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Prevalence rate of hepatitis B and hepatitis C virus among common gender in district Charsadda Khyber Pakhtunkhwa Pakistan

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Abstract

The aim of this paper is to investigate the spread over the rate of Hepatitis B & C in District Charsadda. The data obtained from the patients, suggested by the doctors based on their health issues and symptoms. Hepatitis B is virus which consist of double stranded DNA having envelope. it is responsible to cause various liver diseases. Hepatitis C cause liver diseases like cirrhosis, hepatocellular carcinoma and responsible for the most common threat of the liver transportation globally. This study was designed to evaluate the anti-HCV and anti- HBV antibody positivity with ICT (Immune Chromatography Technique) based detection among various Patient attending by District Head Quarter Hospital Charsadda, from various region of Charsadda KPK province of Pakistan. Total 12694 patient of HBV and 12361 Patient of HCV patient sample serums were collected during July 2017 to April 2018 from the District Head Quarter Hospital Charsadda Kpk Pakistan. All samples of HCV and HBV were tested for anti-HCV antibodies and anti-HBV antibody using ICT (immune chromatography technique) method. Our analysis About 12694 patients who were on risk for symptoms of HBV and 12361 patient's symptoms leading towards HCV indicated that 123 (0.96%) were HBV positive and 141(1.14%) had HCV antibodies in their serum respectively. According to our study the prevalence of HBV is lower than HCV infection in subject areas. The lower level of HBV and HCV infection indicates the development in health care facilities and awareness in public over the past few years.

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Introduction

Now a day Hepatitis B and C are the leading cause of health issue in poor countries *(Khan et al, 2017)*. Commonly hepatitis is the swelling and inflammation of liver due to the infection caused by hepatitis viruses like HBV, HCV etc. HBV and HCV infections are very common in majority of the African countries *(Madhava et al, 2002, Kramvis et al 2008)*. Throughout the world approximately 350 million people which are carrier of HBV *(Goldstein et al 2005)*. Hepatitis B and Hepatitis C infection count majority of death rates among other infection. HBV is a DNA virus belongs to the family hepadneviridae and cause hepatitis B infection *(Pungpapong et al 2007)*. HBV can cause infection 50-100 times more than HIV and 10 times more than HCV. HBV is called silent killer because the infected person has no idea that the person is already infected or not(Samuel *et al* 2004). HCV is an RNA virus belongs to the family Flaviviridae. Mostly it causes infection in chimpanzee and humans *(Polyak. 2006)*. HCV infect approximately 170 million people throughout the world *(Obi et al 2006)*.

The ways these two viruses transmitted from infected to healthy people are through sexual relation, mother to offspring and contact with infected blood *(Onwuliri et al 2016)*.

The common reasons of the spread of these fatal diseases are low economy, unavailability of accurate health services and less or no public awareness about abstaining, transmission and cure of the disease *(Ali et al 2011)*. A lot of studies have been conducted to show the prevalence of HCV and HBV co-infection between HIV infected and intravenous medicine user world widely *(Hakim et al 2010)*. Mostly HCV transmit through unsafe blood transfusion and utilization of infected surgical instruments *(Basit et al 2014)*. In acute hepatitis the patient contains a high level of HBs Ag in serum and they are at a danger of getting sever liver disease *(Sheikh et al 2011)*. To overcome HBV disease, it is very crucial to recognize the accurate prevalence and the contributing agents of the disease. Defensive procedures must be take on to keep away from HBV infection. The major factors of spreading of infection are reuse of needles, use of contaminated razor blades and injection needles, contact with infected blood, sexual contact, vaginal fluids and semen.

In developing countries, the transfusion of blood is one of the big risk factors because of no proper facilities *(Bhatti et al 2007*). HCV can cause cirrhosis and liver cancer *(Komas et al 2010)*. HCV causes chronic liver infections and even hepatocellular carcinoma *(Sood et al 2012)*. Medical apparatus such as needles, razors, scissors and syringes, sexual relation with infected person and wrong use of drugs may raise the probability of getting infection *(Ullah, et al 2017)*. Mostly HCV and HBV treatment depends upon the HCV sero-prevalence and HBsAg studies. About 3% of the total population of the world have proved the presence of chronic HCV (Duan *et al* 2014).

