Prevalence of Hepatitis B & C in Bahawalpur Region, Punjab, Pakistan

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Abstract

Hepatitis is a worldwide problem. Until now, six types of viruses related to hepatitis has been discovered and among them hepatitis B and C virus are most prominent. Both of these viruses can be spread easily and can cause significant health damage. Blood transfusion, unprotected sex and reuse of used syringes and razors are the main reasons for transferring the virus, ICT kits are easily available in market which were used to detect the presence of hepatitis B and C. These kits are easy to use but their efficiency is not 100%. This study was conducted to observe the ratio of hepatitis in Bahawalpur region and it was observed that overall incidence of HCV is more as compared to HBV. The percentage prevalence in male population (37%) was higher than female population (35%) and the percentage of HCV is higher in poor families (41%) than middle class families (33%). Furthermore, virus was more prevalent in middle aged male then younger and older persons. As hepatitis is frequently propagating among the people of Pakistan, which causing great loss of man power and economy every year. However, Public awareness through health education program and seminars should be held in regular interval, and vaccination programs to decrease the burden of HBV and HCV from the population of Bahawalpur Punjab province of Pakistan. There is an urgent need to undertake such studies in other populations so that populations with higher prevalence can be identified and ways can be devised for the prevention and cure of these viral infections.

Key Words: Hepatitis, HBV, HCV, Bahawalpur.

1. Introduction

Hepatitis is a major public health problem of the world. Currently, there are six different types of virus identified as hepatitis A, B, C, D, E, F and G virus. Both the Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are carried through the blood and transmitted primarily through a lesion of the skin (percutaneous) or mucosa (mucosal). All infections related to hepatitis virus are very serious but hepatitis B, C and Delta can also lead to chronic infection (Agboatwalla et al., 1994; Mujeeb, 1998; Shah & Habib, 2000). Hepatitis viruses are deadly pathogens not only because of their continuous prevalence and global burden but also due to serious problems of persistent HCV infection and its co-infection with HBV and HIV which speedup the course of the disease and causing rapid progression of one or both of mentioned virus (Hennessey et al., 2009). These diseases can be prevented especially through health education, safe sex, blood transfusion measures and the use of disposable syringes and razors etc. Infection screening tests are not 100% authentic or specific (Stramer et al., 2004; Viswanathan, 2001). The people of the developed countries have been reported to have relatively low rates of seroprevalence of hepatitis virus (Palitzsch et al., 1999). The rate of seroprevalence is slightly higher in United States (1.8%) (Alter et al., 1999; Armstrong et al., 2006), then other developed countries like Canada (0.8%)(Zou, Tepper, & El Saadany, 2000), France (1.1%) (Alter, 1997) and Australia (1.1%) (Law et al., 2003). The prevalence rate is relatively higher in Japan (1.5-2.3%) (Ohshima et al., 2000) and Italy (2.2%) (Puro et al., 1995).

Under developed countries which retain the larger populations have high rate of prevalence of hepatitis i.e. Pakistan has the prevalence rate of 2.3 for HBV and 2.5% for HCV in children. In pregnant women this ratio increases significantly (2.5% for HBV and 5.2% for HCV). In general public this ratio is 2.6% and 5.3% for HBV and HCV respectively. In health care workers this ratio is more critical i.e., 5.5% for HBV and 6.0% for HCV (Bosan, Qureshi, Bile, Ahmad, & Hafiz, 2010). As hepatitis is frequently propagating among the people of Pakistan, which causing great loss of men power and economy every year. This loss is dramatically increasing every next year so it is necessity of time to evaluate the HBV and HCV infection, status and source of dispersion in the population of Bahawalpur city.

