

## Risk Factors and Comparative Analysis of Hepatitis B and C in Peshawar, Pakistan

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### Abstract:

*Hepatitis B and C are the most threatening disease of the world including Pakistan. The frequency of these infectious diseases is higher in northern areas of Pakistan. Data has been collected from suspected patients visited Khyber Teaching Hospital, during session 2013. A standard proforma was being filled from the patient which includes age, gender, risk factor, socioeconomic status, material status and diagnostic tests etc. A total number of 575 patients were recorded during this study. Blood sample were taken in test tube and tested for hepatitis B surface antigen and hepatitis C antibody on Immunochromatographic technique (ICT) and positive samples were*

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*also confirmed on Enzyme Linked Immunosorbent Assay (ELISA). Gender wise distribution showed that males were more infected than females for both hepatitis B and C. Age wise distribution showed that age group range from 31-45 years have high number of positive patient for hepatitis B and C. More positive cases were recorded for hepatitis B in group range 15-30 years. The study was further analyzed by risk factor like dental surgery, barber's risk, house hold contact, general surgery, blood transfusion and sexual contact.*

**Key words:** Hepatitis B, Hepatitis C, HBV, HCV, Risk Factor, Pakistan.

## **Introduction**

Hepatitis is the inflammation of liver. The inflammation is caused by different type of viruses. There are different type of hepatitis virus i.e. A, B, C, D, E and G. Hepatitis B which is caused by hepatitis B virus (HBV) is responsible for chronic hepatitis, hepatocellular carcinoma (HCC), cirrhosis and accounting for 1 million death annually (Alter et al., 1981). HBV infection is a serious world problem with 350 million suffering from chronic HBV infection and 2 billion infected across the globe. Asians suffering from HBV is about 75 % of the world infected patients (Alter, et al., 1981). The global prevalence rate of chronic HBV infection varied from 8 % (Africa, Asia and the Western Pacific) to 2 % (Southern and Eastern Europe) and less than 2 % (Western Europe, North America and Australia) (Maddrey, 2000). Hepatitis B resulting 500,000 to 1.2 million deaths each year and became the 10th leading cause of death by chronic hepatitis, HCC and cirrhosis, around the world (Lavanchy, 2004). Hepatitis C, which is caused by hepatitis C virus (HCV), is a major health problem across the world. World health organization (WHO) estimates that about 3 % of the world population are being infected by HCV and the prevalence rate in some area of Pakistan is 35 %

(Aslam, 2001; Khattak et al., 2002). Both viruses can be transmitted through percutaneous exposures to positive blood. Transmission of HBV and HCV occurs through high risk sex, through parental exposure, surgical equipment, exposure to house hold contact etc. (Alter, 1995). The purpose of the present study is evaluate different risk factors and to aware people about high risk of hepatitis B and C.

## **Method and Material**

Khyber Teaching Hospital was selected for taking information regarding HBV and HCV patients. Blood samples were collected from patients visited Khyber Teaching Hospital Peshawar, and tested for Hepatitis B surface antigen and Hepatitis C antibody on Immunochromatographic technique (ICT) and positive samples were also confirmed on Enzyme Linked Immunosorbent Assay (ELISA), in Microbiology Laboratory, Khyber Teaching Hospital Peshawar. A questionnaire was filled from patients which include age, gender, risk factor, reference of doctor, marital status, socioeconomic status and diagnostic tests etc.

## **Results**

A total number of 575 patients were interviewed. Out of the total, HBV positive were 265 (46.08 %), HCV positive were 168 (29.22 %) while the remaining were negative for both hepatitis. Out of HBV patient, positive male were 142 (53.91 %) and positive female were 123 (46.42 %). While HCV positive male and females were 106 (63.09 %) and 62 (36.91 %) respectively as shown in Figure 1. The risk factor associated for HBV were dental surgery (32 %), barber's risk (18 %), house hold contact (15 %), surgery (21 %), blood transfusion (6 %) and sexual contact (8 %) respectively as shown in Figure 2. Same risk factor were studied for HCV and were dental surgery 27 %,

barber's risk 25 %, house hold contact 13 %, surgery 22 %, blood transfusion 4 % and sexual contact 9 % respectively as shown in Figure 3. The age wise distribution showed that age range from 31-45 year has high number of positive cases for both HBV and HCV. However an elevated ratio were also found for HBV at age range form 16-30 as shown in Figure 4.

