



CATARACT SURGERY; FREQUENCY OF HEPATITIS B & C VIRUS INFECTIONS IN PATIENTS IN RAWALPINDI, PAKISTAN

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ABSTRACT... Objectives: This study is conducted to determine the prevalence of hepatitis B and hepatitis C virus infection in patients presenting for cataract surgery and to see the pattern of liver function tests in hepatitis positive and negative patients. **Design:** Descriptive study, **Setting and Period:** The study was conducted from September 2015 to February 2016 at Al-Shifa eye hospital, Rawalpindi, Pakistan. **Methods:** All the patients presenting for cataract surgery were included in the study. Liver function tests were performed using automatic chemistry analyzer while hepatitis B surface antigen and antibodies to hepatitis C virus were checked using third generation ELISA. **Results:** A total of 315 patients were included in the study. Male to female ratio was 1.18:1. Out of these 315 cases, there were 45 (14.29%) patients who tested positive for hepatitis and all of these 45 cases were positive for anti-HCV antibodies with 18 (40%) males and 27 (60%) females, showing high predilection for female gender. Majority of patients, about 171 (54.29%), were in the age range of 21-40 years, followed by 57 (18.10%) patients in the age group of 40-50 years. The mean age of hepatitis positive patients was 33.33 ± 13.37 years. Regarding liver function tests, the alanine transaminase levels (ALT) were 77.9 and 132 U/L in hepatitis negative and hepatitis positive patients respectively. Enzyme levels were 1.65 times higher in hepatitis positive patients than in hepatitis negative patients. Rest of the parameters was within normal limits. **Conclusion:** Hepatitis B and C virus infections are common cause of liver dysfunction in our country. Hepatitis C virus infection is more prevalent than Hepatitis B virus infection. Hepatitis infection can lead to raised ALT levels even when other parameters of liver function tests are within normal limits. Therefore, all patients who have raised ALT levels must undergo hepatitis screening.

Key words: Hepatitis B, Hepatitis C, Liver function tests, Cataract, Surgery.

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INTRODUCTION

Liver is a major organ in the body and it is also affected by different diseases. Liver diseases constitute a significant health burden and these diseases range from infectious diseases to metabolic ones. Most common among these diseases are viral infections of liver chiefly, hepatitis B & C virus infections.¹ Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are important cause of liver dysfunction worldwide. Their chronic infection can lead to liver cirrhosis and hepatocellular carcinoma.² About 57% cases of liver cirrhosis and 78% cases of hepatocellular carcinomas result from either HBV or HCV infection.³ Hepatocellular carcinoma is responsible for approximately 70-90% of primary liver carcinomas and it is the 3rd leading cause of

cancer associated deaths globally.⁴⁻⁶

Hepatitis B virus (HBV) is a DNA virus which affects about 300 to 400 million people worldwide and it is responsible for approximately one million deaths annually.⁷ There are 50 million new cases of HBV each year.⁸ Hepatitis C virus (HCV) is a RNA virus and it affects more than 170 million people globally.^{1,9} HCV is one of the important causes of liver transplantation.¹⁰ It comprises of six different genotypes, of which genotype 3a is most common in Pakistan.^{11,12}

HBV and HCV infections are associated with higher incidence of chronic hepatitis, liver cirrhosis and hepatocellular carcinoma.^{1,10} HBV and HCV infections can be acquired through

various factors, chiefly blood-blood contact and through parenteral routes.¹³ Most common risk factors include i) using unsterilized or poorly sterilized medical and dental instruments, ii) body piercing or tattooing, iii) sharing needles among injecting drug abusers, iv) blood transfusion and v) re-using injection syringes.^{7,10,14} Medical and paramedical personals are at an increased occupational risk of exposure to these infections.

Liver is a major metabolic organ in the body. Its function can be ascertained by liver function tests, (LFTs). LFTs reveal important information about various aspects of liver function. LFTs consist of bilirubin, alanine transaminase (ALT), alkaline phosphatase and gamma glutamyltransferase (GGT) with ALT being more specific to liver.¹⁵ Liver function tests (LFTs) reflect various functions of the liver. They are routinely performed in patients who present with non-specific symptoms or vague complaints.¹⁶ Any abnormality in LFTs gives us a clue about the functioning of liver. They can be deranged in various diseases affecting liver.¹⁵ Therefore, LFTs provide important information regarding any liver abnormality which can later be followed further to find its underlying cause or pathology.

