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HBV Burden on Population, a Comparative Study between Two Districts Mardan and Charsadda of KPK, Pakistan

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Abstract:

Worldwide hepatitis is one of the serious threats to human health because it can result in severe damage to liver tissue. Viral hepatitis is an infectious disease which can spread from person to person via orofecal and parental routes, blood transfusion, and contaminated body fluids like semen, saliva and blood. The ratio of infection of Hepatitis B Virus (HBV) differs in different part of the world even in the same country. The aim of this study was to find out the prevalence and overall burden of HBV infection in district Mardan and Charsadda of KPK, Pakistan. Blood samples were collected from patients of various regions of district Charsadda and Mardan attending DHQ hospital and Mardan Medical Complex (MMC) respectively. The study was carried out from October 2017 to May 2018. A total of 10852 patients were recruited from district Charsadda and 14168 patients from district Mardan. Blood samples were collected and screened for anti-HBV antibody using the standard ICT (immuno chromatographic technique) method. Out of 10852 patients from district Charsadda, 103 were anti- HBV positive with the prevalence ratio of 0.949%. Similarly, out of 14168 patients from district Mardan, 149 were anti- HBV positive with the prevalence ratio of 1.051%. Our results showed a higher prevalence of HBV infection in district Mardan as compared to district Charsadda.

Key words: Burden, Hepatitis B, ICT, Charsadda

Introduction:

Hepatitis is a main threat to the health of people all over the world. The ratio of infection of Hepatitis B Virus (HBV) differs in different parts of the world even in the same country. HBV have direct relation with various factors like host, behavior and environment [1]. According to global statistics, around 350 to 400 million individuals are the victims of HBV infection in which about 80% people belong to Asian continent [2,3]. The ratio of HBV infection in Europe and North America is almost 1/1000 of normal people [3]. Every year about 10 to 30 million people become infected by HBV throughout the world and majority of them are children and teenagers [4]. HBV plays a vital role in liver diseases like cirrhosis, hepatocellular carcinoma etc. and have an important role in morbidity and mortality all over the world [1,5].

In Asian and African countries which have low economy and health facilities, approximately 2 billion people are infected with HBV [6]. Hepatitis B Virus is an enveloped virus and belongs to the viral family hepadnaviridae with incompletely double stranded genome having length of 3.2 kb. HBV have no proofreading ability, so have high variability in their genome [7,8]. In Pakistan people are in high critical condition because up to 25% of carriers of HBV infection lead to death causing disease like cirrhosis and liver cancer. Pakistan is among the list of worlds' most infection rates [9]. HBV can transfer through various routs like body fluids, saliva, vaginal fluids, menstrual fluids and through blood. Other transmission routs include use of unsterilized syringes, blood transfusion, sex with infected partner and to a newborn from infected mother. HBV can also transfer through unsterilized dental, surgical and medical process, use of contaminated razors and transfused body organs etc. It cannot transmit through water, food and unintended contact. The procedure of HBV infection diagnosis is totally depended upon biochemical, clinical, serological and histological findings [10].

Materials and Methods:

Patients selection: The samples were collected from District Head Quarter Hospital Charsadda & Mardan Medical Complex Mardan from the volunteer patients who were having early symptoms or recommended by doctors. A total of 10851 patients were recruited from district Charsadda and 14567 from district Mardan and were screened for HBV infection.

Sample collection and analysis: Venous blood was collected from all the patients and screened for HBV infection by ICT (immuno chromatographic technique) method. Those who were HBV positive by ICT method were confirmed by ELISA (Enzyme Linked Immunosorbent Assay).

Statistical analysis:

Data was analyzed by Microsoft Excel 2016.

Results:

1) District Mardan

In Mardan total number of patients tested through ICT (Immuno-chromatographic test) were 14168 to detect HBs Ag. Out of which 149 patients were detected positive with a prevalence of 1.051%. 118

male patients were positive for HBV out of 8780 having 1.339% prevalence. Similarly, 31 female patients were positive out of 5334 having 0.577% prevalence as shown in figure 1.

Table: Prevalence of HBV in District Mardan

Month	Patients	Total +ve	Prevalence	Male patients	Male +ve	Male prevalence	Female patients	Female +ve	Female prevalence
October	1874	16	0.853	1169	11	0.94	705	5	0.709
November	1752	19	1.084	1082	15	1.386	670	4	0.597
December	1697	17	1.001	1023	15	1.466	674	2	0.296
January	1709	20	1.17	1120	17	1.517	589	3	0.509
February	1662	18	1.803	984	14	1.422	678	4	0.589
March	1744	16	0.917	1119	13	1.161	625	3	0.48
April	1849	21	1.135	1184	16	1.351	665	5	0.751
May	1881	22	1.169	1153	17	1.474	728	5	0.686
TOTAL	14168	149	1.051	8780	118	1.339	5334	31	0.577

2) District Charsadda:

In Charsadda a total of 10852 patients were screened for HBV infection out of which 103 were positive with a prevalence of 0.957%. Out of 6543 male patients, 81 were having HBV infection with a prevalence of 1.250%. Out of 4309 female patients, 22 were having HBV infection with a prevalence of 0.4983%. The results are shown in figure 2.

