Original Article

Frequency of Hepatitis "B" Vaccination in Already Diagnosed "HCV" Positive Patients

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ABSTRACT

Objective: To determine the frequency of Hepatitis "B" vaccination in already diagnosed "HCV" positive patients
Study Design: Descriptive, cross-sectional.
Place and Duration of Study: This study was conducted at the Department of Medicine, DHQ Teaching Hospital Bannu, Khyber Pakhtunkhwa for a period of 6 months from Feb 2015 to Aug 2015.
Materials and Methods: Data was collected from 371 patients already diagnosed as HCV positive for more than 1 year, through a preset questionnaire, to note their vaccination status against HBV.
Results: Out of 371 HCV positive patients, 201 patients were males (54.2%) and 170 (45.8%) were females. Only 89 (23.99%) patients were vaccinated (49 males and 40 females) while the rest were either non-vaccinated (260 patients i.e. 70.08%, 140 males and 120 females) or partially vaccinated (22 patients i.e. 5.93%, 12 males and 10 females). So overall 282 (76.01%) HCV positive patients were lacking proper vaccination against HBV, and merely 89 patients were properly vaccinated against HBV.
Conclusion: The frequency of vaccination against HBV was very low in this high risk adult group patients (18-60 years) already infected with HCV. Only 89 (23.99%) patients were vaccinated, which is an alarming situation and need proper planning by health care providers.

Key Words: Hepatitis C virus (HCV), Vaccination status (vaccinated/non-vaccinated/partially vaccinated), Hepatitis B virus (HBV), Bannu.

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INTRODUCTION

Hepatitis C and B are major world health problem. It is estimated that 130–170 million people i.e. 3% of the world's population are living with chronic hepatitis C[1]. Its prevalence is higher in some countries in Africa and Asia. In Pakistan, its prevalence is 4.8%[1]. In Khyber Pakhtunkhwa (KPK) and FATA areas, it is reported even high (up to 6.93%)[2,3]. No vaccine against hepatitis C is available. However, they can be readily vaccinated against Hepatitis B Virus (HBV) to prevent this added infection, with the currently available safe and effective vaccine, in proper 3 doses of standard schedule of 0,1,3 or 0,1,6 months.

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HBV is also endemic here. In Pakistan its prevalence is 2.4%[4], while in KPK and FATA, it is up to4.49%[2]. To prevent HBV co-infection, it has been mentioned international guidelines that all HCV-positive patients should be vaccinated against hepatitis B and A to decrease further liver demage[5].

Unfortunately, no local data is available regarding hepatitis B vaccination status in HCV positive patients. Also due to many reasons such as lack of awareness, limited resources, and no cost-free vaccination campaign for adults, the vaccination in not satisfactory in Khyber Pakhtunkhwa, even in high risk people.

Hepatitis C is an infectious disease affecting liver, caused by hepatitis C virus (HCV), previously called as "non-A non-B hepatitis". About 3–4 million people are infected per year, and more than 350,000 people die yearly from hepatitis C related diseases[1]. SHepatitis C is primary cause of cirrhosis (27%) and Liver cancer (25%)[6].There are 7 major genotypes of HCV, numbered from 1-7[7].With the standard therapy having combination, 50–80% of people treated are cured[1]. Genotype 2&3 are common in Pakistan who show sustained response to treatment in 70-80%[6].

Hepatitis B (HBV) is a viral infection of the liver caused by Hepatitis B Virus (HBV)/ Dane particle, previously called as "Serum Hepatitis". The disease has caused epidemics in parts of Asia and Africa and it is endemic in China[8]. About a third of the world

population has been infected at one point in their lives including 350 million who are chronic carriers[9, 10]. National and regional prevalence ranges from over 10% in Asia to under 0.5% in the United States and northern Europe. According to WHO, worldwide, an estimated 2 billion people are infected with the HBV, more than 240 million have chronic liver disease and 600000 people die every year due to acute or chronic consequences of hepatitis B[9].

The HBV is 50 to 100 times more infectious than HIV[9]. 90% transmission is vertical and 10% horizontal[11]. Hepatitis B carries high morbidity and mortality[11,12]. Hepatitis B is also a prerequisite for Hepatitis D infection[11,13]. Fortunately this infection is preventable with the vaccine, in proper 3 doses of standard schedule of 0,1,3 or 0,1,6 months. The complete vaccine series induces protective antibody levels in more than 95% cases[9]. WHO recommends that all children and adolescents younger than 18 years old and not previously vaccinated should receive the vaccine as part of global vaccination against HBV[9].