In Pakistan about 1.5 million people are infected with hepatitis and it cause death to the patients. In Pakistan the estimated value of anti-HCV antibodies is 2.3 to 5.3%and approximately 2.56 to 3.53% is HBs Ag *(Ali et al 2009; Taha et al 2014*). So about total of 14 million HCV and 9 million HCV carriers throughout the country having higher prevalence according to Umer *et al (Ali et al 2009; Umar et al 2010)*.

The objective of this study was to analysis the spread over rate of Hepatitis B&C and to incorporate an awareness among the common people to do regular checkup and in case of Hepatitis B&C positive people, how to deal with those people in terms of personal hygiene and contacts.

Materials and methods

Data and sample collection

The samples were collected from District Head Quarter Hospital Charsadda from the volunteer patients who were having initial symptoms or suggested by doctors. A total of 12694 patients for HBV and 12361 for HCV were investigated.

Fig. 1. Map of District Charsadda.

Blood analysis method

The samples from all the patients were analyzed using ICT (Immunochromatographic test) kits. The positive patients were further subjected to further verifications and test.

Statistical analysis

All the graphs were generated using excel 2016. Window 7 64 bits.

Results

Hcv result

A total of 12361 patients were screened for anti HCV antibody by ICT (Immuno-chromatographic test). We found that 141 patients were positive for HCV with the prevalence ratio of 1.14%. Out of total 7911 patient's male patients having 91 positive for anti HCV antibody with the prevalence ratio of 1.15% while out of 4450 selected female patients 50 patients with prevalence of 1.123%. As the duration of our research is from July 2017 to April 2018, so we collected our data month wise.as shown in figure 2.

In Month of July total patients were 1084 out of which 17 were positive with the prevalence ratio of 1.568%, among them number of male were 778 with 11 positive results and prevalence ratio is 1.41% and number of female patients were 306 and number of positive patients were 06 with prevalence 1.96%. In the month of August patients 1224 registered out of which 09 were positive having prevalence of 0.73%, among them 838 were male out of which 07 shows positive results and prevalence ratio is 0.83% and number of female patients were 386 patients and only 02 were recorded for positive whose prevalence was 0.58%. In the next month of September total number of patients were 1059 and number of positive patients to HCV were 08 and the prevalence ratio is 0.755% among them number of male were 600 with 05 positive results and prevalence ratio is 0.833% and number of female patients were 459 and number of positive patients were 03 with prevalence 0.653%. In October number of patients were 1060 and total positive patients were 09 with the prevalence of 0.849%, among them number of male were 629 with 06 positive results and prevalence ratio is 0.953% and number of female patients were 431 and number of positive patients were 03 with prevalence 0.696%.In November total patients were 1163 out of which positive to HCV were 14 and the ratio of prevalence is 1.204%, among them number of male were 680 with 09 positive results and prevalence ratio is 1.323% and number of female patients were 483 and number of positive patients were 05 with prevalence 1.035%. Then in December the patients screened by ICT were 1661 and the positive were 11, so the prevalence ratio is 0.662%, among them number of male were 1117 with 08 positive results and prevalence ratio is

0.716% and number of female patients were 544 and number of positive patients were 03 with prevalence 0.551%. In January the patients were 1358 and positive among them were 22 with the prevalence of 1.620%, among them number of male were 826 with 13 positive results and prevalence ratio is 1.573% and number of female patients were 532 and number of positive patients were 09 with prevalence 1.691%. In February number of patients screened were 1118 and positive results were 19 and the prevalence ratio is 1.699%, among them number of male were 699 with 11 positive results and prevalence ratio is 1.573% and number of female patients were 419 and number of positive patients were 08 with prevalence 1.909%.

