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Ophthalmic Complications of COVID-19 Infection at a Tertiary Care Centre in Kashmir Valley

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Abstract: ***Purpose: To study the ophthalmic complications of COVID-19 infection at a tertiary care centre in Kashmir Valley. Method: This study was a cross sectional observational, hospital-based study over a period of 1 year from April 2020 to May 2020. 500 lab diagnosed covid-19 positive patients above the age of 15 were included in the study. Result: In our study of 500 patients with COVID-19 infection.51 (10.2%) had ocular manifestations. Majority of the patients were females (54.9%). Most of the patients were of the age group 15-44 (50.9%). Mean duration of conjunctival congestion was 5.3±2.8. Mean duration between appearance of clinical symptoms and conjunctival congestion was 11.6±5.9. Out of 51 patients with ocular manifestations 51 patients had conjunctivitis, 15 patients (29.4%) had keratoconjunctivitis.10 patients (19.6%) had vitreous haemorrhage.6 patients (11.7%) had central retinal venous occlusion.1 patient (1.9%) had central retinal artery occlusion. Ophthalmic sequalae was seen in 1 patient in the form of CRAO, Rest of the patients had complete recovery without any ophthalmic complaint. Conclusion: Mild conjunctivitis manifesting as conjunctival congestion is common and is one of the major ocular manifestations in COVID-19 positive patients.***

Keywords: COVID-19, conjunctivitis, keratoconjuctivitis, photophobia, vitreous haemorrhage

1. Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was initially detected in late 2019 in Wuhan, China, [1] and Coronavirus disease 2019 (COVID-19) swiftly spread across the globe, and was declared a pandemic on March 11, 2020. [2]

COVID-19 may pose challenges in clinical diagnosis because there is no pathognomonic symptom to detect the disease. Several clinical symptoms have been frequently reported among COVID-19 patients including but not limited to cough, fever, fatigue, sore throat, nasal obstruction, shortness of breath, headache, sputum production, and haemoptysis. [4] Moreover, while some patients show a wider range of gastrointestinal symptoms such as diarrhoea, abdominal pain, low appetite, and vomit, [5] others have shown renal and ocular symptoms. [6]

Most clinical research about SARS-CoV-2 have focused on respiratory manifestations; however, a growing body of evidence has raised concerns about the ocular complications caused by SARS-CoV-2. [7] The reported ocular manifestations of the infection vary greatly and include dry eye, foreign body sensation, itching, blurring of vision, conjunctivitis, chemosis, and photophobia. [8] Some studies have even reported conjunctivitis as an early sign for COVID-19 diagnosis. [9] Knowing the prevalence and type of ocular manifestations of COVID-19 can help physicians diagnose the infection better and sooner in the course of the disease.

This study was a prospective and observational study to evaluate the ophthalmic manifestations and complications of covid-19 infection.

2. Materials and methods

This study was a cross sectional observational, hospital-based study conducted at government medical college Srinagar over a period of 1 year from April 2020 to May 2020.

500 lab diagnosed covid-19 positive patients above the age of 15 were included in the study.

Detailed history was taken keeping in view information about age, sex, disease like hypertension, diabetes, chronic kidney disease, cardiovascular disease, hyperlipidemia, respiratory disease and Chronic liver disease.

Demographic, clinical and radiologic data was obtained from the patients

3. Results

This study included 500 patients who were diagnosed cases of covid-19 infection. Out of these 51 patients had ocular symptoms. Majority of the patients with ocular symptoms were females (54.9%) [Table 1]. Most of the patients were in the age group of 15-44 (50.9%) and other substantial number of patients were in the age group of 45-64 (43.1%) followed by more than 65 (6%) years of age. [Table 2].

Table 1: Baseline Characteristics of Patients with Ocular Findings

Gender	No. of Patients	Percentage
Male	23	45.09
Female	28	54.90

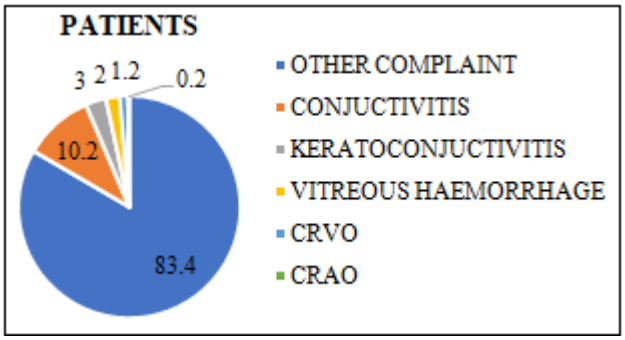
Table 2: Age Distribution of Study Patients with Ocular Symptoms

