Original Article

Prevalence and risk factors associated with Hepatitis B and Hepatitis C infection in Mirpurkhas, Sindh, Pakistan

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Objective: To measure the prevalence and risk factors associated with Hepatitis B and Hepatitis C Infection in Mirpurkhas, Sindh, Pakistan.

Methodology: Camps were organized in Mirpurkhas city to screen the HBV and HCV in general population using immune-chromatography (ICT) method which was confirmed by ELISA and PCR method. Questionnaire comprised of information about such as age, gender, marital status, religion, injury, nosocomial exposure were administrated in participants. Data were computed using SPSS version 21.

Results: Total 311 participants were included in this study. The prevalence of HBV infection was 6.75% and that of HCV 14.46%. The risk factors significantly associated with HBV and HCV infections were hospital associated infections such as hospitalization, blood transfusion, surgery, reused syringe, tattooing and needle injury.

Conclusion: The HBV and HCV prevalence in Mirpurkhas is on rise, so there is dire need of speed up HBV vaccination program and launching public health awareness programs with special focus on infectious diseases. (Rawal Med J 202;45:750-754).

Keywords: Prevalence, risk factors, hepatitis.

INTRODUCTION

Hepatitis B (HBV) and Hepatitis C (HCV) infection is a major public health concern. Both are the cause of mortality around the world particularly in developing world.[1] The hepatitis associated mortalities are now higher than malaria, tuberculosis and human acquired immunod eficiency virus related mortalities.[2] The concentration of HBV and HCV in various body fluids greatly varies. The human body fluids including blood, serum, wound extracts are sites where HBV and HCV are present with higher concentration, followed by semen, vaginal fluid, saliva, where HBV and HCV are moderately present. However HBV and HCV are found in low concentration in urine, feces sweat, tears, and breast milk.[3,4]

The viral transmission occurs due to blood and body fluid contact of normal person with infected ones which subsequently leads to cirrhosis and cancer.[5] Risk for HBV and HCV include accidental contact with infected blood, sexual contact, haircutting and shaving at public saloon, tattooing, piercing, reuse of syringe, hospitalization, unsafe surgery, dental extraction, circumcision, and hemodialysis.[6,7] Several studies report the higher prevalence in those who had blood transfusion and who work in hospitals.[8-10] Contaminated surgical instruments, dental extraction and contaminated barber razor are also risk factors.[11-13] Infection with HBV and HCV is on rise in every part of country including Sindh which is southern province of Pakistan.[14] Some studies have previously reported that prevalence of HBV and HCV in various parts of Sindh, however no study has been carried out in general population.[15,16] The purpose of this study was to find out the prevalence of HBV and HCV in Mirpurkhas, Sindh, which has over 1.5 million population of according to 2018 census.[17]

METHODOLOGY

This was a cross sectional study carried out in the general population of Mirpurkhas district in the month of March 2019. The local health department has no mechanism to report the epidemiological patterns. Therefore, this study was set up to assess the prevalence of Hepatitis C in general population. The camps were set up for free screening. The

participants were informed about the aims and objectives of the study and informed consent was obtained.

Questionnaire comprised of information about socio-demographic characteristics like age, gender, marital status, religion and other factors including hospitalization, surgery, needle injury, tattooing, piercing, and reused syringes and other factors to which study participants was previously exposed. Blood screening for presence of HBsAg and HCV was carried out using ICT method, if ICT test was HBsAg or HCV positive then blood was drawn for ELISA and PCR. Elisa and PCR were carried out in ICT positive participants in Molecular Laboratory of Civil Hospital, Mirpurkhas. The standard protocol and manufacturer's instruction available were used for both Elisa and PCR (Cobas 4800 system by Roche).

Statistical Analysis: Statistical analysis was performed using SPSS version 23.

RESULTS

Out of 311 participants, 138 were male and 173 were female. Mean age was 35±9.79 years (Range: 20-57). The overall prevalence of HBsAg was 6.75%. Socio-demographic distribution showed that hepatitis B was affecting each age group with no significant difference was noted in each age group [X^2=03.98 p=ns]. Gender wise prevalence of HBsAg was more in male participants (n=12/161) than female participant (n=9/129) [X^2=0.21 p=ns]. Prevalence according to marital status show that married participants (n=16/212) were more exposed to HBsAg than unmarried participants (n=5/78) [X^2=0.09 p=ns]. Literacy rate wise distribution show that HBsAg was more frequently present in illiterate participants (n=18/123) than literate participants (n=3/167) [X^2=14.8 p=0.0001]. In context of faith, compared to Hindu participants (n=3/27) Muslim participants (n=18/263) were more exposed to HBsAg [X^2=0.55 p=ns] (Table 1).

Table 1. Association between different factors HBsAg and HCV in general population.