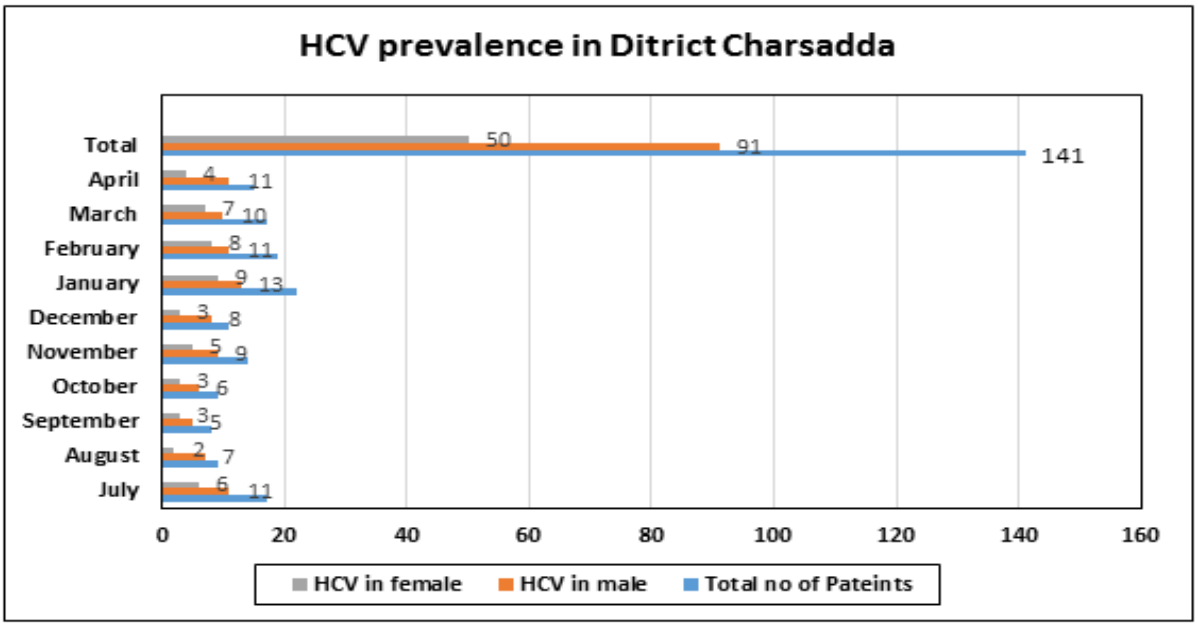

Fig. 2. HCV Prevalence of District Charsadda (July 2017 – April 2018).

In March number of patients were 1259 and positive among them were 17 and the prevalence ratio is 1.350%, among them number of male were 648 with 10 positive results and prevalence ratio is 1.543% and number of female patients were 611 and number of positive patients were 07 with prevalence 1.145%.

In April number of patients were 1375 and positive results were 15 with the prevalence of 1.09%, among them number of male were 1096 with 11 positive results and prevalence ratio is 1.003% and number of female patients were 279 and number of positive patients were 04 with prevalence 1.433%.

Hbv result

Total of 12694 were screened for HBs Ag by ICT. We found that 123 patients were positive for HBV with the prevalence ratio of 1.364%. Out of total 7744 were male patients having 90 positive for HBs Ag with the prevalence ratio of 1.162%.

The selected female patients for ICT were 4950 and among them 33 positive with prevalence of 0.67% as shown in fig 3 In July 2017 total patients were 1100 and positive to the HBs Ag were 15 with the prevalence ratio of 1.568%, among them number of male were 695 with 07 positive results and prevalence ratio is 1.007% and number of female patients were 405 and number of positive patients were 08 with prevalence 1.975%. In the month of August number of patients were 1223 out of which 14 were positive having prevalence of 1.145%, among them number of male were 761 with 08 positive results and prevalence ratio is 1.051% and number of female patients were 462 and number of positive patients were 06 with prevalence 1.298%. In the next month of September total number of patients were 1065 and number of positive patients were 07 and the prevalence ratio is 0.659%, among them number of male were 680 with 06 positive results and prevalence ratio is 0.882% and number of female patients were 385 and number

of positive patients were 01 with prevalence 0.259%. In October number of patients were 1360 and total positive patients were 13 with the prevalence of 0.956%, among them number of male were 838 with 11 positive results and prevalence ratio is 1.312% and number of female patients were 522 and number of positive patients were 02 with prevalence 0.383%.