Age in years	No of patients	Percentage
15-44	26	50.9
45-64	22	43.1
>65	3	6

Most common pre-existing diseases in patients with ocular findings were diabetes (39.2%), hypertension (49.01%) followed by respiratory diseases (11.7%). [Table 3]

Risk factors	No of patients	Percentage
Diabetes	20	39.2
Hypertension	25	49.01
Respiratory disease	6	11.7

Out of 500 patients with covid-19 infection, 51 (10.2%) had ocular manifestations consistent with conjunctivitis.15 patients (3%) had keratoconjunctivitis, 10 patients (2%) had vitreous haemorrhage, 6 patients (1.2%) had central retinal venous occlusion and 1 patient (0.2%) had central retinal artery occlusion.



Duration of conjunctival congestion was 4-6 days in 60.8% of patients, 1-3 days in 19.6% of patients, 7-8 days in 9.8% and greater than 8 days in 9.8% of patients [table 3]. Duration between appearance of clinical symptoms and conjunctival congestion was greater than 14 days in 41.1% patients, 7-14 days in 27.4% patients, 4-7 days in 19.6% patients [table 4].

Table 3

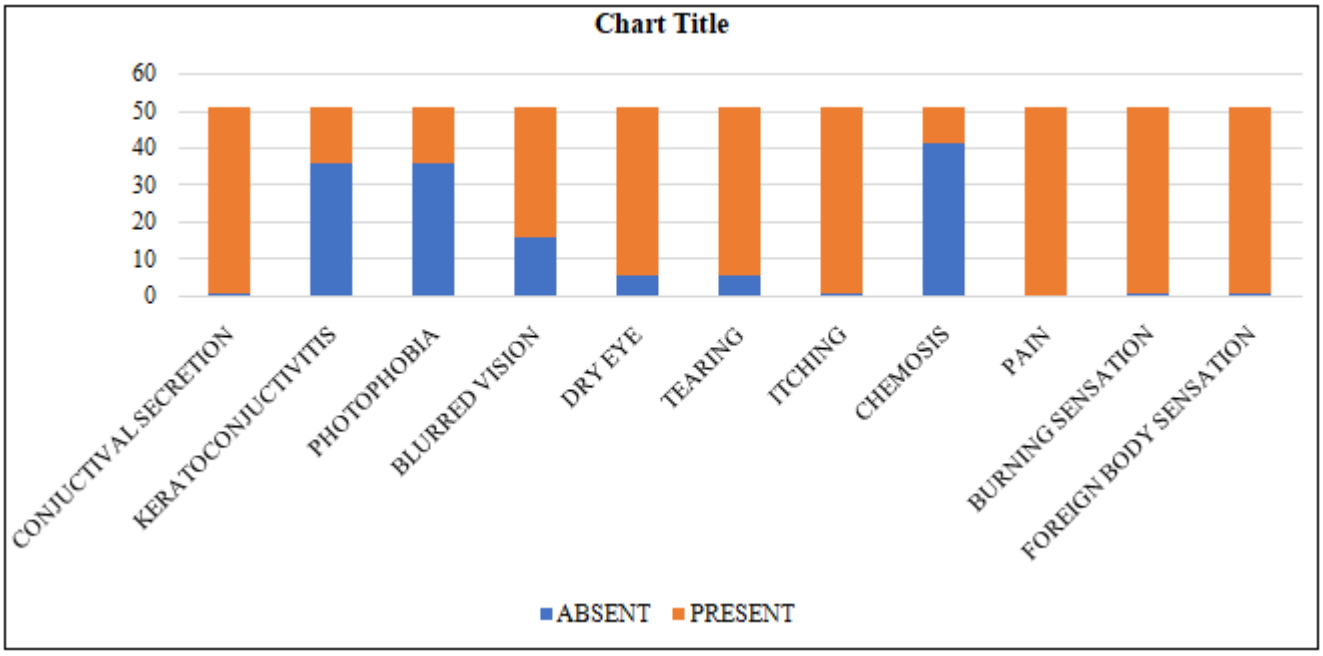
Duration of congestion	No of patients	Percentage
1-3 days	10	19.6
4-6 days	31	60.8
7-8 days	5	9.8
>8 days	5	9.8

Table 4

Duration between appearance of clinical symptoms and conjunctival congestion	No of patients	Percentage
Before	5	9.8
0-3 days	1	1.9
4-7	10	19.6
7-14 days	14	27.4
>14 days	21	41.1

Ocular characteristics of covid patients

Out of 51 patients with conjunctival congestion 50 patients (98%) were having conjunctival secretion, 15 patients were having keratoconjunctivitis (29.4%), 15 patients (29.4%) were having photophobia, 35 patients (68.6%) were having blurred vision, 45 patients (88.2%) were having dry eye, 45 patients (88.2%) were having tearing, 50 patients had itching (98%), 10 patients (19.6%) were having chemosis, 51 patients (100%) were having pain, 50 patients (98%) were having foreign body sensation and 50 patients (98%) were having burning sensation.