## **Discussion**

Hepatitis B virus is responsible for a substantial proportion of cases of post-transfusion hepatitis, liver cirrhosis and hepatocellular carcinoma (Torbensohn and Thomas, 2002). In Pakistan, it is estimated at around seven million, which is about 5% of the worldwide 350 million carriers of hepatitis B (Jafri et al., 2006). The World Health Organization (WHO) Assembly endorsed the recommendation of its Global Advisory Group that all countries should implement a hepatitis B immunization program (WHO, 1992). These vaccine contain non-glycosylated HBV small S protein as the envelope antigen which must be released from the yeast during the manufacturing process (Stephene, 1990). The transmission risk of these diseases increases among persons who are given unsterilized therapeutic injections, patients with thalassemia, patients on hemodialysis and persons who have their faces or armpits shaved by street barbers (Bhatti et al., 1995).

In the present project, prevalence was evaluated in those peoples who visited Khyber Teaching Hospital. The result of this project showed that the prevalence of HBV was (46.08%), which has been found to be high. Other research workers have also conducted studies over the prevalence of hepatitis B. Arshad studied that 8.3 % were positive for HBsAg among Afghan refugees living in Baluchistan, Pakistan (Arshad et al., 2005). Aamir et al, (2000) concluded that 19 % were positive for hepatitis B in peri urban community of Karachi. Nafees et al, (2009) found that 30.94 % persons were positive for hepatitis B

in general population of Lahore. A total number of 265 (46.08%) persons were found to be positive for Hepatitis B. From the comparison of both genders it was concluded that male positivity ratio was high (53.58%) as compared to female (46.42%). In the study of Ilyas et al., (2011) the percentage of males and females were 73.92 % and 26.07 % respectively. These results are in co-relation with the present results for gender wise prevalence. Prevalence rate was high (40.75%) in the age group of 16-30 years and the lowest (2.64%) among the age group of 60 plus years. The study of Abdullah (2007) is also in co-relation with the present study who found that the age group of 16-29 years was more (41.1%) infected and less (5.4%) infected age group was 03 months to 14years.

The gender wise study for HCV were in agreement with Muhammd and Jan (2005), which showed high number of male (54.63 %) infected than females (45.53 %). Same results have also been observed by Masood et al. (2005) which are 52.2% for males and 47.7% for females. Age wise distribution showed high number of positive patient age group range 31-45 years. The results were in agreement with Ali (2003), who recorded 42.85 % prevalence of HCV in age group of 35-40 years. Among the risk factors identified, dental surgery was the most frequent and major risk factor that accounted for 26.78%. A much higher result (41.26 %) has been reported by Shazi and Abbas (2006). The data regarding barber risk found in present study was 25%. Different workers have reported different data for aforementioned risk factor. According to Shazi and Abbas (2006), barber risk associated with HBV and HCV positive patient was 61.9%. Similarly, 58.81% occurrence of barber risk among HCV positive patients was being reported (Masood et al., 2005). General surgery risk was identified as 22.02% for the transmission of HCV infection among the patients. A much higher result (63.63 %) has been reported by Masood et al., (2005) studying the patients admitted for elective surgery. While studying risk factors, blood transfusion contributed for

3.57 % among the HCV patients which were in correlation with Muhammad and Jan (2005) which is 1.06 %. Sexual contact with HCV positive partner risk factor in the present study was reported as 9.52 %. Household contact with HCV positive patients accounted for 13.09 % transmission for HCV in the present study. So far no study has been conducted in Pakistan regarding this factor.

## **Conclusion**

It is being concluded from this study that HBV and HCV ratio are more in males than females. Furthermore this study showed that HBV was found in all group range while HCV was not recorded at age group range from 0-15. The ratio was high in group range 15-30 for both hepatitis. This is due to negligence and awareness of people about these threatening diseases.

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