In November total patients were 1163 out of which positive were 11 and the ratio of prevalence is 0.946%, among them number of male were 716 with 09 positive results and prevalence ratio is 1.256% and number of female patients were 447 and number of positive patients were 02 with prevalence 0.447%. Now in December the patients screened by ICT were 1661 and the positive were 10 so the prevalence ratio is 0.602%, among them number of male were 987 with 08 positive results and prevalence ratio 0.810% and number of female patients were 674 and number of positive patients were 02 with prevalence 0.296%. In January the patients were 1358 and positive among them were 16 with the prevalence of 1.178%, among them number of male were 814 with 11 positive results and prevalence ratio is 1.351% and number of female patients were 544 and number of positive patients were 05 with prevalence 0.919%. In February number of patients screened were 1181 and positive results were 11 and the prevalence ratio is 0.931%, among them number of male were 700 with 09 positive results and prevalence ratio is 1.285% and number of female patients were 481 and number of positive patients were 02 with prevalence 0.415%.

In March number of patients were 1280 and positive among were 12 and the prevalence ratio of 0.938%, among them number of male were 797 with 10 positive results and prevalence ratio is 1.254% and number of female patients were 483 and number of positive patients were 02 with prevalence 0.414%. And in April number of patients were 1303 and positive results were 14 with the prevalence of 1.074%, among them number of male were 756 with 11 positive results and prevalence ratio is 1.455% and number of female patients were 547 and number of positive patients were 03 with prevalence 0.548%.

Discussion

Hepatitis B Virus and Hepatitis C Virus have very high ratio to cause a disease and can cause death globally. Throughout the world, prevalence ratio of HCV is 3% (Bonkovsky & Mehta 2001) while the prevalence rate of HBV differs in various parts of the world like in Asia and Africa the rate is almost 15%, in Britain and America it is up to 0.1-0.2% and in Greece and southern Italy the rate is 3% *(Butt & Amin 2008).*

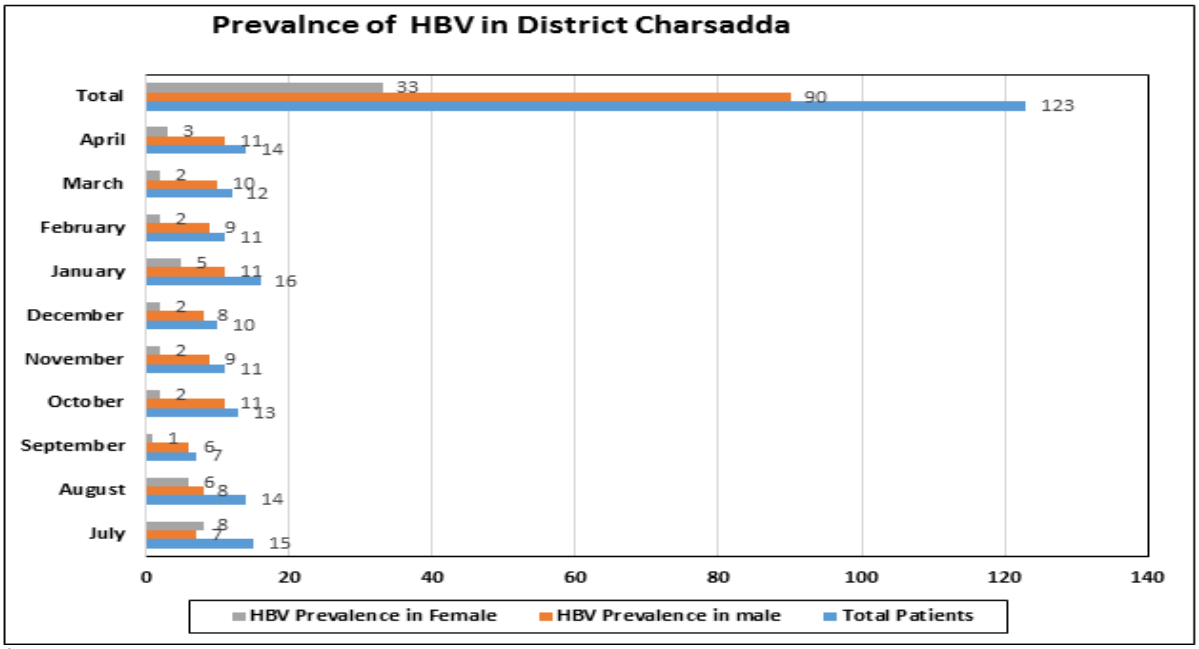

fig. 3. HBV Prevalence of District Charsadda (July 2017 – April 2018).

