



Seropositivity For Viral Markers in Patients Undergoing Cataract Surgery Diagnosed Unexpectedly

Ishwar Singh¹, Harsimran Singh², Talvir Sidhu³, Rohit Raina^{4*}, Neha Chhabra⁵

¹Associate Professor, Government Medical College, Patiala, Punjab, India. Email: issaini2000@yahoo.in, Orcid ID: 0000-0003-1852-717X.

²Professor, Government Medical College, Patiala, Punjab, India.

Email: harsimrangosal@hotmail.com, Orcid ID: 0000-0003-2778-467X.

³Assistance Professor, Government Medical College, Patiala, Punjab, India.

Email: nehchh215@gmail.com, Orcid ID: 0000-0003-0775-7201

⁴Senior Resident, AIIMS, Rishikesh, Uttarakhand, India. Email: nehchh21@gmail.com,

Orcid ID: 0000-0003-1296-9428

⁵Junior Resident, Government Medical College, Patiala, Punjab, India.

Email: rohitraina103@yahoo.com,

Orcid ID: 0000-0003-0886-579X

*Corresponding author

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Abstract

Background: To find the prevalence of unexpected seropositive viral markers in the patients undergoing cataract surgery. **Material & Methods:** It was a longitudinal observational study. Total 1180 cataract patients were studied. Patients were discovered unexpectedly positive for hepatitis B antigen, hepatitis C, human immunodeficiency virus during preoperative screening for cataract surgery. HBV and HCV patients were referred for medicine opinion and operated after treatment and clearance. HIV patients were referred to ART center for further management. **Results:** During the study period 1180 patients, 504 males and 676 females were studied. 34 patients were positive for HIV, twelve patients were positive for hepatitis B and 50 patients were found positive for HCV. The patients accidentally found positive were 18/34 for HIV, 6/12 for hepatitis B and 32/50 for hepatitis C. **Conclusions:** We concluded that preoperative screening should be done for viral markers before every cataract surgery to prevent spread of such infections. Mass immunization against hepatitis B should be done among health care workers.

Keywords:- Cataract, Viral markers, Unexpectedly diagnosed.

INTRODUCTION

World Health Organization (WHO) defined cataract as the leading cause of blindness in the world where visual acuity (VA) is less than 3/60 in the better eye. Approximately 18 million people, 90% of them in developing countries are affected by cataract.^[1] Cataract surgery is one of the most common surgical procedures performed worldwide.^[2] Blindness occurs in 66.2% patients of cataract in

population aged ≥ 50 years according to NPCBVI Survey India.

Surgical interventions pose safety issues in areas of high endemicity for HIV infections, viral hepatitis B (HBV) and C (HCV).^[3] HIV has the prevalence of 0.26% as estimated by Government of India in 2015 survey.^[4] For HBV, there is a prevalence of 3-4.2%.^[5,6] HCV has the prevalence of 1-1.5% in India.^[7]



Since patients remain asymptomatic and undiagnosed for prolonged period of time thus they poses risk of infection to other patients and health care workers. Asymptomatic carriers with positive viral serology serve as reservoirs of infection and due to the the lack of routine screening prior to surgery is responsible for increased disease transmission.^[8,9,10]

Syringing, biometry, tonometry are some of the Out-patient (OPD) procedures should be done with caution in HIV, HBV and HCV patients. Handling of sharp instruments during anaesthesia and OT procedures should be done with extreme caution due to high risk of exposure. Sharp instruments are being used during Phaco emulsification technique and Small incision cataract surgery (SICS) and thus there is increase risk of blood borne infections during surgery. Mode of transmission of HIV, HBV and HCV is through direct with the blood of an infected person.^[11,12]

Seropositive patients of HIV, HBV, HCV could present risk of transmission to ophthalmologists and health care staff. Thus preoperative screening should be done to determine prevalence of viral markers.^[13]

MATERIAL AND METHODS

A longitudinal observational study was done in Department of Ophthalmology, GMC Patiala and Rajindra hospital where 1180 patients who underwent cataract surgeries were observed between April 2019 to March 2020 to determine the presence of positive viral serology. Patients presented with symptoms of jaundice and with immunization history

were excluded. An informed written consent was obtained from all patients and information of subjects was kept confidential before performing cataract surgery.