The Center for Medicare and Medicaid Services (CMS) of United States has recommended that all chronic HCV patients should be vaccinated against hepatitis B and A[5], but this is not in common practice. In 88,456 patients in Texas USA, overall vaccination rates of 21.9% for HBV and 20.7% for HAV were noted[14]. In another study in New York USA, of the111 patients with chronic HCV, only 45 patients (40.5%) were vaccinated against HBV[15].Keeping this in mind the following study was designed to see vaccination status in these high risk people in our community.

MATERIALS AND METHODS

Descriptive, cross sectional study conducted at the Department of Medicine, DHQ Teaching Hospital Bannu KPK from Feb 2015 to Aug 2015.

Sample Size: 371 HCV positive patients who were analyzed for HBV vaccination (taking 40.5%[15] as frequency of true vaccination rate against HBV, keeping 5% margin of error and 95% confidence interval, using WHO sample size calculator).

There was consecutive, Non-probability Sampling.

Inclusion Criteria: All "HCV" positive patients (Anti-HCV Abs positive by ELISA, diagnosed for last one year, noted from clinical record), of Either gender, and aged above 18 and under 60 years.

Exclusion Criteria: Those patients with a history of previous Hepatitis "B" infection (who have cleared the virus either spontaneously or by treatment), patients with End-stage liver disease, patients terminally ill, and patients with dementia/mentally retarded were not included because, as they were either already infected, naturally immuned to HBV, would not benefit from future planned vaccination or would give recall bias. If included in the study, these would act as confounders to introduce bias in the study results.

Data Collecting Procedure: The study was conducted after approval from hospitals ethical and research committee/ board. All the patients who were HCV positive and meeting the inclusion criteria, as per operational definitions, presented to the Department of Medicine, DHQ Teaching Hospital Bannu, through emergency or OPD, were included in the study. All patients were first counseled for interview. The purpose and benefits of the study were explained to all patients, and a written informed consent was obtained from all who agreed to participate in the study. A detailed medical history (used as a diagnostic tool) was taken from all the patients, regarding duration of HCV infection and hepatitis "B" vaccination status. A structured questionnaire was distributed among patients (study population), as data collection tool having all variables of interest.

All the patients were interviewed on the basis of questionnaire and they were categorized as Vaccinated, Partially vaccinated or Non-vaccinated for Hepatitis "B". All the information including name, age, gender, address, vaccination status were recorded in that pre-designed Proforma. Only a complete Proforma was subjected to analysis. Strict exclusion criteria was applied to control confounders and bias in the study results.

Statistical Analysis: Data obtained was entered into SPSS version 10 and analyzed in descriptive statistics. Mean + SD were calculated for numerical/ quantitative variables like age. Frequencies and percentages (%) were calculated for categorical/ qualitative variables such as gender, vaccination status. Vaccination status were stratified among age and gender to see the effect modifiers. All results were presented in the form of tables, charts.

RESULTS

A total of 371 patients with HCV positive were included in the study. Among them, 201 (54.18%) were male and 170 (45.82 %) were female, with male to female ratio of 1.18: 1.0.

Table No.1: Summarized descriptive statistics of study population (n=371)

Vaccination Status	Age Group									Total Patients
	18-25 years			26-55 years			56-60 years			
	M*	F	T	M	F	T	M	F	T	
Vaccinated	16	13	29	27	22	49	06	05	11	89
Non-vaccinated	50	43	93	68	59	127	22	18	40	260
Partially Vaccinated	03	03	06	07	06	13	02	01	03	22
Total Patients	69	59	128	102	87	189	30	24	54	371

***M= Male F= Female T= Total**

Their age ranged between 18 and 60 years, and the mean age was 37.15±14.009 years. 89 (23.99%) patients were completely vaccinated, while 282 (76.01%) patients were either non-vaccinated (260 patients i.e.70.08%) or partially vaccinated (22 patients i.e.5.93%), as per operational definition. Summarized Descriptive statistics of the study population are shown in table 1. The distribution of age, gender and combined age &gender are shown in tables 2, 3, 4 respectively.

