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Original Research Article

A Cross Sectional Hospital Based Assessment of the Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), and Hepatitis C (HCV) Viral Seropositive Among the Patients Posted for Cataract Surgery

Archana Kumari

Senior Resident, Department of Ophthalmology, Patna Medical College & Hospital, Patna, Bihar, India.

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Corresponding author: Dr. Archana Kumari
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Abstract

Aim: To study the prevalence of human immunodeficiency virus (HIV), hepatitis B (HBV), and hepatitis C (HCV) viral seropositive among the patients posted for cataract surgery at a tertiary care center in Bihar Region.

Material & Method: This was a cross sectional hospital based study done in the Department of Ophthalmology, Patna Medical College & Hospital, Patna, Bihar, India over a period of two years. All the patients planned for elective cataract surgery were tested for HBsAg, HCV, and HIV.

Results: There was a significant association with the mean age in the patients with HIV ($P < 0.001$) and HBsAg seropositive ($P < 0.001$). There was a significant association between HIV and male gender ($P = 0.012$). There was no association between gender and HBsAg and HCV positivity.

Conclusion: The prevalence of viral seropositivity was high among patients scheduled for cataract surgery. For the benefit of the patient and their caregivers, eye care physicians might recommend these patients for counselling and additional management.

Key words: Cataract, HBsAg, HCV, HIV, viral seropositivity

Introduction

Cataract surgery is one of the most common surgeries performed on the human body. Although there has been a revolution in cataract surgery, still sharp instruments and needles are used in cataract and other ocular surgeries. So, there are chances of needle prick or sharp instrument injury during the procedure also.

Hepatitis B and C virus infections affect the liver and results in a broad spectrum of disease outcomes. An infection with HBV can spontaneously resolve and lead to protective immunity, result in a chronic infection and, in rare cases, cause acute liver failure with a high risk of dying. In contrast to HBV, an infection with HCV becomes chronic in most cases.1 People with chronic hepatitis B and/or C virus infection remain infectious to others and are at risk of serious liver disease such as liver cirrhosis or hepatocellular cancer (HCC) later in life.[1,2]

Peribulbar anesthesia was the common mode of anesthesia for cataract surgery and entailed the use of a sharp 24‑gauge needle to administer it.[3,4] The incidence of needle‑prick injury in ophthalmological practice was reported as 0.06–0.08 per 1,000 surgeries in our country.[5]

The World Health Organization (WHO) reported HIV infection in 36.8 million people all over the world.[6]The corresponding numbers for HBV and HCV infections were 251 and 70 million, respectively.[7]

HIV, Hepatitis B and C are not routinely tested before cataract surgery in majority of our ophthalmology setting. In India, most of the patients undergoing cataract surgery were not routinely tested for viral seropositivity. Occult carriers of viral infections were prone to infecting others and were deprived of proper treatment.[8-10]

Thus, this study aims to study the prevalence of human immunodeficiency virus (HIV), hepatitis B (HBV), and hepatitis C (HCV) viral seropositive among the patients posted for cataract surgery at a tertiary care center in Bihar Region.

Material & Method:

This was a cross sectional hospital based study done in the Department of Ophthalmology, Patna Medical College & Hospital, Patna, Bihar, India over a period of two years. All the patients planned for elective cataract surgery were tested for HBsAg, HCV, and HIV. Congenital and developmental cataracts (involving the pediatric age group) were excluded from the study.

The protocol was approved by the Institutional Ethical Committee and strictly adhered to the Declaration of Helsinki.

Methodology

Preoperatively, all cataract patients underwent comprehensive ocular examination and laboratory investigations. All the patients were requested to sign informed consent for serological evaluation for HBV, HCV, and HIV by rapid diagnostic antibody test kit as recommended by the National AIDS Control Organization (NACO). The patients who were illiterate had the consent readout along with a caregiver and their thumb impressions were obtained. Other laboratory investigations included complete blood count/hemogram and random blood sugar. The HIV was again tested with the Enzyme Linked Immuno-Sorbent Assay (ELISA) test kit.

Post‑test counseling was given to the seropositive cases and they were referred to the antiretroviral therapy (ART) center for registration and baseline investigations. The information recorded was kept confidential. Patients' demographic details like age, gender, education, and occupation were collected.

Statistical analysis

The details were recorded on proforma and data were analyzed by using the SPSS (Statistical Package for Social Science) version 25:0. Qualitative data variables were expressed by using frequency and percentage (%). Quantitative data variables were expressed by using mean, SD, etc. The Chi‑square test was used to find the association between HBV, HCV, and HIV with age group (years) and gender. The P value <0.05 was considered significant.

Results:

A total of 5050 cataract patients were operated on over a period of one year. Of these, 4102 (81.2%) were adults; 2223 (44.0%) were males, while 2827 (44.3%) were females. Their ages ranged from 19 to 88 years; 160 (3.1%) were found to be seropositive for one of the viruses.