2. Material and Methods

2.1 Sample collection

Whole blood samples were collected from Pathology lab of Bahawal Victoria Hospital and Gardezi Lab, situated in Bahawalpur city, Punjab, Pakistan. Sampling was done over a period of six months. Approximately 3mL blood was collected in EDTA coated vacutainer, labelled, brought to the research laboratory and kept at 15°C for further analysis. During Sample collection demographic data of participants such as age, gender, profession was recorded.

2.2 Screening of HBV

Refrigerated blood samples were brought to room temperature and mixed well before the start of Detection of HBV antigen in samples was done by using rapid immune-chromatographic test (ICT) kits. Place the test area clean and flat to avoid any false results. Two to three dropt of sample were transferred to the kit with the help of clean disposable dropper. Positive results can be seen after a couple of minutes. It is better to wait as long as 15 minutes to avoid any inconvenience.

Results were recorded negative if only band (only C) is observed on test kit that indicates undetectable levels of HBsAg. Presence two bands (C and T) interpreted as HBV positive which means that the level of HBsAg in the specimen is equal or higher than 2ng/ml. However, if only T band developed and the C band is not observed it means the assay is invalid.

2.3 Screening of HCV

Refrigerated blood samples were brought to room temperature and mixed well before the start of Detection of HCV antigen in samples was done by using rapid immune-chromatographic test (ICT) kits. Place the test area clean and flat to avoid any false results. Two to three dropt of sample were transferred to the kit with the help of clean disposable dropper. Positive results can be seen after a couple of minutes. It is better to wait as long as 15 minutes to avoid any inconvenience.

Results were recorded negative if only band (only C) is observed on test kit that indicates undetectable levels of HCsAg. Presence two bands (C and T) interpreted as HCV positive which means that the level of HCsAg in the specimen is equal or higher than 2ng/ml. However, if only T band developed and the C band is not observed it means the assay is invalid.

3. Results

3.1 Month Wise Prevalence of HBV and HCV

During the six month study of Hepatitis B & C incidence among the people of Bahawalpur City the total 1049 samples were evaluated. Total 431 individuals were tested for HBV, out of which 79 persons were positive for HBV that show 18.32% infection ratio in the population of Bahawalpur City. Highest prevalence was observed in January which is 26.31% followed by 25% in March and April, 14.44% in June, 12.64% in May and 12.12% in February.

Similarly, 615 individuals were tested for HCV, out of which 225 people were affected so the overall prevalence of HCV was 36.59% while highest prevalence was observed in April (43.53%), followed by 42.06% in June, 40.96 %, 35.06%, 32.80%, and 27.95% in March, January, May and February respectively (Figure 1).



Figure 1: Month wise Prevalence of HBV and HCV

Gender Wise Prevalence of HBV and HCV

Prevalence of HCV was greater in males (37%) as compare to females (35.53%). Out of 618 subjects tested for HCV, 345 were males and 273 were females. However, 128 males and 97 females were found affected. Prevalence of HBV was 20.31% in males as compare to 15.29% in females. So, the overall prevalence of HBV and HCV in males was found greater as compare to females (Figure 2).



Figure 2: Gender wise prevalence of HBV and HCV

Age Wise Prevalence of HBV and HCV

Prevalence of HBV was compared in different age groups i.e., 11-30 years, 31-50 years and 51 and above. HBV was most prevalent in Highest in age group of 30-50 year (19.36%,) followed by 18.64% in age group, 50> years and 15% in 11-30 age group. The prevalence of HCV was recorded highest (38.46%) in age group of 51 and above, followed by 35.88% in individuals of 31-50 years and 35% in 11-30-year-old individuals (Figure 3).



Figure 3: Age wise prevalence of HBV and HCV

Prevalence of HBV and HCV in different Socioeconomic classes

Highest prevalence of HBV was observed as 22.58% in middle income class followed by poor (16.66%) then 13.88% in rich. However, highest prevalence of HCV was 40.87% in poor followed by middle class 32.89% and 30.92% in rich (Figure 4).



