

PERCENTAGE OF HEPATITIS B AND C AMONG YOUNG ADULT MALES FROM INTERIOR SINDH

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ABSTRACT

Objective: Present study was planned to know the seroprevalence of Hepatitis C Antibodies and Hepatitis B Surface Antigen in a population based sample of healthy male army/naval recruits from rural Sindh.

Design: Laboratory based non-interventional, descriptive study.

Place and Duration of study: Conducted at Combined Military Hospital Pano Aqil from 1st January 2006 to 31st October 2006.

Patients and Methods: A total of 5237 healthy male recruits from various districts of interior Sindh were studied. HBsAg and Anti-HCV were tested by Immunochromatographic assay and positive tests were confirmed by ELISA method.

Results: The percentage of anti-HCV was (4.37%) and was (7.39%) for HBsAg. The percentage of HBsAg in districts Nowsheroferoze (10.11%), Ghotki (9.21%) and Khairpur (7.48%) and Anti-HCV ($p < 0.0001$) in districts Nawabshah (9.32%), Khairpur (6.71%) and Ghotki (6.64%) respectively was higher than the other districts. Both the viruses are evenly distributed among the remaining different Districts' population.

Conclusion: There is considerable threat of HBV and HCV in interior Sindh. Screening of selected groups and vaccination against Hepatitis B may be considered in these areas. Health education to general public including barbers would be the key for control/prevention of these dreadful diseases.

Keywords: HCV antibodies, hepatitis B surface antigen, hepatitis B, hepatitis C, Sindh

INTRODUCTION

Viral hepatitis is a major health problem worldwide. Different viruses like A, B, C, D, E and G viruses cause infections in human liver. Hepatitis A and E viruses are transmitted orally. Hepatitis B, C and G are transmitted parentally, mainly as a result of blood to blood contact including injury with contaminated sharp instruments and sharing of needle or by sexual contact and also through perinatal transmission from mother to child [1-2].

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About half of the world's population has had contact with HBV and about 10% has developed persistent infection [3]. More than a million people die each year from HBV infection and its sequelae [2]. There are several million carriers worldwide which provide a huge reservoir for HBV. HBV infection may cause either persistent infection or carrier state. It may progress to chronic liver disease (CLD) including hepatocellular carcinoma (HCC) [3-4].

Prevalence of Hepatitis C viral infection in the world varies from 0.3 to 13% or more with the highest prevalence recorded in Central Africa and Eastern China (>5%) [5]. Risk factors associated with hepatitis C are parental drug

abuse 46% [6], transfusion of blood or blood products 6% [7], accidental needle pricks [8], tattooing [9], ear piercing [10], and organ transplants [11]. With current screening techniques, about 1 in 250,000 of the blood transfusions may be involved in exposure to hepatitis C [12]. Co-infection of HCV and HBV is possible [13]. The disease spectrum in Hepatitis C varies from benign asymptomatic infection to progressive liver disease and hepatocellular carcinoma [14].

Hepatitis C virus can cause acute or chronic hepatitis as well as cirrhosis of liver [15]. Although the clinical progression of HCV related chronic liver disease is slow and cirrhosis is well tolerated but the final outcome is very devastating especially if it is left untreated. HCV has an incubation period varying from 2 to 52 weeks.

Most of the chronically infected patients are asymptomatic but appear to be infectious despite normal liver enzymes in some of them [16]. Present study was planned to know the seroprevalence of Hepatitis C antibodies and Hepatitis B surface antigen in a population based sample of healthy male army/naval recruits from rural Sind. This study is important because it would give us an idea of the magnitude of the problem in the community and enable us to understand the dynamics of its transmission in a particular scenario on which the control and prevention strategies can be established.

PATIENTS AND METHODS

A total of 5237 young adults who reported over a period of 10 months from 1st Jan 2006 to 31st October 2006 for recruitment in different soldier categories (fighting soldiers or soldiers in services group including engineering branch, army medical corps, clerks, supply units and signal branch) in Armed Forces were included in this descriptive study. All of them reported to Combined Military Hospital (CMH) Pano Aqil, Pakistan for medical examination. These

individuals belonged to rural Sind including districts of Dadu, Shikarpur, Jacobabad, Kambar Shahdad kot, Kashmore, Jamshoro, Larkana, Ghotki, Khairpur, Sukkur and Nausheroferoze. Inclusion criteria included healthy unmarried males, 17-22 years of age, minimum height of 5 feet 6 inches with minimal educational qualification of matriculation. Exclusion criteria included Individuals with history of Hepatitis B vaccination, prior hospital admission, blood transfusion or intravenous drug abuse and having physical body defects or having systemic or local diseases/conditions like fever, perforation of tympanic membrane, diabetes, hypertension, lymphadenopathy, hepatosplenomegaly, cardiac valvular defects or any other systemic disease. A total of 1125 applicants were excluded from the study based on the exclusion criteria. The distribution of cases from various districts is depicted (table-1). None of them refused testing. All the individuals were subjected to a thorough physical examination, complete blood counts, routine blood chemistry, urine examination and chest radiography. All of them were also screened for HBsAg and Anti-HCV using the IDI-IND diagnostic Inc (Canada) HBsAg test device and by Maxi-test anti-HCV rapid test (IND Diagnostic INC-Canada) which, were based on the immunochromatographic principle. About 4ml blood was collected from each individual using a sterile syringe and allowed to clot for one hour. The serum was extracted from the blood samples and stored at 2000 C till the time of serological testing. The positive tests were sent to CMH Peshawar for further confirmation by ELISA methods using HBsAg ELISA test kits (CDC Diagnostics Los Angeles USA) and HCV ELISA test kit (CDC Diagnostics Los Angeles USA).