This study was conducted to determine the frequency of HBV and HCV infections in patients who presented for cataract surgery and to study the pattern of liver function tests (LFTs) in these individuals.

MATERIALS & METHODS

It was a descriptive study which was conducted from September 2015 to February 2016 at Al-Shifa eye hospital, Rawalpindi, Pakistan. It was a consecutive non-probability sampling.

After approval from Hospital Ethics Committee, all the patients who presented for cataract surgery were included in this study. Patients who were suffering from chronic liver disease or those taking hepato-toxic drugs, or patients with age less than 10 and more than 60 years of age, or those suffering from any metabolic liver disease (e.g. Wilson's disease, haemochromatosis, etc.)

were excluded from the study.

Total of 369 patients were enrolled in the study as per given criteria. Fifty four patients were excluded from the study based on exclusion criteria. Detailed history was taken especially about the risk factors associated with HBV and HCV infections. Demographic data e.g. age and gender was recorded. Third generation enzyme linked immunosorbant assay (ELISA) was used to check for the presence of HBsAg and antibodies to HCV (anti-HCV) in all the patients. LFTs were performed for all the patients included in the study using automatic blood chemistry analyzer (Hitachi 902, Roche Diagnostics, Germany). The parameters checked in LFTs included bilirubin, alanine transaminase (ALT), alkaline phosphatase and gamma glutamyltransferase (GGT).

The data was entered, organized and analyzed using Statistical Package for the Social Sciences (SPSS, version 17). Frequencies and percentages were measured for all categorical data like gender, hepatitis positive and negative cases while continuous data like age and liver function tests were presented by Mean \pm SD.

RESULTS

There were total 369 patients in this study. Fifty four patients were excluded from the study based on exclusion criteria. There were 171 (54.29%) males and 144 (45.71%) females, with a male to female ratio of 1.18:1 as shown in Figure-1.

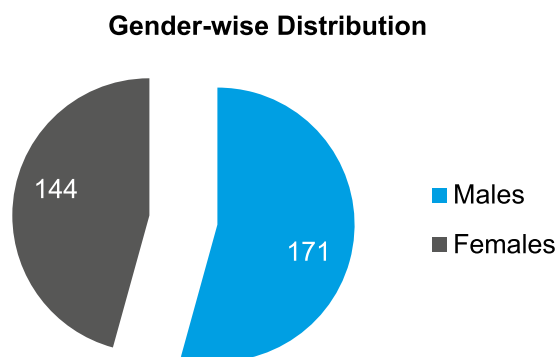


Figure-1. Gender distribution of study sample, (n=315)

The mean age of hepatitis negative patients was 34.58 ± 14.57 years while mean age of hepatitis

positive patients was 33.33 ± 13.37 years in our study. Majority of patients, 171 (54.29%), belonged to the age group of 21-40 years, followed by 57 (18.10%) patients in the age group of 40-50 years, 54 patients (17.14%) in the age group of 10-22 years and 33 (10.48%) patients were more than 50 years of age, as shown in Table-I.

Age ranges, (in years)	No. of cases	Percentage
10-20	54	17.14%
21-30	93	29.52%
31-40	78	24.76%
40-50	57	18.10%
50+	33	10.48%
Total	315	100%

Table-I. Age-wise stratification of study sample, (n=315)

Among 315 cases, 45 (14.29%) patients were tested positive for hepatitis. All these 45 cases were positive for anti-HCV antibodies and there was not a case which was positive for HBsAg, as shown in Table-II & III. Hepatitis positive patients consisted of 18 (40%) males and 27 (60%) females, showing high predilection for female gender. While stratifying the HCV positive patients according to gender, out of 171 males, 18 (5.71%) were positive for HCV while out of 144 females, 27 (8.57%) were positive for HCV as shown in Table-IV.

