Prevalence of Seromarkers of HBV and HCV in Health Care Personnel and Apparently Healthy Blood Donors

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Abstract

Ninety-five health care workers and 91 controls were screened for seromarkers of both HBV (HBsAg, HBeAg, Anti-HBc) and HCV (anti- HCV) by ELISA. The control group showed a much higher frequency of seromarkers for both the viruses. HBsAg was positive in 5% of study group (health care personnel) and 14% of controls, Anti-HBc as a marker of past HBV-exposure was positive in 28% 'of study group as compared to 36% of controls. Overall, 33% of study group and 48% of control showed one or the other marker of HBV. Anti- HCV was positive in 4% of study group and 14% of controls. This study suggests that health care workers are not particularly a high risk group as compared to rest of the population (JPMA 46:152,1996).

Introduction

Infection with hepatitis B virus (HBV) and hepatitis C virus (HCV) is a world-wide problem especially in underdeveloped countries. Pakistan is among the countries with moderately high carrier rate of Hepatitis B surface antigen (HBsAg). Previous studies carried out by different workers in this country have shown a prevalence rate of 5-10% for HBsAg[1]. Lack of awareness and unsatisfactoiy health conditions have resulted in large section of population being exposed to hepatitis viruses.
Health care personnel including dentists are considered to be a high risk group, because of their contact with potentially infected patients. Previous studies carried out in health care workers in this countiy concentrated mainly on various markers of HBV In this study we analysed seromarkera of both HBV and HCV simultaneously. For the control group non-professional donors were selected as they are considered to be a low risk group, yet are a potential source of transmission for HBV and HCV.

Subjects and Methods

The study was conducted by "Hepatitis study group" in collaboration with Allama Iqbal Medical College and Shaikh Zayed Hospital, Lahore. A total of 186 volunteers participated in this study. Ninety five were health care workers (study group) from Services Hospital and Dental College, Lahore. This group included 9 doctors, 42 dentists, 15 nurses, 12 lab assistants/operation theatre assistants and 17 ward boys/sweepers. There were 91 controls, who were apparently healthy volunteer blood donors and consisted of two groups: 46 from blood bank of Mayo Hospital, Lahore and 45 from central Directorate of Blood Transfusion services. Among the controls 38 were students and 53 belonged to other professions. All the volunteers were questioned for histozy of previous blood transfusions, jaundice, surgical procedures, needle pricks, eye splash, drugs, alcohol, addictions, vaccination for HBV and contact with a jaundiced patient. Blood samples were collected and sera separated and stored at -20 C. All sera were tested for markers ofHBV(HBsAg, HBeAg and anti- HBc) and HCV (anti-HCV) by ELISA (Abbott

Laboratories) at the department of Microbiology, Shaikh Zayed Hospital, Lahore.

Results

In the study group, 62 were males and 33 females. In the control group, 86 were males and 5 females. Only 2 doctors from the study group were previously vaccinated for HBV. Results comparing predisposing factors and frequency of semmaikers for HBV and HCV ate shown in tables I, II respectively.

Table I. Comparison of predisposing factors in study group and controls.

Risk factors	Health care workers n=95	Controls n=91
Dental visits	12	-
Injections/drips	16	6
Surgery	5	-
Needle Pricks	44	-
Eye splash	23	-
Past H/O jaundice	9	-

Table II. Comparison of seromarkers for HBV and HCV in study group and controls.

Seromarkers	Health Care Workers n=95	Controls n=91	P-value
HBsAg	5 (5%)	13 (14%)	0.02**
Anti-HBc	25 (28%)	33 (36%)	0.11
HBeAg*	5 (5%)	7 (8%)	0.25
HBsAg+Anti-HBc	2 (2%)	6 (6.60%)	0.06**
HBsAg+HBeAg	-	2 (2%)	-
Any marker of HBV	31 (33%)	44 (48%)	0.01**
Anti-HCV	4 (4%)	13 (14%)	0.008**
Anti-HCV+any marker	2 (2%)	11 (12%)	0.003**

* 3 health care workers and 4 controls showed HBcAg without any other marker.
**Significant.

Frequency of HBV/HCV markers were significantly higher in the control group.

Discussion

The present study was designed to analyse seromarkers of both HBV and HCV in health care personnel and potential blood donors. For HBV, we used HBsAg and HBeAg as markers of infectivity and anti-HBc as a marker of past. exposure. Earlier studies carned out in Pakistan, nearly two decades ago, showed alowerpercentage of HBsAg carriage as compared to the recent findings. In two early studies Zuberi et a! reported 2.8% of HBsAg in healthcare workers[2] and 3.1% in blood donors[3], whereas Hassan and Shams[4] in 1995 have reported percentage of 7% for HBsAg in health care personnel. This upward trend is probably due to dissemination of virus rather than to sensitive laboratory techniques. This is suggested by two recent studies with less sensitive techniques which show HBsAg frequency of 5.23% and 7. l%[5,6].

In our volunteers, HBsAg was positive in 5% of study group which correlates with previous studies carried out in health care workers and is also similar to the average range of 5-10% reported for the general population[1].

In Pakistani population, an overall exposure rate of 40-50% for HBV has been reported[1]. In our study anti-HBc was positive in 25 persons (28%) in health care personnel and 33 persons (36%) in control group. This shows that exposure rate for health care workers is not higher than reported for the general population. In a recent study by Hassan and Shams[4], exposure rate of 52% was reported in health care personnel, which in their study was higher than control group.

The prevalence of HCV has notbeen evaluated in earlier studies carried out in health care workers or in blood donors. In this study the frequency of anti-HCV is 4% for health care workers but is alarmingly high (14%) in the control group. Unfortunately, the data about anti-HCV positivity in normal healthy population is not available for Pakistan. A report from Saudi Arabia has shown that in blood donors anti-HCV was positive in 2.4% of local and 4.52% of expatriates[7].

Blood donors positive for anti-HCV were demographically similar to other donors; of 13 anti-HCV positive donors, 7 were students and 6 belonged to different professions but none of them belonged to a high risk group.

In view of common occurrence of false positive anti-HCV reactivity in population at low risk of HCV infection such as, normal volunteer blood donor[8], further studies detecting HCVRNA may help to resolve this problem.

An unusual feature was the presence of HBeAg alone without any other marker for HBV; 3 among health care personnel and 4 in control group. With our present state of knowledge, itis difficult to explain, but the same phenomenon was observed in our previous study (unpublished). This may be due to technical reasons, though spontaneous mutations with inadequate immune response or presence of a genetic variant cannot be ruled out.

The control group in this study showed a much higher percentage of both HBV and HCV, which appears paradoxical to the generally held view. Although, our sample size was small for generalization, a study from Nawabshah supports ourfindings for HBV markers[4]. This may mean that with high prevalence of viral hepatitis, in general population, health care workers are no longer an especially high risk group. This also suggests that the mode of transmission is more diverse than needle pricks and direct exposure, suggesting an unexplained subclinical horizontal transmission[10] to which health care workers are as much exposed. This study also underscores, underutilization of HBV vaccine even among the informed section of health care workers. The need for a routine screening for hepatitis B and C of blood donors is desirable.

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