



## ORIGINAL ARTICLE

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**Comparison of Ocular Infections in Geriatric Patients in COVID Pandemic Period and Previous Year****Sevde İşleker, MD<sup>1</sup>; Sertaç Argun Kıvanç, MD<sup>1</sup>, Assoc Prof,  
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**Abstract**

**Purpose:** Our aim was to compare the admissions to the hospital due to ocular infections in March, April and May 2020, when the age of 65 and above was officially quarantined, with the admissions made in the same months of the previous year and with other age groups.

**Material and methods:** The files of 293 patients, were retrospectively reviewed. Keratitis, orbital cellulitis/ abscesses, endophthalmitis were defined as sight/life threatening infections. According to age groups, the study was divided into two groups, 64 years and under and 65 years and over, depending on the quarantine status.

**Results:** The distribution of sight-threatening/life-threatening infections in 2019 was found to be similar for those under 65 and over. (15.3% and 33.3%, respectively,  $P = 0.091$ ). During the pandemic period, the rate of sight-threatening/life-threatening infections was 12.6% for those under the age of 64, and 55.6% for those over 65. ( $P=0.005$ ). The distribution of factors was not different in age groups before and after the pandemic. It was observed that the incidence of adnexal infection at the age of 65 and older decreased statistically in the same period of 2020 compared to 2019. ( $P<0.05$ )

**Conclusion:** It is determined that the incidence of sight/life-threatening infections in application to the hospital during the pandemic period, increased significantly in the

geriatric age group compared to the young age group.

**Introduction**

The coronavirus outbreak started in our world at the end of 2019 and the first official case in Turkey appeared in March 2020.(1,2) In Turkey, where quarantine was applied gradually after the first case occurred, in March, April and May, the population over the age of 65 was kept at home with the “stay at home” application and then with the official quarantine application. Studies have shown that in this period, the number of hospital admissions with eye diseases complaints decreased compared to previous periods.(3-5) However, as far as we know, there is no study in the literature regarding the application of geriatric patients to the ophthalmology department during this period. In this study, we aimed to compare the admissions to the hospital due to ocular infections in March, April and May 2020, when the age of 65 and above was officially quarantined, with the admissions made in the same months of the previous year and with other age groups

**Material And Methods  
Identification of Bacteria**

In the Covid-19 pandemic, the first case occurred in our country and in March, April, May, when the curfew was applied on weekdays for individuals aged 18 and under and individuals aged 65 and over, and on weekends for individuals of all age group, the files of 293 patients, including 112 patients who were admitted for ocular infection and 181 who were admit-

ted in the same period (March April May) in the previous year, were retrospectively reviewed in order not to ignore the probable effect of periodic features. The demographic characteristics of the patients and the geriatric age group were compared with the other groups. According to age groups, the study was divided into two groups, 64 years and under and 65 years and over, depending on the quarantine status. The patient files were evaluated according to the Helsinki declaration.

Keratitis, orbital cellulitis/ abscesses, endophthalmitis were defined as sight/life threatening infections. According to the signs, symptoms and response of the treatment infectious agents were divided 2 groups as viral or bacterial.

#### Statistical analysis

SPSS 23 data analysis program (IBM) was used to analyze statistical data in the study. Whether the distribution of study data was normal or not was determined by the One-sample Kolmogorov Smirnov test. Descriptive statistical methods were used for demographic data. Pearson's chi-square test was used to compare age groups and application complaints. Z test was used to compare percentages. Statistical significance level was determined as  $p < 0,05$  in all statistical tests.