Table 2: Prevalence of HBV in District Charsadda

Month	Patients	Total +ve	Prevalence	Male patients	Male +ve	Male prevalence	Female patients	Female +ve	Female Prevalence
Oct	1360	13	0.955	838	11	1.312	522	2	0.383
Nov	1163	11	0.945	716	9	1.256	447	2	0.447
Dec	1661	10	0.602	987	8	0.81	674	2	0.216
Jan	1358	16	1.178	814	11	1.351	544	5	0.919
Feb	1181	11	0.931	700	9	1.285	481	2	0.415
Mar	1280	12	0.937	797	10	1.254	483	2	0.414
Apr	1303	14	1.074	756	11	1.455	547	3	0.548
May	1546	16	1.034	935	12	1.283	611	4	0.645
TOTAL	10852	103	0.957	6543	81	1.250	4309	22	0.4983

Discussion:

Hepatitis B virus (HBV) infection is a main threat all over the world especially in Africa, Asia, southern Europe and Latin America. 2 billion people are infected with HBV infection all over the world and about 400 million people among them are infected from chronic infection. The ratio of infection in Pakistan is very high, about 9 million people are infected with HBV and its rate of infection rises with passage of time due to poor economic status, lack of accurate health facilities and less public awareness about the spread of various infectious diseases including HBV, HCV, HIV. Majority of HBV infected patients do not show signs or symptoms at the start of infection [11]. About 1-2 million people died every year due to HBV infection all over the world and about 300 million people are carrier of HBV infection out of which around 80% belongs to Asian continent [12]. Infection of HBV give rise to a wide range of Asymptomatic carrier state to self-limiting infection or hepatic failure, chronic hepatitis which leads to cirrhosis and hepatocellular carcinoma (HCC) [13]. The HBV studies carried out in past in Pakistan have diverse methodologies, limited geographical scope and different time intervals [14].

In Pakistan different studies were done by using different methodologies of selection of the subjects to detect HBV infection. The rate of prevalence of HBV infection of blood donors of KPK is 1.83% [15]. The prevalence of HBV infection in healthy blood donors of Peshawar KPK Pakistan is 2.05% [16]. Vaccination against Hepatitis B virus alone cannot decrease rate of prevalence in a short time because these vaccines are not freely available to majority of the people living in Pakistan and the second reason is that it is not affordable to the people. In USA too, the availability of vaccination against HBV is not that much fruitful and can't cause decrease in prevalence of HBV [17]. The most accepted preventive measures for HBV infection include take a good care during blood transfusion, proper vaccination against HBV, safe sex, take care while shaving by barber and health worker must train well. Those patients who needs surgery must be screened for hepatitis and if hepatitis virus is present so there should be separate operation theater facilities for such patients [18].

In this study we examine the seroprevalence of HBV infection Among OPD patients from Mardan Medical Complex Mardan and District Head Quarter Hospital Charsadda, KPK Pakistan. This study was conducted from June 2017 – May 2018. The blood samples of patients were screened through ICT. First, we took blood sample from 14168 patients of MMC hospital district Mardan and 10852 patients of DHQ hospital district Charsadda for the prevalence of HBV infection through ICT.

In Mardan total numbers of positive patients were 149 with the prevalence ratio of 1.051%. From Mardan number of male patients were 8780, number of infected male were118 and rate of prevalence are 1.339%. And numbers of female patients were 5334, while numbers of female positive patients were 31 with the prevalence of 0.577%.

On the other hand total number of patients to be screened in DHQ hospital Charsadda was 10852 in which number of positive patients was 103 with the prevalence ratio of 0.957%. Total number of male patients were 6543 with 81 positive and prevalence is 1.250%. Numbers of female patients were 4309 and numbers of infected persons were 22 with the prevalence of 0.498%.

According to the studies from 1996 -2009 high ratio of prevalence was 5%– 6% has been reported form Sindh area [19], but our result of both district Mardan and Charsadda shows lowering trend of HBV due to many reasons like public awareness, early screening of patients and increase in vaccination rate etc. OPD record of the patients and blood sample of the patients reporting to MMC Mardan and DHQ hospital Charsadda Pakistan from June 2017-May 2018 were screened. Our study realizes that prevalence of HBV infection of the OPD patients of Mardan and Charsadda KPK as well as in the case of the entire country (Pakistan) has decreased over the past few years. This could well be credited to the awareness created among the health professionals and general public about hepatitis B. The decreasing trend of HBV infection shows the improvement in health care facilities and awareness among the general population over the past few years.

Conclusion:

As already discussed about HBV infection which have been spread out all over the world. According to global statistics the Asian countries were more infected as compare of Europe countries. We analyses different data from two districts Charsadda and Mardan, in which there were a little bit possibility for prevention and the more cases were at chronic stages. This means that there were no any accurate techniques for eliminating these infection and awareness programs to inform people about this congenital disease. The technique ICT (immune chromatography technique) was used for the screening of HBV. The more populated areas were infected more from HBV as compare of less populated. Mardan was populated district as compare of Charsadda which was more infected from HBV infection.

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