Serological rapid tests are done in laboratory for screening according to WHO guidelines.^[14] HIV was tested with ELISA (Enzyme-Linked Immunosorbent Assay) test kit which is an indirect sandwich ELISA test according to NACO guidelines. Qualitative detection of surface antigen of hepatitis B and antibodies for hepatitis C was done by rapid chromatography immunoassay as the screening technique in the study. Each patient was sent for medicine opinion and operated after proper treatment and clearance. For HIV and AIDS patients were referred to ART centre, Rajindra hospital, Patiala for HAART therapy. Since these patients were high risk, OPD procedures like biometry and keratometry were done using polythene paper interface and the tip disinfected. Disinfection of tonometry was done after every patient. OT procedures included use of disposable linen, double gloves to surgeon and assistants and use of disposable instruments. they were operated in minor O.T wearing HIV kits, double gloves and all precautions were undertaken during operation to prevent the spread of infections. Proper sterilisation techniques were followed and autoclaving of surgical instruments were done.

RESULTS

In this study 1180 patients who were to be operated upon for cataract surgery were evaluated for the presence of viral markers. Out of 1180 patients, males were 504(42.71%) and females were 676 (57.28%). Hepatitis B was

present in total 12 (1.01%) patients where 6 patients (0.50%) were unexpectedly came positive for HBV antigen. Hepatitis B was found in 5 (0.42%) male patients and 1(0.08%) female patient. There were 32 (2.71%) patients unexpectedly positive for hepatitis C out of total 50(4.23%). Hepatitis C patients where females were 11 (0.93%) while it was found in 21 (1.77%) male patients. Out of total 34 (2.88%) HIV positive patients, unexpected positivity was found in 18 patients where 12 (1.01%) were male patients and 6 (0.50%) were females.[Table 1]

In this study, out of 18 patients who were unexpectedly positive for HIV, all underwent

SICS surgery and none of the patients underwent phacoemulsification. Whereas out of 6 patients who were unexpectedly positive for HBV, 4 patients (3 males and 1 female) underwent SICS surgery and 2 of the patients underwent phacoemulsification where all were males. Out of 32 patients who were unexpectedly positive for HCV, 25 patients underwent SICS surgery where 16 were males and 9 were females, whereas 5 males and 2 females underwent phacoemulsification. Thus, it was concluded that the preferred technique for performing cataract surgery among operating surgeons in patients with viral markers seropositivity was SICS as compared to phacoemulsification. [Table 2, Figure 2]

Table 1: Distribution of unexpectedly positive viral markers

Viral Infection	Total patients	Unexpected positive patients		
		Total	Male	Female
HBV	12 (1.01%)	6 (0.50%)	5 (0.42%)	1 (0.08%)
HCV	50 (4.23%)	32 (2.71%)	21 (1.77%)	11 (0.93%)
HIV	34 (2.88%)	18 (1.52%)	12(1.01%)	6(0.50%)

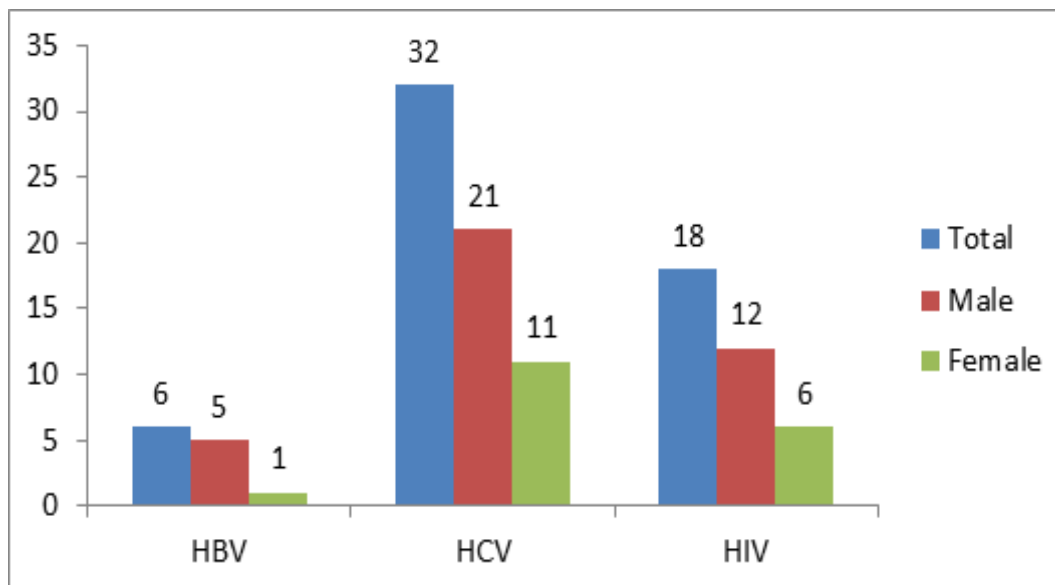


Figure 1: Frequency of Viral Markers unexpectedly positive in Male and Female Patients