In Pakistan the total prevalence of HBV and HCV is about 10% *(Malik et al 1988)*. According to different repots it is suggested that the ratio of prevalence of HBsAg in healthy blood donors is 0.82%-5% *(Zuberi 1998; Asif et al 2004; Zuberi et al 1977; Yousuf et al 1998*). Globally Hepatitis B and C viruses are responsible for more than 1 million deaths per year and about one-third of the total population are disease receive (Butt & Amin 2008). According to WHO report, 170 million people are HCV infected (Butt & Amin 2008). HBV and HCV are the two main factors to cause cirrhosis, Liver diseases and Liver cancer through the world (Nagao *et al* 2004).

The incubation time for HCV is 12-27 weeks but about 80-90% of the total cases arise in 5-12 weeks *(Hoofnagle et al 2007)*.Majority of the HBS and HCV patients do not have clear symptoms at the beginning of the disease. Only 25% of the disease has the signs and symptoms of jaundice *(Butt & Amin 2008)*.

In previous studies different methods are used for the selection of subjects in Pakistan. The rate of HCV infection in the healthy blood donors of Swat district was 2.23% *(Ahmed 2006)*.

The rate of prevalence on of HCV in healthy blood donors of district Mardan was 4.5% (*Khan et al 2012*). Frequency of HCV in Kurram Agency 1.1% *(Ali et al 2011)*. Reported the prevalence ratio of 3.3% and 3.0% for HCV and HBV respectively in healthy soldier's blood *(Farooq et al 2005)*. Estimated a prevalence of 6.2%for HCV antibodies in healthy population of North West Pakistan (Khattak *et al* 2002). Studied the prevalence ratio 3.0% for HBV in the blood donors of Karachi *(Ali, et al 2011)*.

In our study, first we investigate 12694 Hepatitis B Virus patients and 12361Hepatitis C Virus patients through ICT method for the prevalence of HBV and HCV from different areas of district Charsadda KPK Pakistan. Previous studies in KPK reported prevalence ratio of 3-4% in HBV and HCV. In this study the results of ICT test show that 141(1.14%) patients were positive for HCV and 123(0.96%) patients were positive for HBV.

In our study the patient's blood were screened through ICT to find the prevalence ratio for HBV and HCV patients of DHQ hospital Charsadda KPK Pakistan.

The serum of all the patients reporting to DHQ hospital Charsadda from July 2017 to April 2018 was screened. In this study, screening of blood by ICT technique exposed that 1.14 % of the patients were positive for anti-HCV and 0.96% of anti- HBV which is well in the range of previously reported anti-HCV and anti-HBV prevalence. In this study we screened all the patient blood samples by ICT which indicated that 1.14 % of the patient had anti-HCV antibody and 0.96% of the patient had HBsAg. Comparing month wise data, in the month of January number of positive patients for HBV is 1.17% which is higher among all and for HCV too in January prevalence ratio is higher which 1.62% is. According to our study the frequency of HBV and HCV infection decreases to 0.96% and 1.14% respectively. So, this study shows that ratio of prevalence of HBV and HCV infections is even lower than all the previous studies done for prevalence of HBV and HCV in the respective subject areas.

This decrease in the infections of HBV and HCV shows development in health care facilities and also the awareness in population in the last few years.

Conclusion

To sum up our data on the basis of our result it is clear that hepatitis patients rate is gradually decreasing with the passage of time.one possible reason could be different awareness program through media by which people are more alert toward this deadly disease. Also, through new technology the test for hepatitis become very feasible and quick to diagnose through kits and PCR machines. However, from the data it is also clear that hepatitis prevalence is more in men as compared to female.

The reason may be possibly because male is more independent in term of food, travel, and relations. While female is restricted to home. The food and drinks in hotels are also many times unhygienic.

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