initially conjunctivitis was identified in babies due to COVID in 2014⁽¹⁸⁾. In another study similar to ours conducted in UK comprising of 83 patients and utilizing online questionnaires, it was observed that pain in the eyes, itching and intolerance to light were reported in COVID patients. These lasted for about fourteen days⁽²⁾. Some other studies have shown 4 to 31% chances of presence of eye problems⁽¹⁹⁾.

The eye problems that were reported in a study comprising 56 patients were pain in the eyes, redness, and discharge⁽²⁰⁾. Whereas another study reported decreased vision, dry eyes and foreign body sensation. This was conducted in China on about 500 patients and incidence of eye problems was only 5%. An isolated incidence of pseudomembranous conjunctivitis in a COVID patient occurred in France^(21, 22).

CONCLUSION

Out of 97 COVID-19 patients, 38 (38.5%) were male and 59 (61.5%) were female. Majority of them belong to 40 years or less age group (47%) with 27% who had onset eye symptoms in the 1st and 2nd week of COVID infection, rest of the group did not report any eye problem onset. Maximum duration of eye problems was less than 3 days 12(12%) followed by 1 week (8%). Only four patients reported the eye problem duration longer than 4 weeks.

Table 2 shows the comparison of age group with eye problems after getting COVID-19 infection. Onset of symptoms for the younger age group was slightly higher than other age group (41%) but no significant association was found (p=0.738). Eye problems were resolved for middle age group in the 1st week and for older age group in 2nd week. Some of the youngest (25-40) and oldest (above 55 years) reported redness in the eyes during their quarantine time (17% respectively) but no association was present (p=0.472). Significant decrease in the vision was reported by the middle age

group (41-55 years old) (22%) (p=0.004). Younger patients did not report any decrease in vision. Most problems occurred in the initial weeks of infection and resolved with minor treatment. This is a pilot study and further studies will include more patients and systemic involvement will be considered too.

Author's Contribution:

Concept & Design of Study: Nargis Nizam Ashraf
 Drafting: Nisar Ahmed Siyal, Eisha Safia Ashraf
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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