Table No.2: Age distribution of study population (N=371):

Para-meters	Total No of patients	Min. (yrs)	Max. (yrs)	Mean	Std. Deviation
Age in years	371	18.00	60.00	37.15	14.009

Table No.3: Gender distribution of study population (n=371):

Gender	Frequency	Percentage
Female	170	45.8%
Male	201	54.2%
Total	371	100.0%

Table No.4: Age and gender-wise distribution (n=371):

Age Groups	Gender		Total
	Male	Female	
18 to 25 years	69	59	128
26 to 55 years	102	87	189
56 to 60 years	30	24	54
Total	201	170	371

The frequency of hepatitis B vaccination status is shown in table 5

Table No.5: Frequency of vaccination status of patients (n=371):

Vaccination status	Frequency	Percentage
Non-vaccinated	260	70.1%
Partially Vaccinated	22	5.9%
Vaccinated	89	24.0%
Total	371	100.0%

Out of 371 (n=371) HCV positive patients, 201 patients were males (54.2%) and 170 (45.8%) were females (table 3). Only 89 (23.99%) patients were vaccinated (49 males and 40 females) while the rest were either non-vaccinated (260 patients i.e. 70.08%, 140 males and 120 females) or partially vaccinated (22 patients i.e. 5.93%, 12 males and 10 females) (table 5). So overall 282 (76.01%) HCV positive patients were lacking proper vaccination against HBV, and merely 89 patients were properly vaccinated against HBV.

DISCUSSION

Hepatitis C is an infectious disease affecting primarily the liver. It is a word health problem. It is estimated that 130–170 million people i.e. 3% of the world's population are living with chronic hepatitis C[1]. Those who develop liver cirrhosis or cancer may require liver transplant. Hepatitis C is the leading cause of liver transplantation and is primary cause of cirrhosis (27%) and Liver cancer (25%)[6].

No vaccine against hepatitis C is available. Its spread and transmission can be decreased by adopting preventive measures.

Management of chronic HCV patients also include screening of these patients for HBV infection, and if not infected/prior immuned, then proper vaccination of these patients against HBV with standard vaccination schedule[16].to prevent co-infection with HBV. This vaccination will protect against HBV as well as HDV infection.

This study is a preliminary study in this area. It presents a detailed survey of 371 HCV-patients, both out patients and in-door patients, who were aged 18-60 years, with mean age 37.15+14.009 years, who were positive for anti-HCV positive by ELISA for >1year, noted from their clinical records, with compensated liver disease, according to inclusion criteria. Their vaccination status was inquired against HBV infection.

Out of 371, only 89 (23.99%) patients were vaccinated (49 males and 40 females) against HBV. This vaccination rate is slightly higher than the vaccination rate noted in a study in Texas[14], where it was 21.9% (vs.23.99%). This is partially because of a large population included in that study as compared to this study (88,456 vs. 371). While this vaccination rate is lower than the vaccination rate noted in a study in New York USA[15], where it was 40.5% (Vs 23.99), partially because of low sample size (111 Vs.371), high patients awareness and availability of cost free vaccination for adult population.

Out of 371, a large portion of 282 (76.01%) patients were lacking proper vaccination against HBV according to standard schedule, they were either non-vaccinated (260 patients i.e.70.08%) or partially vaccinated (22 patients i.e.5.93%), as per operational definition.

This was partially because of;

-Lack of awareness/ education and affordability problems due to low socioeconomic status on part of the patients,

-Lack of proper counseling educating and directing patients on part of health care providers, and

-Lack of support services as well as cost free vaccination programs for adult group population on part of the government.

CONCLUSION

This study has demonstrated that a large proportion of the HCV-positive patients lacked proper vaccination against HBV, where both the viruses have high prevalence, and HBV infection can occur to these patients (co-infection). Therefore, all those managing HCV-positive patients should also counsel and educate the patients, regarding preventive measures against both HCV/HBV infections, screen these patients for HBV infection, and if not co-infected, th0en properly vaccinate them against HBV, with standard schedule of vaccination, along with giving standard Treatment including recent antivirals for HCV.

Recommendations: In the view of the above study, we recommend:

- The guidelines that all HCV-positive patients should be screened and vaccinated for HBV, must be practiced.
- All the HCV free-treatment programs, which have already been started, should incorporate free vaccination against HBV as well.

Author's Contribution:

Concept & Design of Study:	Raza Muhammad Khan
Drafting:	Asmatullah Khan
Data Analysis:	Sami ul Haq & Anwar Shah
Revisiting Critically:	Raza Muhammad Khan
Final Approval of version:	Raza Muhammad Khan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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