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Comparison of anti-HCV seroprevalence of patients who underwent cataract surgery and other ophthalmic procedures

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ABSTRACT

Aims: The aim of this study is to evaluate the Anti-HCV seroprevalence in patients who underwent cataract surgery and to compare the prevalence with other ophthalmic surgery procedures.

Methods: Patients who underwent ophthalmic surgeries between January 2017 and January 2023 and were preoperatively screened for anti-HCV by ELISA test were included in this study. Patients who underwent cataract surgery formed the study group and other patients were compared as the control group. All data were obtained from the database of the institute and were retrospectively evaluated.

Results: A total of 15799 cases were included in the study, and 69.9% had cataracts whereas 30.1% had non-cataract surgery. The mean age of the patients was 63.24±16.04 years. The rate of Anti-HCV seropositive patients was 0.48% (n=53) in the cataract surgery group, and 0.42% (n=20) in those who had non-cataract surgery. However, the difference was not statistically significant (p=0.696). The overall rate of Anti-HCV seropositive cases was %0.46.

Conclusion: Even though there was no significant difference between the two groups, the Anti-HCV was positive for almost 1 in 200 ophthalmic procedures. We strongly recommend preoperative screening due to the severity of HCV infection and the risk of surgical transmission.

Keywords: Cataract, cataract surgery, opthalmic surgery, anti-HCV seroprevalence

INTRODUCTION

Cataract surgery is one of the most common surgical procedures all over the world. The incidence of senile cataracts is 17.2% in the world and the rate is exponentially increasing with the aging population.[1] Hepatitis C virus (HCV) is one of the leading causes of liver cancer and the number of people infected with HCV is approximately 180 million worldwide.[2] Senile cataract is also one of the extrahepatic findings of Hepatitis C disease. Patients with senile cataracts have significantly higher HCV seropositivity than the general population of the same age.[3] Hence, HCV infection may have a role in the etiology and/or prognosis of lens opacification. Although several studies in the literature evaluated the relationship between cataract formation and HCV infection, there is no study so far comparing this relationship with other eye surgeries. This study aimed to retrospectively investigate Anti-HCV seropositivity in patients who underwent cataract surgery among all eye surgeries.

METHODS

This retrospective study was carried out with the permission of Samsun University Clinical Researches Ethics Committee (Date: 07.06.2023 Decision No: 2023/11/10). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

The study was carried out in the ophthalmology clinic of Samsun Training and Research Hospital in Samsun. All patients who underwent eye surgery between January 2017 and January 2023 and were preoperatively screened for anti-HCV by ELISA were included in the study. Cataract patients formed the study group and were compared with other ophthalmic surgery patients as the control group. All data were obtained from the hospital database and were analyzed retrospectively. SPSS v22.0 (Statistical Package for the Social Sciences, IBM, NY, USA) program was used for data analysis. A p value <0.05 was set as statistically significant.

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RESULTS

Of the 15799 cases included in the study, 69.9% of the patients had cataracts and 30.1% had non-cataract surgery. The mean age of the patients was 63.24±16.04 years (0.0-105.0). The mean age of cataract patients was 68.25±10.62 years (0.0-105.0), and the mean age of those with non-cataract surgery was 51.62±19.98 (0.0-93.0) and the difference was statistically significant (p<0.001). The distribution and demographic data of all patients are shown in **Table 1**.

Tablo 1. The distribution and demographic data of all patients

	Cataract surgery n (%)	Other ophthalmic procedures n (%)	Total n (%)	P
Number of patients	11040 (69.9)	4759 (30.1)	15799(100)	
Age	68.25±10.62	51.62±19.98	63.24±16.04	<0.001
Gender				<0.001
Male	5558 (50.3)	1939 (40.7)	7497 (47.5)	
Female	5482 (49.7)	2820 (59.3)	8302 (52.5)	
Anti-HCV result				0.696
Anti-HCV (+)	53 (0.48)	20 (0.42)	73 (0.46)	
Anti-HCV (-)	10987 (99.52)	4739 (99.58)	15726 (99.54)	

Of those included in the study, 47.5% (n: 7497) were male and 52.5% (n: 8302) were female. The rate of males who had cataract surgery (50.3%) was significantly higher than that of males (40.7%) who had non-cataract surgery (p<0.001). The number of anti-HCV-positive patients was 73 (0.46%). The rate of Anti-HCV positives in those who had cataract surgery was 0.48% (n=53), which was higher than the rate of Anti-HCV positives (0.42%; n=20) in those who had non-cataract surgery. However, this difference was not statistically significant (p=0.696) (**Table 1**).