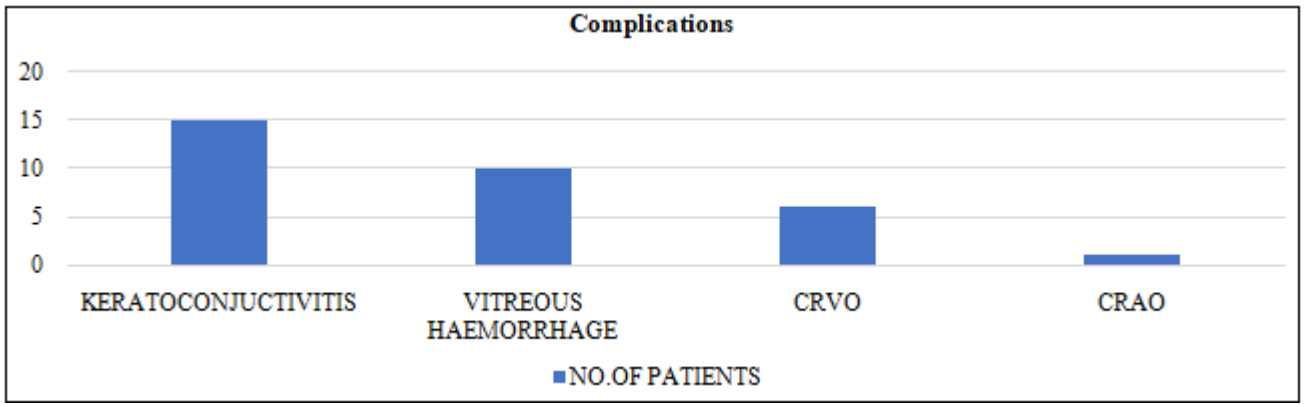


Ocular History of COVID Patients

Out of 51 patients with ocular signs and symptoms, 50 patients (98%) [P-value<0.001] had history of hand eye contact.

Complications

Out of 51 patients with ocular signs and symptoms, 15 had keratoconjunctivitis (29.4%), 10 had vitreous haemorrhage (19.6%), 6 patients had CRVO (11.7%) AND 1 patient had CRAO (1.9%).



Sequeale
Ophthalmic sequalae was seen in 1 patient in the form of CRAO, Rest of the patients had complete recovery without any ophthalmic complaint.

4. Discussion

Our study included 500 patients, out of which 51 (10.2%) patients had ocular manifestations. These results were consistent with study done bySindhuja K et al [10] which consisted of 127 patients, 11 (8.66%) out of 127 had COVID-19-related ocular manifestationMajority of the patients with ocular symptoms were females (54.9%). Most of the patients were in the age group of 15-44 (50.9%) and other substantial number of patients were in the age group of 45-64 (43.1%) followed by more than 65 (6%) years of age which correlated with a study conducted by Sindhuja K et al which consisted of 127 patients with a median age of 38.8 years.

Mean duration of conjunctival congestion was 5.3 ± 2.8. Mean duration between appearance of clinical symptoms and conjunctival congestion was 11.6 ± 5.9. This was in accordance with study conducted by Liwen Chen et al [11] in which 535 patients were included. The average duration of conjunctival congestion was 5.9 ± 4.5 days. Out of 51 patients with conjunctival congestion 50 patients (98%) were having conjunctival secretion, 15 patients were having keratoconjunctivitis (29.4%), 15 patients (29.4%) were having photophobia, 35 patients (68.6%) were having blurred vision, 45 patients (88.2%) were having dry eye, 45 patients (88.2%) were having tearing, 50 patients had itching (98%), 10 patients (19.6%) were having chemosis, 51 patients (100%) were having pain, 50 patients (98%) were having foreign body sensation and 50 patients (98%) were having burning sensation. Out of 51 patients with ocular signs and symptoms, 15 had keratoconjunctivitis (29.4%), 10 had vitreous haemorrhage (19.6%), 6 patients had CRVO (11.7%) AND 1 patient had CRAO (1.9%). Andrea Montesel et al [12] reported a case of central retinal artery occlusion (CRAO) in a patient with a previous history of severe COVID-19 disease.

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