SPSS for windows version 13 (SPSS Inc Chicago IL, USA) was used for data analysis descriptive statistics i.e mean and SD for

numeric variables and frequency alongwith percentages were used to describe the data.

RESULTS

A total of 5237 males with age range of 17-22 years (mean + SD; 18.82 + 1.511) were included in the study (after excluding 1125 males, because of exclusion criteria of the study). They all belonged to lower middle or poor socioeconomic group. They all denied any sexual contact except eighteen of them. These eighteen males gave history of infrequent sexual contact but all were negative for HBsAg and anti-HCV. Twenty-nine of them gave the past history of jaundice but all of them were negative for HBsAg and anti-HCV except one. Thirteen of them received some dental treatment/extraction from some quack at their villages and only one of them was positive for HBsAg. Out of 5237 cases tested, 387 (7.39%) cases were positive for and 229 (4.37%) cases were positive for anti-HCV HBsAg. District wise distribution of positive cases for anti-HCV and HBsAg are depicted (table 1). There were 16 (0.31%) cases having both the infections. The percentage of HBsAg in districts Nowsheroferoze (10.11%), Ghotki (9.21%) and Khairpur (7.48%) and Anti-HCV in districts Nawabshah (9.32%), Khairpur (6.71%) and Ghotki (6.64%) respectively was higher than the other districts. HBsAg in districts Kamber (21.88%) and Kashmor (16.67%) appears to be very high but as the total number of individuals included from these districts was less, therefore high percentage may simply be a co-incidence which may change if the numbers of individuals are increased. In rural Sind both the viruses appears to be clustered at districts Khairpur and Ghotki whereas in Nowsheroferoze HBV and in Nawabshah HCV are prevalent respectively. However, both the viruses are evenly distributed among the remaining different Districts' population (table-1).

DISCUSSION

Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the major causes of chronic

hepatitis and cirrhosis worldwide. In third world countries including Pakistan the situation is even worse. The prevalence rate of HCV positivists amongst random blood donor samples in the US, Europe, Japan and Britain was 0.2-2% [17]. In Egypt, in some cities more than 20% of the population is infected. In our study all the persons studied were males so sex predilection can not be assessed. Almost all the candidates belonged to lower social economic strata and were just matriculates.

Hepatitis C virus infection is an emerging health problem leading to chronicity and affecting the health of 80-160 million people in the world [18]. HCV RNA detection by PCR differentiates the simple sero positive cases from those having viraemia [19]. In this study all cases were male and were in the age group 17-23 years. Hence, the study will not determine percentage in the other age groups and in female population.

Most of the studies done in Pakistan until now are hospital based. They have been done either in high-risk groups such as blood recipients, patients suffering from chronic liver disease and health care workers or in voluntary blood donors [20-23]. Therefore it is difficult to compare our results with them. In some of the studies percentage has been estimated as 3-10% for Hepatitis B surface antigens (HBsAg) and 2.2-14 % for Hepatitis C (HCV) antibodies [20-24]. Khan et al in a study of school going children noted that 2.04% of them were positive for HBsAg [25]. Shah et al recorded that 15.9% of patients admitted to medical ward of Bolan Medical College were positive for HBsAg [26]. In a study similar to ours Ahmed et al in 1991 reported that 9.9% of healthy recruits were positive for HBsAg [27]. Sultana et al reported 4% percentage of Anti-HCV in 100 subjects, most of whom were health care workers [28].

As most of the chronic infections with HBV and HCV are asymptomatic, community based studies are required to find out its percentage.

Previous studies done in this country have shown a variable percentage rate of both the viruses. The percentage of hepatitis C

priority, understanding the epidemiological pattern of the disease are required to reach meaningful conclusion.

Table-1: Distribution of anti HCV and HBsAg positive cases among young adults from rural Sindh.

