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Comparative Analysis of Risk Factors and Complications of Hepatitis B and C Infections at Khyber Teaching Hospital, Peshawar

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Background and Aims: **To analyze comparatively the risk factors and complications of hepatitis B and C infections at Khyber Teaching Hospital, Peshawar.**

Methods: **A cross-sectional observational study was conducted in Department of Medicine, Khyber Teaching Hospital, Peshawar, from March 2005 to October 2006. Relevant information's were obtained from the patients with the aid of a pre-designed questionnaire prepared in accordance with the objectives of the study.**

Results: **A total of 432 patients with positive anti-HCV antibody 252 (58.33%) and positive HBs Ag 180 (41.66%) were included. The age range of the patients with anti-HCV antibody was from 11 to 84 years with the mean age of 47.5 years, while in HBV cases was 50.5 years (range: 7 to 87 years). In HCV positive cases, 165 (65.47%) were males and 87 (34.52%) were females while in HBV patients, 123 (68.33%) were males and 57 (31.67%) were females. The risk factors of HCV patients were: intravenous drug users, 23.81%; HCV positive sexual partners, 15.07%; blood or blood products transfusion, 13.49%; and occupational acquired-HCV, 7.14%. The major risk factors of HBV were: intravenous drug users, 33.88%; HBsAg positive sexual partners, 23.33%; blood transfusion, 14.44%; and dental procedures (tooth extraction or root canal treatment), 9.44%. Unknown source of infection was recorded in 25% of HCV and 10.56% of HBV patients. Complications consequences in HCV patients were: chronic hepatitis, 34.52%; liver cirrhosis, 16.26%; hepatocellular carcinoma, 0.79%; fulminant hepatitis, 0.79%; while 47.61% were asymptomatic or sub-clinical symptomatic. In HBV patients, complications were acute hepatitis, 5.56%; fulminant hepatitis, 0.5%; chronic healthy carriers, 31.67%; chronic hepatitis, 24.44%; liver cirrhosis, 6.11%; and hepatocellular carcinoma, 1.10%; while 40.55% were clinically asymptomatic or with sub-clinical disease. Coexistence of HCV and HBV were recorded in 52 (12.03%) patients.**

Conclusions: **History of sexual transmission favors HBV infection while blood transfusion and occupational exposure were recorded mainly in HCV positive patients. Chronic persistent hepatitis and liver cirrhosis were recorded more significantly with HCV infection while HBV favor carrier state or presents as a sub-clinical disease.**

Keywords: **HBV, HCV, Risk Factor, Complication, Peshawar**

Introduction

Hepatitis B and hepatitis C are serious global public health problems. Worldwide 2 billion people have been infected with the hepatitis B virus (HBV) and more than 350 million have chronic, lifelong infections [(1)]. An estimated 170 million people are chronically infected with hepatitis C virus and 3-4 million people are newly infected each year [(2)]. In a study in North West Frontier Province, Pakistan (Bunir District), out of 16400 patients, 751 were positive anti-HCV antibody (4.57%) [(3)]. Hepatitis B causes an estimated 1-2 million deaths per year world wide and it is estimated that there are 300 million carriers of HBV in the world [(4)]. The carrier rate varies in different areas of the world. In Pakistan the carrier rate is 10-15% in adults and 5% in children up to 5 years of age [(5)].

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In a study risk factors of HCV are listed as follow [6]: transfusion before 1993 was the primary risk factor in 26%, intravenous drug use setting in 9% and occupational exposure in healthcare in 9%. Women were more likely to have a history of occupational exposure or transfusion before 1993 and less likely to undergo minor surgery. Known nosocomial risk factors (transfusion before 1993 and dialysis) were responsible for 27% of infections, probable nosocomial factors (transfusions after 1992 and minor surgery) for 14% and further 9% were occupationally acquired infections [6]. The transmission of HBV like HCV is parenteral i.e. commonest by transfusion of unscreened blood and blood products, IV drug abuse, from mother to child, needle stick, ear piercing, tattoos, barber razors, etc. Infection may also spread by fomites, sharing of toothbrushes and abrasions [7].