Test	No of Patients	Percentage
Hepatitis Positive Patients	45	14.29%
Hepatitis Negative Patients	270	85.71%
Total	315	100%

Table-II. Seropositivity of study sample for hepatitis, (n=45)

LFT Marker	Hepatitis Negative Patients	Hepatitis Positive Patients	Normal Value
Bilirubin	0.81 ± 0.89	0.78 ± 0.82	0.1-1.2 mg/dl
Alanine Transaminase, (ALT)	77.9 ± 156.29	132 ± 230.19	≤ 41 U/L
Alkaline Phosphatase	130.01 ± 76.13	148.87 ± 82.30	Males: 40-129 U/L Females: 35-104 U/L
Gamma Glutamyl Transferase, (GGT)	39.45 ± 40.76	43.47 ± 26.92	Male: 08-61 U/L Female: 05-36 U/L

Table-V. Values of liver function tests in hepatitis positive and hepatitis negative patients

Test	Positive	Negative	Total
Hepatitis C Positive Cases	45	270	315
Hepatitis B Positive Cases	00	315	315

Table-III. Stratification of hepatitis positive patients according to the type of hepatitis virus infection, (n=45)

Gender	No of Patients	Hepatitis Positive Patients	Percentage
Male	171	18	5.71%
Female	144	27	8.57%
Total	315	45	14.29%

Table-IV. Gender-wise distribution of hepatitis positive patients, (n=45)

The different parameters of LFTs in hepatitis positive and negative patients were given in Table-V. The table represents the mean values of the given parameter and its standard deviation, in both hepatitis positive and negative patients respectively.

DISCUSSION

Liver dysfunction is associated with many diseases. Viral infections of the liver, caused by hepatitis viruses mostly HBV & HCV, accounts for significant amount of liver diseases especially in South Asia.¹⁷

Our study has shown that the seropositivity for hepatitis was 14.29%. This is comparable to other studies already done on the same subject. Naeem et al. has shown that the prevalence of hepatitis was 12.99%, in their study done in Karachi, Pakistan.¹⁸ Lehman et al. have reported the prevalence of HCV in healthy individuals was 13.9% in their study conducted in Egypt.¹⁹

This is consistent with the finding that we have reported in our study as all the hepatitis positive cases in our study comprised of HCV. Similarly, the prevalence of HCV was 12.4% in a study conducted by Tesfa et al in Ethiopia.²⁰ There was no positive case for HBV in our study. This could be due to the following facts: i) we might needed a much larger study sample, and ii) the prevalence of HBV was documented to be quite low as compared to HCV in previous studies. A study from Nepal conducted by Shrestha et al. has reported that the rate of prevalence of HBV infection was 0.47%.²¹ Similarly, a study conducted in Pakistan by Ahmad et al., the incidence of HCV positive cases was 13.8% while that of HBV was 3.5%²², showing that the prevalence of HBV is considerably lower than that of HCV.

Regarding gender of hepatitis positive patients, our study has shown that there were 18 (40%) males and 27 (60%) females, showing higher predilection for female gender. Our finding is in contrast to other studies. Khattak et al., Shrestha et al. and Naeem et al. have shown male predominance in their studies.^{1,18,21} This discrepancy may be due to better availability and better access to modern health care facilities to the people nowadays. The mean age of hepatitis positive patients was 33.33 ± 13.37 years in our study. This finding was same as reported by Khattak et al. in their study which was conducted in Pakistan. The mean age of hepatitis positive patients in their study was 35.58 ± 13.93 years.¹

There were many studies done about the prevalence of hepatitis B & C virus infections and their associated risk factors in general and specific population groups. We have also checked liver function tests in all the patients in our study to determine the level of various markers of liver function in hepatitis positive and negative cases and to see correlation between them. The bilirubin levels in hepatitis negative and positive patients were comparable with not a much difference. It is also documented in literature that high levels of bilirubin, especially conjugated one, are usually seen in chronic hepatitis B & C.¹⁵ ALT is liver specific enzyme. In our study, ALT levels were

77.9 and 132 U/L in hepatitis negative and positive patients respectively. It is evident that these levels are considerably higher (about 1.65 times) in hepatitis positive patients than in hepatitis negative patients. Therefore, all patients with raised ALT must be screened for the presence of HBV & HCV infection. The raised levels of ALT in hepatitis negative patients signifies that they may be raised due to other diseases affecting the liver as we have only screened these patients for HBV and HCV.¹⁵ The GGT levels were within normal limits for both groups.

CONCLUSION

HBV & HCV infections are common causes of liver dysfunction in our country. HCV infection is more common than HBV. Hepatitis infection can lead to raised ALT levels even when other parameters of liver function tests are within normal limits. Therefore, all patients who have raised ALT levels must undergo hepatitis screening.


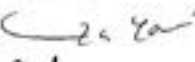
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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Hashim Riaz	Performed study & written manuscript	
2	Dr. Surriya Yasmin	Co-author	
3	Dr. Ayesha Babar Kawish	Conceive the idea, Supervised & proof read the manuscript	