ORIGINAL ARTICLE

Prevalence of Hepatitis B, Hepatitis C and Human Immunodeficiency Viral Infection among the Pakistani Population

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ABSTRACT

Background: Pakistan is among the developing countries of the world burdened with an estimated population of 190 million. Hepatitis B and Hepatitis C are the prevalent viral infections that are emerging rapidly in the general population of Pakistan due to various social and economic factors.
Methods: A cross sectional study was conducted from 2013 to 2015 in various cities of Pakistan. Screening of the general population was done through population screening camps. 3278 blood samples were collected during these camps. All the samples were screened for Hepatitis B surface antigen (HBsAg), anti-HCV and anti-HIV 1 and 2by immunochromatographic technique (ICT) and enzyme linked immunosorbant assay (ELISA). The reactive samples on Elisa were tested on PCR (Polymerase chain reaction) for HBV DNA & HCV RNA. Western blot was performed for HIV infected sample. Statistical analysis was carried out by using SPSS software version 17.
Results: Among the 3278 individuals, the overall seroprevalence of (HBsAg), anti-HCV and anti-HIV were found to be 6.62%, 5.73% & zero% respectively. No case was reported as HBV, HCV and HIV co-infection.
Conclusion: The prevalence of Hepatitis B and Hepatitis C found to be at an increasing pattern in the general population of Pakistan as compared to the previous statistics. Therefore it is needed to take prompt action against it. Education of the masses is desired in order to create awareness in the general population. Higher authorities should direct proper management against the reported cases.
Keywords: Prevalence, Hepatitis B, Hepatitis C, Human immunodeficiency virus.

INTRODUCTION

Transmission of blood borne pathogens is a global issue for the health care centers worldwide. Hepatitis B, hepatitis C, syphilis, malaria, infections with human T cell lymphotrophic virus (HTLV), human immunodeficiency virus (HIV) and West Nile virus[1].

Hepatitis B, hepatitis C and HIV infection are serious health care issues from global prospective[2]. Hepatitis B is affecting about 350 to 400 million people worldwide[3]. The recent global statistics suggesting that the frequency of HCV is more than 200 million people[4].In 2014, the WHO Fact sheet published that approximately 36.9 million people are HIV infected worldwide with a prevalence of about 0.8%[5].

Pakistan is a developing country, burdened with an estimated population of 190 million having limited resources. Over the years, a steady increase in the incidence of HBV, HCV and HIV infections have been observed due to many social and economic factors[6,7].

Various studies have been conducted to determine the seroprevalence of these blood borne viral infections among different groups, but the recent statistics for the general population is lacking. Therefore, this study is designed to evaluate the recent prevalence of HBV, HCV and HIV in the general population of Pakistan. This indeed helps the health care authorities to take effective measures regarding their management and prevention. Therefore, the aim of this study was to determine the recent seroprevalence of Hepatitis B, Hepatitis C and HIV infection in the general population of Pakistan.

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MATERIALS AND METHOD

The research was conducted for a period of 3 years from January 2013 to December 2015 in different cities of Pakistan. For this purpose, Population screening camps were organized.3278individuals had participated after written informed consent. Relevant history and clinical examination weredone to rule out any known co-morbid.

Samples were collected for screening of HBsAg, Anti HCV and Anti HIV 1 and 2 by immuno-chromatographic technique (ICT) using “Tell me fast strips” of Biocan diagnostics, Canada. All the samples were again screened by ELISA (Enzyme linked immunosorbent assay) of Biocan diagnostics, Canada. The results were reported reactive or nonreactive as per the recommended cut off values.

The data were assembled accordingly on the Microsoft Office Excel 2007. Descriptive analysis was done on SPSS version 17.0. The prevalence of HBV, HCV and HIV was calculated and expressed in terms of percentage.

RESULT

The results of the three year serological screening tests for Hepatitis B, Hepatitis C and HIV infection revealed a continuously increasing trend of viral hepatitis as shown in table 1. Among the participants, the overall seroprevalence of HBsAg, anti-HCV and anti-HIV by ELISA was found to be 217 (6.62%), 188(5.73%) and 3 (0.09%) respectively. However, the prevalence estimated by ICT was just 60(1.87%) for HBsAg, 69 (2.1%) for anti HCV and Zero (0%) for anti HIV antibodies. No HBV,HCV and HIV co-infection was observed among the participants by both techniques. The prevalence rate of hepatitis B and C is also evaluated in student and general population as shown in table 2 and 3 respectively. The results are also compared with other regional studies as shown in table 4

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Table 1: Comparative analysis among the screening results of HBsAg, anti HCV and anti HIV

Techniques	Results	HBsAg	Anti HCV	HIV
ICT	Reactive	60(1.83%)	69(2.10%)	0%
	Nonreactive	3218(98.17%)	3209(97.90%)	3278(100%)
ELISA	Reactive	217(6.62%)	188(5.73%)	03(0.09%)
	Nonreactive	3061(93.38%)	3090(94.26%)	3275(99.91%)