The potential outcome of the HCV acute infection leads to persistent chronic infection, cirrhosis, hepatocellular carcinoma and fulminant hepatitis [8]. Various studies showed that HBV seropositivity was present in 52.85% cases of chronic liver disease and 22.64% cases of cirrhosis [9]. It has been shown in the literature that, HCV has a higher propensity for causing liver disease in contrast to HBV [10]. Present study was designed to compare risk factors and complications of HBV and HCV infections in a hospital based study.

Materials and Methods

A cross-sectional observational study was conducted in Department of Medicine, Khyber Teaching Hospital, Peshawar, from March 2005 to October 2006. Out of 423 patients, 252 (58.33%) positive anti-HCV antibody and 180 (41.66%) positive HBsAg patients were included. Inclusion criteria were all patients with established diagnosis of HBV and HCV infections, diagnosed on the basis of seropositivity for HBsAg and anti-HCV antibodies, irrespective of age and sex admitted in Department of Medicine of KTH. Exclusion criteria were patients with hepatitis of causes other than HBV and HCV, hepatitis A, and drug induced hepatitis.

A detailed history of patients was taken with the aid of a pre-designed questionnaire, prepared in accordance with the objectives of this study. Duration and family history were also recorded from every patient. Questionnaire was also contained information regarding age, sex, address, and occupation of patients. Information's regarding intravenous drug abuse and blood transfusions were recorded. History of sexual contacts, occupation, homosexuality and hepatitis status of sexual partner were also recorded.

The associated complications of HBV and HCV infections were also recorded from the ward record of the patients diagnosed by the consultant of the respective ward. Finally statistical analysis of results was performed and association of risk factors with HBV and HCV infections were studied.

Results

Age range

A total of 252 (58.33%) positive anti-HCV antibody and 180 (41.66%) positive HBs-Ag patients were included. The age range of the patients with anti-HCV antibody was 11 to 84 years with the mean age of 47.5 years, while for HBV cases was 7 to 87 years with the mean age of 50.5 years (Table 1).

Table 1. Age distribution of patients

Age range	Anti-HCV seropositive subjects (n=252)	HBsAg seropositive subjects (n=180)
15-20 years	5 (1.98%)	7 (3.88%)
21-40 years	82 (32.53%)	65 (36.11%)
41-60 years	114 (45.23%)	73 (40.55%)
61-80 years	38 (15.07%)	29 (11.10%)
>80 years	13 (5.15%)	6 (3.33%)

Gender

Out of 252 HCV positive cases, 165 (65.47%) were males and 87 (34.53%) were females while in HBV patients, 123(68.33%) were males and 57 (31.67%) were females.

Risk factors for HBV and HCV infections

The risk factors distribution for HCV patients were: intravenous drug users, 23.81%; HCV positive sexual partners, 15.07%; blood or blood products transfusion, 13.49%; and occupational acquired HCV, 7.14%. The major risk factors for HBV were: intravenous drug abuse, 33.88%; HBsAg positive sexual partners, 23.33%; blood transfusion, 14.44%; and dental procedures (tooth extraction or root canal treatment), 9.44%. Unknown source of infection was recorded in 25% of HCV patients and 10.56% for HBV cases (Table 2).

Complications analysis of HBV and HCV infections

Complications consequences in HCV patients

Table 2. Risk factors analysis for HBV and HCV infections at Khyber Teaching Hospital, Peshawar

Risk factors	Anti-HCV seropositive subjects (n=252)	HBsAg seropositive subjects (n=180)
Intravenous drug abuse	60 (23.81%)	61 (33.88%)
Sexual partner positive for specific viral infection	38 (15.07%)	42 (23.33%)
Blood or blood products transfusion	34 (13.49%)	26 (14.44%)
Occupational exposure	18 (7.14%)	9 (5%)
Dental procedures	8 (3.17%)	17 (9.44%)
Shaving from community barbers	12 (4.76%)	16 (8.89%)
Medical endoscopies	6 (2.38%)	10 (5.56%)
Tattooing	0	3 (1.66%)
Hemodialysis	0	1 (0.5%)
Homosexuality	0	1 (0.5%)
Past surgical history	3 (1.19%)	6 (3.33%)
Unknown sources of infection	63 (25%)	19 (10.59%)
Multiple risk factors recorded	10 (3.96%)	73 (40.55%)