District	Total #	Anti HCV+ (%)	HBsAg+ (%)	Anti HCV+ & HBsAg+ (%)
Dadu	494	11 (2.23)	31 (6.28)	2 (0.41)
Shikarpur	481	16 (3.33)	22 (4.57)	1 (0.21)
Jacobabad	213	5 (2.35)	10 (4.7)	0
Kambar Shahdad kot	102	5 (4.9)	9 (8.82)	1 (0.98)
Kashmore	51	1 (1.96)	5 (9.8)	0
Jamshoro	9	0	3 (33.33)	0
Larkana	971	28 (2.88)	46 (4.74)	1 (0.1)
Ghotki	467	31 (6.64)	43 (9.21)	2 (0.43)
Khairpur	1088	73 (6.71)	104 (9.56)	5 (0.46)
Sukkur	484	26 (5.37)	31 (6.4)	0
Nausheroferoze	752	20 (2.66)	76 (10.11)	4 (0.53)
Nawabshah	118	11 (9.32)	5 (4.24)	0
Sanghar	7	2 (28.57)	2 (28.57)	0
Total	5237	229 (4.37%)	387 (7.39%)	16 (0.31%)

antibodies of 4.37% and that of HBsAg as 7.39% in our study appears to be different when compared to other studies. The probable reason is that, in our study, the subjects were young healthy men coming from interior Sind mainly from rural population whereas the inclusion criteria of cohorts of other studies were different. They also differ in other inclusion criteria like age (17-23 years in our study) educational status (matriculates in our study) and socioeconomic background. Farooq [29] et al., has estimated percentage of 3.3% & 3% for HCV antibodies and HBsAg respectively among young soldiers. These individuals are almost similar to our study population. Although anti-HCV percentage is comparable but HBsAg percentage is higher in our group of individual indicating some local factors prevalent in districts of Sind.

Hepatitis C virus (HCV) has a higher propensity for causing chronic liver disease in contrast to Hepatitis B virus [30]. In Pakistan Shafi et al studied the prevalence of anti-HCV in Shaikh Zayed Hospital Lahore on hemodialysis patients and reported 62.2% positive for anti-HCV [31]. As prevention of HBV and HCV infection is an important health

Different treatment modalities for chronic HCV infection are being used these days but cure to the disease is still rare. Solution to the problem lies mainly in prevention. The prevention of HCV infection to a large extent relies on effective screening programmes for the blood and blood products which can help a lot to control this global problem. Vaccination especially in children plays a major role in prevention against hepatitis B. It is suggested that blood screening for anti-HCV and HBsAg must be done before transfusion. Use of disposable syringes, instruments, razors in the hospitals, daily use and barber's shop should be made mandatory for prevention of hepatitis B and C spread. It is also necessary to make the public aware of complications of HCV and Hepatitis B and possible modes of transmission in the community through mass media.

There is wide variation in the prevalence of HBsAg worldwide. It is infrequent (0.1 to 0.5%) in healthy population in United States and western Europe [32]. However a prevalence of 5 to 15% has been found in the Far East and in some tropical countries [33]. Poor knowledge about HBV infection is the main cause of its

spread which ultimately leads to HBV-related liver cancer [34]. People with intellectual disability are well-known high-risk group for HBV infection [35]. Higher incidence of Hepatitis B in men is also recorded in other cities of Pakistan [36-37].

There is increase in the percentage of HBsAg in our study as compared to other studies reported. It probably reflects that even greater awareness, the advantage of use of vaccine, use of disposable syringes and wider acceptance of health care measures were not effective. Probably these measures were not disseminated properly to village population from where our study group belonged.

Hepatitis C have already been known to have significant associations between viral infection and a history of blood transfusions at least six months previously, direct patient care or laboratory work, intravenous (IV) drug use, multiple sexual partners, or sexual or household contact with an infected person [5, 38]. The highest prevalence is among hemophiliacs who received factor concentrate transfusions before 1992 [39]. Persons with a history of IV drug use account for more than 50 percent of HCV transmission [38]. Perinatal spread is uncommon and, when it occurs, rarely leads to chronic infection of the child unless the mother is co-infected with HIV [38]. Prior hospitalization is a risk factor (prevalence in hospitalized patients is 2-20 percent) [39]. All these factors appear to be excluded in the present study. However, it may be possible that because of social and religious set up in the country, most of them were denying any sexual contact. Barber could be the source of infection in most of the positive cases. No specific reasons for more percentage of HBsAg carrier rate and hepatitis C antibodies in districts of Ghotki, Khairpur, Nowsheroferoze or Nawabshah were noted because all the factors appear to be the same for all over the province. There is a need to adopt strict control/preventive measures against Hepatitis

B and C virus infections. However, as the mode of transmission and risk factors are same for both the conditions, preventive and control measures should be planned to tackle with them simultaneously. Health education to general public including barbers would be the important tool of control/preventive measures.

CONCLUSION

There is considerable threat of HBV and HCV in interior Sind. The percentage of HBsAg was (7.39%) and for anti-HCV it was (4.37%) among young adult male population. Although both the viruses are distributed evenly throughout rural Sind, however, percentage is more in the districts of Ghotki, Khairpur, Nowsheroferoze and Nawabshah. Screening of selected groups and vaccination against Hepatitis B may be considered in these areas. Health education to general public including barbers would be the key for control/prevention of these dreadful diseases.

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