Table 2: Screening results of hepatitis B among general and student population

Technique	Result	General population		Student population	
		Urban	Rural	College / University	Madaris
ICT	Reactive	13(1.3%)	30(2.35%)	09(1.8%)	08(1.6%)
	Nonreactive	987(98.7%)	1248(97.6%)	491(98.2%)	492(98.4%)
ELISA	Reactive	47(4.7%)	120(9.4%)	21(4.2%)	29(5.8%)
	Nonreactive	953(95.3%)	1158(90.6%)	479(95.8%)	471(94.2%)

Table 3: Screening results of hepatitis C among general and student population

Technique	Result	General population		Student population	
		Urban	Rural	College / University	Madaris
ICT	Reactive	21(2.1%)	35(2.74%)	07(1.4%)	06(1.6%)
	Nonreactive	979(97.9%)	1243(97.3%)	493(98.6%)	494(98.8%)
ELISA	Reactive	39(3.9%)	110(8.6%)	19(3.8%)	20(4%)
	Nonreactive	961(96.1%)	1168(91.4%)	481(96.2%)	480(96%)

Table 4: Reported prevalence of Hepatitis B, Hepatitis C and HIV among the general population of Pakistan from 2004 to 2016

Author	Place	Year	Group	HBV	HCV	HIV
Amin J *et al* [8]	Lahore	2004	General Population	2.6%	13.5%	-
Khokhar N *et al* [9]	Islamabad	2004	General Population	2.5%	5.3%	-
Farooqi JI *et al*[10]	NWFP	2007	General Population	2.2 %	3.1%	-
Mirza *et al*[11]	South Punjab	2007	General Population	5.9 %	2.5%	-
Nafees *et al*[12]	Lahore	2009	General Population	8.06%	21.7%	-
Ali S A *et al*[13]	Pakistan	2009	General Population	2.4%	3.0%	-
Qureshi H*et al*[14]	Pakistan	2010	General population	2.5 %	4.8%	-
Ambreen K *et al*[15]	Lahore	2016	General Population	50%	26.2%	0.02%
Aslam MN *et al*[16]	South Punjab	2016	General Population	2.3%	7.8%	-

DISCUSSION

Pakistan is particularly vulnerable to various health care problems due to socioeconomic norms. Highlighted aspects are high poverty rate, illiteracy, unawareness among medical professionals; certain high risk groups, i.e. I/V drug abusers, homosexuals, commercial sex workers who are engaged in sexual practices.

This study was undertaken to determine the recent prevalence of Hepatitis B, C and HIV among the Pakistani population. Such epidemiological surveys facilitate the health care authorities to formulate effective prevention strategies against them.

The study revealed a steady increase in the prevalence rate of Hepatitis B and Hepatitis C in Pakistan i.e., 6.62% and 5.73% respectively. However the incidence of HIV is 0.09% which is considerably low as compared to its neighboring countries such as China, India and Afghanistan. Various research studies have been published that report an increasing incidence rate of these viral illnesses over the years[15,16].

It was interesting to observe that both hepatitis B and C are more prevalent in the general population of the rural areas as compared to the student population. This is probably due to more awareness in the student population regarding the transmission of these infections.

Various different modes of transmission of HBV, HCV and HIV are documented in the literature. Homosexuals and commercial sex workers comprise the highest risk group for HBV, HCV and HIV infection[17]. So, effective prevention strategies should be implemented for them. One of the most important routes of transmission of viral hepatitis is through transfusion of blood and blood components[18]. As limited safety measures are implicated in the remote areas of Pakistan regarding efficient screening of blood for transfusion transmissible diseases, this is considered as the leading cause of hepatitis in multi transfused patients. More over malpractice by the quacks with unsafe injections and surgical procedures has further worsened the condition in the developing world[20, 21.] The thing which adds on is unawareness regarding prevention of sexually transmitting infections (STI) in the spouse and limited access to their management[22].

The susceptible population for Hepatitis B, Hepatitis C and HIV infection is IV drug abusers. Needle-sharing among intravenous drug abusers constitute a large proportion of HIV infected individual[23]. Medical professional are also among the high risk group that is particularly prone to develop these infections and medical and paramedical staff[24]. However the immunization against HBV has decreased the incidence of HBV in the health care providers. This could be a reason for the less new emerging cases of HBV as compare to HCV. Other rare causes of viral transmission reported in the literature are shaving by barber, ear piercing and tattooing[25].

In the light of the above facts and the comparative figures of seroprevalence of these viral infections in the previously reported manuscripts my study has suggested

an increasing pattern of positivity for Hepatitis B surface markers and HCV antibodies in the serum of the individuals screened However the HIV screening was near about the same observed in the previous research.

CONCLUSION

This study is supporting the perception of health care community regarding the increasing incidence of viral hepatitis particularly HCV in the general population. The research is helpful to excel in the prevention of these infections.

Running Title: Current prevalence of HBsAg, Anti HCV and Anti HIV in Pakistan

Conflict of interest: All the authors of the manuscript do not have any conflict of interest relevant to this research study.

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