were: chronic persistent hepatitis, 34.52%; liver cirrhosis, 16.26%; hepatocellular carcinoma, 0.79%; and fulminant hepatitis, 0.79% while 47.61% were asymptomatic or subclinical symptomatic. In HBV patients, complications were: acute hepatitis, 5.56%; fulminant hepatitis, 0.5%; chronic healthy carriers, 31.67%; chronic hepatitis, 24.44%; liver cirrhosis, 6.11%; and hepatocellular carcinoma, 1.10% while 40.55% were clinically asymptomatic or with subclinical disease (Table 3).

Table 3. Comparative analysis of associated complications of HBV and HCV infections at Khyber Teaching Hospital, Peshawar

Complications	Anti-HCV seropositive subjects (n=252)	HBsAg seropositive subjects (n=180)
Chronic persistent hepatitis	87 (34.52%)	26 (14.44%)
Liver cirrhosis	41 (16.02%)	12 (6.11%)
Fulminant hepatitis	2 (0.79%)	1 (0.5%)
Hepatocellular carcinoma	2 (0.79%)	2 (1.10%)
Asymptomatic or with subclinical disease and were admitted for other problems	120 (47.61%)	73 (40.55%)
Acute hepatitis	0	10 (5.56%)
Healthy carrier state	0	56 (31.11%)

Discussion

Chronic liver diseases i.e., chronic hepatitis and liver cirrhosis due to HCV are becoming a common problem worldwide. It has now also become a major health hazard in Pakistan [11]. In the present study, intravenous drug abuse was observed as the most important risk factor (23.81%) for transmission of HCV, wile total cases attributed to HBV transmission due to IV drug abuse were 33.88%. Luby SP *et al.* [12] also have reported that the transmission risk of the disease increases among persons who are given unsterilized therapeutic injections. Therapeutic injections and blood transfusion received during the past five years were significantly associated with HBsAg status in this study. HBV transmission through contaminated needles is well established [13]. Our findings correlate with other epidemiological studies conducted for risk factor analysis of HBV transmission [14, 15].

History of blood transfusion and occupational exposure were recorded mainly in HCV positive patients and favors its transmission. Hepatitis C has been reported to be the cause of 70-95 % of post transfusion hepatitis in western countries [16]; while its prevalence among health workers of Civil Hospital, Karachi was 5-6% [17]. We found that subjects with a history of dental treatment received from unqualified provider had an increased risk for HBsAg positivity; consistent with previous research [18]. Bleeding during facial shaving from barbers was significantly associated with the outcome in this study. Facial shaving from barbers has been repeatedly documented as a risk factor for transmission of hepatitis B and C viruses in various countries [19, 20].

Chronic persistent hepatitis (34.52%) and liver cirrhosis (16.02%) were recorded more significantly with HCV infection in present study while in positive HBV cases; liver cirrhosis was recorded only in 6% of patients. The major clinical pathway for acute HCV is chronic liver disease 87 (34.52%) which our findings are lower than that of Alter [21], 20-40%. The estimated annual number of deaths attributed to chronic liver diseases is expected to rise [21]. In Italy, HCV was the cause of liver cirrhosis in 40.1% of the case [22]. In another study carried out in Chicago in 1990 anti-HCV antibodies reactivity was 58.9% in chronic liver disease [23]. In Africa the third most common cause of death in medical wards is due to liver diseases. Hepatitis B was the commonest cause of these liver diseases, with 15-60 % seropositivity for HBsAg in the normal population [24]. In contrast the Vietnam study

shows HBsAg seropositivity more than HCV seropositivity in chronic liver disease patients [25].

Conclusion

We concluded that history of sexual transmission favors HBV infection and blood transfusion and occupational exposure were recorded mainly in HCV positive-patients. Chronic persistent hepatitis and liver cirrhosis were recorded more significantly with HCV infection while HBV favor carrier state or presents as subclinical disease.

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