Table 2: Type of surgery done in patients with unexpectedly positive viral markers

Viral Infection	Unexpected positive patients				
	Total	PHACO		SICS	
		Male	Female	Male	Female
HBV	6 (0.50%)	2	0	3	1
HCV	32 (2.71%)	5	2	15	9
HIV	18 (1.52%)	0	0	12	6

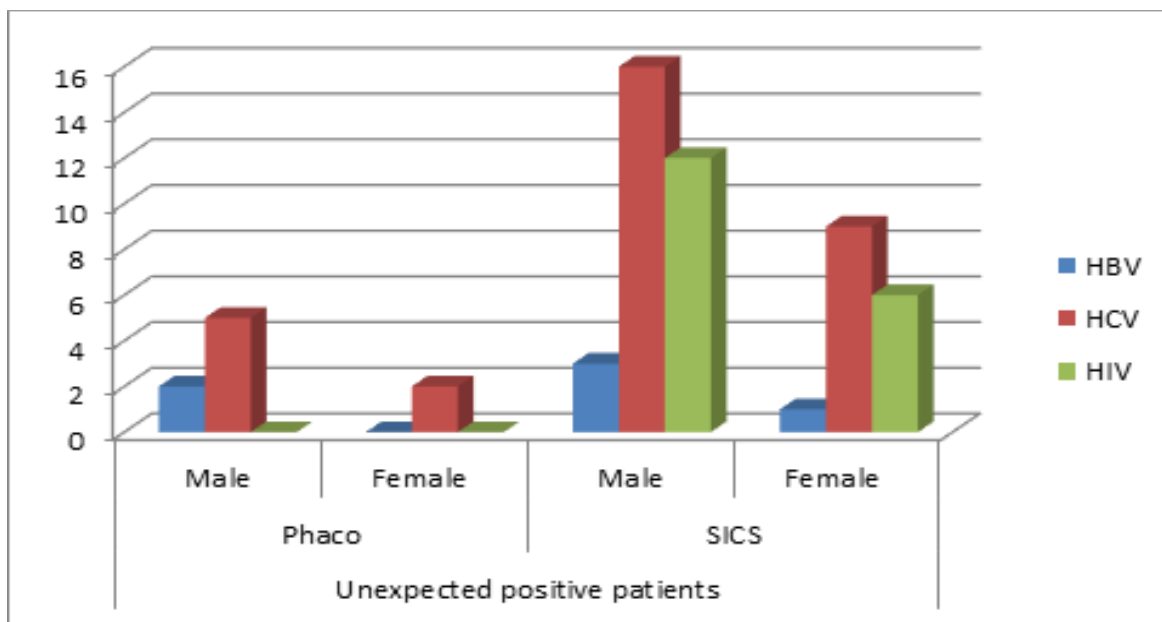


Figure 2: Type of surgery done in patients with unexpectedly positive viral markers

DISCUSSION

Prevalence of HBV, HCV and HIV has reached an alarming level in India where large number of people are already infected with hepatitis B and C and they are usually asymptomatic and discovered unexpectedly.^[15,16,17]

Temel et al., and Koksai et al., noted that Polymerase Chain Reaction (PCR) demonstrated positivity for HBsAg in tear and aqueous humor samples in 70% and 85% respectively with HBsAg seropositive patients.^[18,19] Kobayakawa et al., reported that Polymerase Chain Reaction (PCR) results were

positive for anti-HCV antibody in aqueous humor in 50% HCV positive patients.^[20] This study found the prevalence of HBV and HCV infection was found to be more in age group 40-70 years. It could be due to cataract being operated in the present study is of senile variety affecting older age groups.

In our study, HIV positive patients were between 40-50 years. Males are affected more with HBV and HCV infection in (0.42%, 1.77%, respectively) as compared to females (0.08%, 0.93%, respectively) could be a reflection of more males coming for treatment due to more social mobility in males than females and thus

greater vulnerability to be infected by these viruses.^[21,22]

The limitation of our study was that only cataract cases were taken for evaluation of viral markers positivity. Other limitation is that our study showed the seropositivity of a local geographic area and thus not a representative of the entire population.

CONCLUSIONS

Due to the high prevalence of HBV, HCV and HIV in the patients presenting for cataract

surgery as shown by our study it has been suggested that routine preoperative screening should be carried for all patients of cataract surgery. Mass immunization against hepatitis B should be done and awareness regarding hepatitis B and HIV should be promoted among hospital staff and general public. This study also concluded that the preferred technique for performing cataract surgery among operating surgeons in patients with viral markers seropositivity was SICS as compared to phacoemulsification.

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