Figure 4: Prevalence of HBV and HCV among different socioeconomic groups

4. Discussion

HCV and HBV both are serious health problems around the globe. Blood transfusion, sexual contact and interfamilial transmission are the major cause of spreading these viruses. According to an estimate hepatitis B has affected about 350 million people and more than 170 million are positive with hepatitis C virus around the world (Previsani & WHO, 2002). Pakistan, due to poor surveillance of these diseases, is considered one of the worst afflicted countries with HBV and HCV. In Pakistan, seroprevalence of HCV is much higher than its neighboring countries like Afghanistan, Iran and India (Perz, Armstrong, Farrington, Hutin, & Bell, 2006).

Present study was conducted to get an estimated about the prevalence of hepatitis B and C in human population of Bahawalpur City. According to the present study overall prevalence of hepatitis was is 18.31% which is higher than previous studies (Soomro & Mahmood, 2013) who studied the prevalence of hepatitis B 11.29% in Khanpur. In another report (Muhammad Ayub, Rehman, Muhammad, Azam, & Allah, 2006) hepatitis B infection was 68.15% more in males as compared to the females, which also correlates with present study.

In the current study, presence of Hepatitis C was high in males (37.10%) as compared to the females (35.53%), that correlates with Khan *et al.*, 2013 (Khan et al., 2013) who observed overall prevalence of Hepatitis 32.35% in males in comparison to the females 17.65% in human population of college students of Gujranwala and he gave the logic behind the higher prevalence of Hepatitis C in men might be because of the fact that in Pakistan men have more freedom and social mobility than females as a result they are more exposed to multiple risk factors having greater chances of contracting the viral infection.

The data obtained from study was further differentiated into age groups to see if there was an age effect on prevalence of hepatitis B. The analysis of data showed maximum prevalence of hepatitis B (19.36%) 179

in 31-50 years old individuals followed by old age that is, 51 above then in 11-30 years' age group. This data also correlates with Marcucci *et al.*, in 2006 who study high prevalence of hepatitis B in mature individuals (47.3%), 27% in old individuals and about 25.2% in children (Marcucci *et al.*, 2006). Khan *et al.*, in 2013 gave reason that mature are involved in outside activities as compared to the children and old age person that is why they are have more chances of catching infections (Khan *et al.*, 2013).

Analysis of data indicates that maximum prevalence of Hepatitis C i.e., 38.46% in old aged persons in comparison to mature persons (age class 31-50) 35.88% and young (age class 11-30) 35%. Xia in 1996 observed 6.60% in old in comparison to mature 6.64% and in young 6.04%. The increased prevalence in old age might be associated with drug abuse, divorce or separated maternal status and low educational level (Xia et al., 1996).

Present study revealed that prevalence of hepatitis B with respect to the socio economic status varies. It was found highest, 22.58% in middle income man followed by 16.66% in poor 13.88% in rich. Further another study in 2009 explained the reasoned for high rate of HBV in Low and Normal class due to household crowding unconscious and careless lifestyle as compare to rich (Labrique et al., 2009). Socio economic status is also a big factor that effect the sanitary and hygienic practices and it is also a major factor that directly tie-in with hepatic infection (Gadgil, Fadnis, Joshi, Rao, & Chitambar, 2008). Prevalence of hepatitis C with respect of Socio economic status also observed the highest in poor people 40.87% followed by the normal 32.89% and then 30.92% in poor. This data showed less rate of infection in upper socio economic levels and flipped the association between socio economic status verses presence of infection.

5. Conclusion

HBV and HCV both diseases in male were more frequently exposed to the risk factors as compared to female and poor class are more in risk as compare to the high and middle income class. Similarly, the middle age group had high rate of infection as compared to the children and the older age groups. Reuse of syringes, barber risk and history of injection were main risk identified during the present study. The reason may be that male have more exposure to outdoor activities, shaving habits, using hotels, travelling and drug abuses etc. and also some environmental effect also involve.

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