The average age for seropositive patients was 54.7 years (SD 11.5 years); 89 (55.6%) seropositive were males, 71 (43.9%) were females.

The prevalence for HIV was 61 (1.2%), HBsAg was 70 (1.3%), and HCV was 10 (0.19%).

Six were positive for HIV + HBV, two for HIV + HCV, and one for HBV + HCV.

There was a significant association with the mean age in the patients with HIV ($P < 0.001$) and HBsAg seropositive ($P < 0.001$). There was a significant association between HIV and male gender ($P = 0.012$). There was no association between gender and HBsAg and HCV positivity. (Table 1)

Table 1: Age and gender distribution among the human immunodeficiency virus (HIV), hepatitis B (HBV), and hepatitis C (HCV) seropositive cases

Variables	Negative	Positive	Total	P-value	Gender	Negative	Positive	Total	P-value
HIV									
<40 years	3 (27.2%)	8 (72.7%)	11	<0.001	Male	66 (62.2%)	40 (37.7%)	106	0.012
41-60 years	76 (77.5%)	22 (22.4%)	98		Female	44 (81.4%)	10 (18.5%)	54	
>60 years	48 (94.1%)	3 (5.8%)	51						
HBsAg									
<40 years	7 (63.6%)	4 (36.3%)	11	<0.001	Male	25 (23.5%)	81 (76.4%)	106	0.441
41-60 years	36 (36.7%)	62 (63.2%)	98		Female	15 (27.7%)	39 (72.2%)	54	
>60 years	1 (1.9%)	50 (98.0%)	51						
HCV									
<40 years	11 (100%)	0	11	0.281	Male	101 (95.2%)	5 (4.7%)	106	0.810
41-60 years	90 (91.8%)	8 (8.1%)	98		Female	50 (92.5%)	4 (7.4%)	54	
>60 years	49 (96.0%)	2 (3.9%)	51		Total	151	9	160	
Total	150	10	212						

Discussion:

Ali et al.[11] reported Hepatitis B in (3.6%) as compared to Hepatitis C in (5.1%) of all the positive patients. In another study prevalence of Hepatitis B was (8.66%) and Hepatitis C was (11.66%).[12] Soomro et al also reported that among the 20.67% positive patient of Hepatitis B/C, prevalence of Hepatitis B was 11.29% while Hepatitis C was 88.70%.[13]

In India, although femtosecond laser cataract surgery reached a few cities, manual small-incision cataract surgery (MSICS) is a major chunk of the surgical mode of cataract extraction due to the cost-effectiveness and lesser learning curve in comparison to phacoemulsification.[14] In MSICS, there is a chance of minor

bleeding during peritomy and the making of the sclera-corneal tunnel. So, there is a chance of cross-infection to surgeons, nurses, other staff, and patients if the status of the operating patient is unknown to all. At the same time, when a patient is a known case of Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV), or Hepatitis B Virus (HBV) infection, all take universal precautions along with special disposable gowns with head cover and goggles, double gloves, and unique waste management is done for that also. Even to prevent cross-infection to other patients, such patients are operated upon last in the operation theatre (OT) to minimize the cross-infection. This is the benefit of knowing the serology status of the patient beforehand. Nowadays, the test percentage has definitely increased from the previous years but still, all operating surgeons or hospitals are not practicing this sometimes due to cost issues of the patient or due to less importance given to this fact. Some advocated doing universal testing or selective testing of a particular viral marker according to the prevalence of that virus in that population for cost-effectiveness.[4]

A recent article on the preferred practice patterns of the ophthalmologists while operating on the seropositive patients had stated that ophthalmologists considered needle-prick injury an occupational hazard and most took extra precautions while performing cataract surgery on known HIV-positive patients.[4]

Maddali MV et al.[15] have stated that India can halve the epidemiological burden of HIV over 15 years with the achievement of the UNAIDS90‐90‐90 targets. The eye care providers can play a small but not insignificant part in this. The prevalence of viral infection was found to be higher in the age group between 50 and 60 years in our study. This may be because people in that decade of life present commonly for cataract surgery. Ahmad et al. and Naeem et al. both from Karachi, Pakistan, reported the highest number of seropositive cases in the age group 50–85 years and 55–64 years, respectively.[16, 17]

According to Verma et al.the history of injection from a local practitioner and history of dental extraction were two common risk factors for the HCV infection.[18]

In a study by Arif et al.done in Aligarh, Uttar Pradesh (the same state as this study), a greater number of male patients were found to be seropositive in comparison to the female patients.[19,20]

Conclusion:

The prevalence of viral seropositivity was high among patients scheduled for cataract surgery. For the benefit of the patient and their caregivers, eye care physicians might recommend these patients for counselling and additional management. Viral infections can no longer be neglected in ophthalmic care as the tear film and aqueous have the viral load.

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