## Results

A total of 293 patients, 181 of which were diagnosed with ocular infection in 2019 and 112 in 2020, were included in the study. Patient files were analyzed retrospectively. Demographic characteristics according to age groups are shown in Table 1. The distribution of sight-threatening/life-threatening infections in 2019 was found to be similar for those under 65 and over. (15.3% and 33.3%, respectively,  $P = 0.091$  Fischer's exact test) During the pandemic period, the rate of sight-threatening/life-threatening infections was 12.6% for those under the age of 64, and 55.6% for those over 65. ( $P=0.005$  Fischer's exact test)

Table 1: Comparison of mean age and female ratio according to years

		March, April, May		P value
		2019	2020	
<19	Age (Mean±SD)	6.6±5.5	8.2±5.6	0.240**
	Female (%)	46.2	41.7	>0.05*
19-64	Age (Mean±SD)	39.7±14.5	38.9±13.7	0.714**
	Female (%)	51.4	44.3	>0.05*
>64	Age (Mean±SD)	73.3±6.1	70.7±5.6	0.293**
	Female (%)	61.1	55.6	>0.05*
Total	Age (Mean±SD)	33.5±23.1	34.9±20.2	0.603**
	Female	50.8	44.6	>0.05*

\*Z test \*\* T test, SD: Standart Deviation

While 27.7% of conjunctivitis was bacterial in 2019, this rate was determined as 44.7% in the same period of 2020. This change was statistically significant. (Pearson Chi Square  $P=0.049$ )

The distribution of microorganisms (viral and bacterial agents) suspected according to ages and working period is shown in Table 2. The distribution of factors was not different in age

groups before and after the pandemic. It was observed that the incidence of adnexal infection at the age of 65 and older decreased statistically in the same period of 2020 compared to 2019. ( $P < 0.05$ ) In 2019, the rate of conjunctival infections was higher in those aged 64 and under, while the rate of globe and adnexal infections was higher in those aged 65 and older. The difference between them was statistically significant. ( $P=0.001$  Chi-Square) It has been observed that this difference disappeared during the pandemic period.

Table 2 Comparison of microbiologic agent and ocular infection site according to years.

		March, April, May				P value	
		2019		2020		Z test	Chi-Square
		Count	Column N %	Count	Column N %		
≤64 year-old	Virus	66	40,5%	35	34,0%	>0.05	
	Bacteria	97	59,5%	68	66,0%	>0.05	0.287
≥65 year-old	Virus	6	33,3%	1	11,1%	>0.05	
	Bacteria	12	66,7%	8	88,9%	>0.05	0.214
	P value**	0.620		0.267			
≤64 year-old	Conjunctiva	81	49,7%	44	42,7%	>0.05	0.575
	Globe	29	17,8%	22	21,4%	>0.05	
	Adnexal*	53	32,5%	37	35,9%	>0.05	
≥65 year-old	Conjunctiva	1	5,6%	3	33,3%	>0.05	0.057
	Globe	8	44,4%	5	55,6%	>0.05	
	Adnexal*	9	50,0%	1	11,1%	<0.05	
	P value	0.001		0.058			

\*\*Chi-square  
\*Adnexal is included eyelids, orbit and lacrimal apparatus

While the most common diagnosis made before the age of 64 years before the pandemic is conjunctivitis (50.3%), it is orbital or periorbital cellulitis with 33.3% above the age of 65 and keratitis with the same rate. During the pandemic period, while the most diagnosed infection in the age of 64 and under is conjunctivitis ( 42.7% ), the most diagnosed infection in the age of 65 and older is keratitis (55.6%).

During the pandemic period, there was no admission with blepharitis, hordeolum, chalazion or dacryocystitis in those 65 years and older.

## Discussion

During the pandemic period, complaints and densities of admission to hospitals due to "stay at home" practices and as a result of quarantine also change in the field of ophthalmology. (3-6) There are several ocular trauma studies in geriatric age group, however ocular infection studies were very limited.(7,8) To our knowledge, this study is one of the first studies in this field, especially on ocular infections, especially in pandemic period.

In their study, Poyser et al. determined the most common diagnoses in the 31-day period in 2019 as 12.7% conjunctivitis, 12.1% ocular trauma, 11.8% blepharitis / dry eye, 7.9% keratitis, 7.9% PVD / vitreous syneresis. In the same period of 2020, quarantine measures were applied due to the pandemic and the most common reasons for application were trauma with 14.6%, keratitis with 10.7%, uveitis with 10.3%, blepharitis / dry

eye with 9.5%, PVD / vitreous syneresis with 8.1%. During the pandemic period, they found that the incidence of admission due to ocular infections was lower. In the study period in 2020, they thought that the reason for the decrease in applications due to conjunctivitis was due to measures to stop the spread of COVID-19, such as awareness of hand hygiene practices, social distancing measures and closing schools.(6) In our study, a significant decrease was detected in the incidence of adnexal ocular infections in 2020 compared to 2019, although the number of patients admitted due to ocular infection was noted.