Factor	HBsAg Positive	HBsAg Negative	X^2 and p value	HCV Positive	HCV Negative	X^2 and p value
Age in years						
<30	6	81		12	75	
31-40	6	110		12	104	
41-50	3	60	3.95	12	51	3.80
51-60	6	39	p=ns	9	36	p=ns
Gender						
Female	9	129	0.21	18	120	0.40
Male	12	161	p=ns	27	146	p=ns
Marital Status						
Married	16	212	0.09	36	192	1.20
Single	5	78	p=ns	9	74	p=ns
Education						
Illiterate	18	123	14.8	18	123	0.60
Literate	3	167	p<0.0001	27	143	p=ns
Faith						
Hindu	3	27	0.55	6	24	0.82
Muslim	18	263	p=ns	39	242	p=ns
Sex partner			X^2			X^2
1	12	209		27	194	
>1	3	12	p=0.83	9	6	p<0.0001
Nil	6	9		9	66	
Injection Drug Abuse			OR=15.94			OR=6.26
Yes	3	3	CI=3.00-84.67	3	3	CI=1.22-32.05
No	18	287	p<0.0001	42	263	p=0.01

Table 2. Risk factors for HBsAg and HCV in general population.

Factor	HBsAg+ve cases (n)	HBsAg-ve cases (n)	X^2 /p value	HCV+ve cases (n)	HCV-ve cases (n)	X^2 /p value
Hospitalized						
Yes	9	51	X^2=8.031	27	33	X^2=55.993
No	12	239	p=0.005	18	233	p<0.0001
Surgery						
Yes	4	27	X^2=2.069	15	16	X^2=32.007
No	17	263	p=0.150	30	250	p<0.0001
Blood Transfusion						
Yes	9	27	X^2=21.530	21	15	X^2=63.295
No	12	263	p<0.0001	24	251	p<0.0005
Needle Injury			X^2=4.342			
Yes	2	6	p=0.037	6	2	X^2=24.310
No	19	284		39	264	p<0.0001
Re-used syringe			X^2=27.270			
Yes	12	39	p<0.0001	36	15	X^2=1.552
No	9	251		9	251	p<0.0001
Shave at Saloon Males only						
Yes	12	78	X^2=11.892	27	63	X^2=29.505
No	0	83	p=0.001	0	83	p<0.0001
Dental Treatment			X^2=7.121			
Yes	9	54	p=0.008	30	33	X^2=70.151
No	12	236		15	233	p<0.0001
Toothbrush Sharing	1	0	X^2=13.854	1	0	X^2=1.70
Yes	20	290	p<0.0001	45	265	p=0.680
No						

The overall prevalence of HCV was 14.46%, and affected each age group with no significant difference was observed [X^2=3.80 p=ns]. Gender wise prevalence of HCV was more in male participants (n=27/146) than female participant (n=18/120) [X^2=0.40 p=ns]. Prevalence according to marital status show that married participants (n=39/192) were more exposed to HCV than unmarried participants (n=9/74) [X^2=1.20 p=ns]. Literacy rate wise distribution show that HCV was more frequently prevalent in literate participants (n=27/143) than illiterate participants (n=18/123) [X^2=0.60 p=ns]. In context of faith, compared to Hindu participants (n=6/24) Muslim participants (n=39/242) were more exposed to HCV [X^2=0.82 p=ns] (Table 1). Risk factors including hospitalization, blood transfusion, needle injury, use of contaminated syringe, shaving at public saloon, dental treatment and injection drug use, was significantly associated with prevalence of HCV among participants exposed to these risk factors (Table 2).

DISCUSSION

A recent study published in 2019 has shown that over all prevalence of HCV in population of Punjab province was 17%, another study have also compiled the prevalence data in high risk groups, HCV was predominantly high in blood donors (10.10%) followed by pregnant women (4.65%) and children (1.6%).[18]

We noticed that HBsAg and HCV was more

frequent in married participants compared with unmarried participants, such trend was also noticed in previously conducted studies.[19-21] This might be due to unawareness of barbers about hepatitis and its routes of transmission and use contaminated razors for shaving and haircut.[22] Unsafe blood transfusions are also practiced by the participants of study at Mirpurkhas, which is also one of leading cause with highest odd ratio for prevalence of HBsAg and HCV.

In present study, it was noted that male were more exposed to HBsAg and HCV, this could be due to male-specific risk factors such as frequent use of public saloons for haircut and shaving, old age group have exposed to risk factors more number of times. This study recommends that Provincial Government of Sindh should effectively monitor the Hepatitis control program and launch public awareness program to eliminate unawareness.

CONCLUSION

The HBV prevalence is 6.75% while HCV prevalence is 14.46% in Mirpurkhas, Pakistan.

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