Cataract surgery patients were also evaluated in terms of gender. However, there was no significant difference between genders in terms of Anti-HCV seropositivity. On the other hand, male patients had cataract surgery at an earlier age in the study group (**Table 2**). There was a similar distribution in terms of Anti-HCV seropositivity between the genders in the control group, as well. However, females had other ophthalmic procedures at an earlier age (**Table 3**). There was no statistically significant difference between seropositive and seronegative cataract patients in terms of age and gender (p=0.082, p=0.595, respectively) (**Table 4**).

Tablo 2. Distribution of patients who underwent cataract surgery by gender

	Male	Female	Totale	P
Number of patients	5558 (50.3%)	5482 (49.7%)	11040 (100%)	>0.05
Anti HCV +	33(0.59%)	20 (0.36%)	53 (0.5%)	0.098
Age	67.63±10.51	68.89±10.68	68.25±10.62	<0.001

Tablo 3. The gender distrubition of patients who underwent other ophthalmic prosedure

	Male	Female	Totale	P
Number of patients	1939 (40.7%)	2820 (59,3%)	4759 (100%)	>0.05
Anti HCV +	8 (0.41%)	12 (0.42%)	20 (0.4%)	0.946
Age	52,45±21.31	51.05±18.99	51,62±19,98	<0.017

Tablo 4. Evaluation of Cataract Patients Based on Anti-HCV Result

	Anti-HCV negative n(%)	Anti-HCV positive n(%)	Total n(%)	P
Gender				0.082*
Male	5525 (50.3)	33 (62.3)	5558 (50.3)	
Female	5462 (49.7)	20 (37.7)	5482 (49.7)	
Age	68.25±10.62	68.94±9.27	68.25±10.62	<0.595**

*; Pearson chi squared test, **; Mann Whitney U test

DISCUSSION

Cataract surgeries are among the most frequently performed surgeries all over the world.[4,5] As in all body fluids, HCV RNA can be detected in humoral aqueous and tear fluid, as well.[6-8] In this study, approximately two-thirds of the ophthalmic procedures were cataract surgeries and Anti-HCV seropositivity was found in 0.46% of all patients and 0.42% of cataract surgeries. This rate is lower than the prevalence of Anti-HCV in general Turkish population. A meta-analysis examining a total of 246 articles revealed the prevalence of HCV infection in Turkey as 1.6%.[9] Yoshida et al.[3] reported the prevalence of HCV in cataract patients significantly higher than the healthy individuals (p<0.01). The rates were 18.3% and 7.1% in the 60-69 age subgroup; 6.6% and 17.8% in the 70-79 age subgroup; and 3.7% and 15.1% in the 80-90 age subgroup, respectively. However, they found no significant difference in HCV seropositive and seronegative groups in terms of hepatitis B virus prevalence in the cataract group (p=0.548).

In a recent study investigating 6858 patients in the United States, it was reported that anti-HCV positivity was 1.86%. The mean age at surgery was 63.4 years for HCV-positive patients, while it was 69.1 years for HCV-negative patients. Patients with HCV infection were significantly more likely to experience complications during cataract surgery than those without HCV disease (2.9% vs. 1.2% OR 2.27, 95% CI 1.03-5.01, p=0.0415). The main reason for the complication in these patients was associated with high alanine transaminase levels.[10]

A study evaluating 240 patients who underwent cataract surgery in Pakistan determined the anti-HCV positivity and the rate was found as 12.13%.[11] The same authors reported the rate as 11.1% in another study with 377 patients.[12] The anti-HCV seropositivity of cataract patients in Pakistan was reported as 14.29% (45 of 315 patients).[13] The prevalence of Anti-HCV positivity was found to be 12.4% in Egypt which included 3067 patients who applied for elective eye surgery.[14-16] In a report from India; Anti-

HCV seropositivity was found in 11 patients (0.1%) in the preoperative screenings of 7316 patients before elective cataract surgery.[17] These rates from the middle-east region are similar to the values we obtained in our study.

In the Sustainable Development Goals published by WHO (World Health Organization) in May 2016; it is aimed to eliminate viral hepatitis from being a public health threat by 2030. To this end, it is recommended to raise awareness and mobilize screening activities.[18-20] Ophthalmologists can contribute to this goal of WHO by performing hepatitis screening with the ELISA test before their frequent cataract surgeries. Referring positive cases to the Infectious Diseases department for further examination and treatment will be a beneficial step for both patient and public health.

CONCLUSION

We evaluated the prevalence of Anti-HCV in patients who underwent cataract surgery and compared it with the prevalence of Anti-HCV in other ophthalmic procedures. There was no significant difference between the two groups and lower anti-HCV seropositivity was found compared to the general population. We strongly recommend preoperative screening due to the severity of HCV infection and the risk of surgical transmission.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Samsun University Clinical Researches Ethics Committee (Date: 07.06.2023, Decision No: 2023/11/10).

Informed Consent: Because the study was designed retrospectively, no written informed consent was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper and that they have approved the final version.

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