In the study of Poyser et al., the mean ages of the patients who applied in both periods were found to be similar. While the incidence of keratitis that may threaten sense of sight was determined as 7.9% in 2019, this rate increased to 10.7 in 2020. Preseptal cellulitis rate decreased from 2.3% to 1.9%. However, these data were not evaluated according to age groups.(6) In our study, the mean ages were found to be similar, as well. In 2019, the distribution of sight / life-threatening infections was found to be similar under and over 65 years of age, while it was significantly higher in the pandemic period over 65 years of age than under 64 years of age. Infection of structures such as the eyelid, orbita and lacrimal system over the age of 65 was found to be significantly reduced in 2020 compared to 2019. It is thought that this change in the 65 age group was due to the fact that this age group was kept away from external influences and weather changes as they were under quarantine in 2020 during the continuous working period. However, it is thought that the development of behavioral changes due to the pandemic and the more emphasis on hygiene have also led to this result. However, the distribution of ocular infections according to eye tissues under the age of 64 was similar between 2019 and 2020. It is thought that this is not a significant difference since there was no restriction in the daily work and lives of this group, which includes especially active working age groups.

Studies in this area are limited. Such studies are important in terms of evaluating the applications to the hospital in specific periods and distributing the resources and personnel accordingly. We found that quarantine practices changed the distribution of ocular infections in geriatric age groups. It is determined that the incidence of sight/life-threatening infections in application to the hospital during the pandemic period, increased significantly in the geriatric age group compared to the young age group. Revealing the seasonal differences with studies covering larger periods will play an important role in evaluating the issue more clearly.

## References

- 1-World Health Organization. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> (Access Nov 15, 2020)
- 2- Turkish Republic Health Ministry <https://covid19.saglik.gov.tr/> (Access Dec 1, 2020)
- 3-Wu C, Patel SN, Jenkins TL, Obeid A, Ho AC, Yonekawa Y. Oculartraumaduring COVID-19 stay-at-homeorders: a comparativecohortstudy. *CurrOpinOphthalmol.* 2020 Sep;31(5):423-426.
- 4-Shah, Mehul&Netralaya, Drashti&Bhasin, Purendra&Jyot, Rayan&Dr, Netralaya&Shah, Shreya&Patel, Heena. (2020). Impact of COVID-19 Lockdownperiod on OcularTrauma. 10.21203/rs.3.rs-49393/v1.
- 5-Pellegrini M, Roda M, Di Geronimo N, Lupardi E, Giannaccare G, Schiavi C. Changingtrends of oculartrauma in the time of COVID-19 pandemic. *Eye (Lond).* 2020 Jul;34(7):1248-1250
- 6- Poyser A, Deol SS, Osman L, Kuht HJ, Sivagnanasithiyar T, Manrique R, Okafor LO, DeSilva I, Sharpe D, Savant V, Sarodia U, Sarvananthan N, Chaudhuri R, Banerjee S, Burns J, Thomas MG. Impact of COVID-19 pandemic and lockdown on eye emergencies. *Eur J Ophthalmol.* 2020 Nov 19:1120672120974944.
- 7- Kivanç SA, Akova Budak B, Skrijelj E, Tok Çevik M. Demographic Characteristics and Clinical Outcome of Work-related Open Globe Injuries in the Most Industrialised Region of Turkey. *Turk J Ophthalmol.* 2017 Jan;47(1):18-23. doi: 10.4274/tjo.81598.
- 8- Kivanç SA, Akova-Budak B, Olcaysü OO, Çevik SG. Sociodemographic status of severely disabled and visually impaired elderly people in Turkey. *Arq Bras Oftalmol.* 2016 Feb;79(1):24-9. doi: 10.5935/0004-2749.20160008.