

HEPATITIS B VIRUS INFECTION AND ITS ASSOCIATED RISK FACTORS; ASSESSMENT IN A TERTIARY CARE HOSPITAL

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ABSTRACT...Objective: The present study was carried out to screen for prevalence of Hepatitis B Virus (HBV) infection and its associated risk factors in patients presenting for various complaints at a tertiary care hospital. **Study design:** Cross-sectional descriptive study. **Place & Duration:** Nawaz Sharif social security Hospital, Multan Road Lahore from January 2008 through December, 2009. **Materials & Methods:** A total of 15403 patients, aged 14 to 60 years, belonging to low socio-economic group were screened for Hepatitis B surface antigen (HbsAg) during the study period. Relevant information was obtained through a pre-designed questionnaire prepared in accordance with the objectives of the study. Patient's serum was tested qualitatively for HbsAg by rapid immunochromatographic technique (ICT devices, Accurate, USA) according to the manufacturer's instructions. All sera showing reactivity were then confirmed with Enzyme Linked Immunosorbent Assay (ELISA). **Results:** HbsAg positivity was found in 488 (3.16%) patients of the screened population. Associated risk factors were: therapeutic injections (25.0%), shaving from community barbers (15.98%), blood or blood product transfusions (10.04%), HbsAg positive sexual partners (7.99%), dental treatment (6.96%), past surgical history (4.91%), occupational exposure (3.07%), pricking nose/ears (3.07%), H/o hemodialysis (2.04%) and medical endoscopy (1.02%). 5.94% cases revealed no risk factor whereas 13.93% cases had multiple risk factors. **Conclusions:** A high prevalence of known etiological risk factors for HBV infection in the HBV positive patients documented in our study should not go without serious concern. Public awareness programs should be launched through mass media to discourage the malpractices related to risk factors.

Key words: HbsAg, Risk factors, Seropositivity

INTRODUCTION

Hepatitis B virus (HBV) infection is responsible for significant morbidity world-over. The causative agent is a double-stranded DNA virus first isolated in 1963¹. The global burden of HBV infection varies from the highest (>8%) in Asia to the lowest (<2%) in Western Europe². Worldwide, two billion people have been infected with HBV and more than 350 million have life long infection³. Pakistan belongs to intermediate prevalence area with a carrier rate of 3-4% in general population⁴. The transmission risk is much higher, however, in high risk groups as thalassaemia cases or those receiving repeated blood transfusions, on hemodialysis, receiving injections with un-sterilized syringes/ needles, undergoing dental treatment, getting their face/ armpits shaved by street barbers, getting their skin tattooed or involved in sexual abuse⁵.

The present study was carried out randomly to assess the frequency of HBV infection and the associated risk factors in patients attending a tertiary care hospital for various complaints. Laboratory based results for seropositivity and clinical data related to etiological risk factors for HBV are presented.

MATERIALS & METHODS

A total of 15403 patients attended the indoor and outpatient departments of Nawaz Sharif social security teaching hospital multan road Lahore during the study period. It is a 610 bedded tertiary care teaching Hospital and provides free health care to the workers of different factories, their families and also caters for the private patients. All these patients, 14-60 years of age irrespective of sex, reporting in the hospital laboratory from January 2008 through December 2009, were included in the study. Relevant information emphasizing

on the etiological risk factors was obtained through a pre-designed questionnaire prepared in accordance with the objectives of the study.

For screening of blood, 5 ml blood sample was collected aseptically in a syringe from each patient. Serum was separated and tested for HbsAg. The HbsAg status was determined by using HbsAg one step rapid immunochromatic test device (Accurate, USA) to qualitatively detect the presence of HbsAg in serum. The screening assay had relative sensitivity: >99.0%, relative specificity: 96.7% and accuracy: 98.3% (according to the package insert). All sera showing reactivity were then confirmed with Enzyme Linked Immunosorbent Assay (ELISA).

RESULTS

Out of 15403 patients, 488 (3.16%) were found to be positive for HbsAg. Among the risk factors: therapeutic injections were the most frequent (25.0%) followed by shaving from community barbers (15.98%), blood/ blood product transfusions (10.04%), HbsAg positive sexual partners (7.99%), tooth extraction or dental treatment (6.96%), past surgical history (4.91%), occupational exposure of health workers (3.07%), pricking nose/ ears (3.07%), hemodialysis (2.04%) and medical endoscopy (1.02%). No risk factor was found in 5.94% and multiple risk factors were recorded in 13.93% of cases positive for HbsAg (Table I).

DISCUSSION

Hepatitis B Virus is endemic and widespread in many parts of the world. The course of the disease can vary from vague self-limiting illness to chronic hepatitis which may lead to debilitating cirrhosis with its associated complications and may even act as a soil for the development of Hepatocellular carcinoma. Nonetheless HBV can lead to fulminant and fatal illness from the very beginning⁶. In the present study, the prevalence of Hbs Ag was found to be 3.16%.

Our results are comparable to other studies reported from various parts of the country. Aziz S et al from Karachi reported 3.1% prevalence rate in peri urban area of Sindh⁷, Amin j et al from Lahore found it to be 2.6%⁸, Farooq MA et al from Rawalpindi observed a rate

Table-I. Risk factors in 488 HbsAg seropositive patients

Risk factors	No. of cases	%age
Therapeutic injections	122	25.0
Shaving from community barbers	78	15.98
Blood or blood product transfusions	49	10.04
HbsAg positive sexual partners	39	7.99
Dental treatment	34	6.96
Past surgical history	24	4.91
Health care workers	15	3.07
Pricking ears / nose	15	3.07
H/o haemodialysis	10	2.04
Medical endoscopy	05	1.02
No risk factors	29	5.94
Multiple risk factors	68	13.93

of 3.0%⁹ and Noor A et al reported 3.2% seroprevalence for HBs Ag¹⁰. In some other studies a higher frequency of HbsAg has been observed in Southern Punjab, Karachi, Lahore and Nawabshah (5.9%, 6.5%, 8.06% and 8.6% respectively)^{11,12,13,14}. Looking at the seroprevalence of HbsAg of neighbouring countries, results almost similar to the present study have also been reported by Sonwane et al from India (2.8%)¹⁵. Some reports from Turkey revealed a much higher prevalence compared to our findings (6.6%)¹⁶. On the other hand a study from Japan reported a much lower (1.8%) seroprevalence¹⁷ which is far lower compared to our study.

In the present study, therapeutic injections, shaving from community barbers, unscreened blood transfusions, HbsAg positive sexual partners and dental treatment were major risk factors associated with HBV infections. Our findings are consistent with the studies associating use of therapeutic injections, shaving from community barbers and unhygienic dental procedures in Pakistan with HBV seropositivity^{18,19}. In our community, there is an irrational use of therapeutic injections. These unsafe

injections may lead to transmission of blood-borne pathogens. In our study h/o frequent use of therapeutic injections was recorded in 25.0% of HBV seropositive patients which is quite low as compared to a study from Karachi which showed it (53.0%)²⁰.

In our study, history of blood or blood product transfusions and HbsAg positive sexual partners were present in HBV seropositive patients 10.04% and 7.99% respectively which were quite low as reported from Khan H and Jan N²¹. Health care workers are at greater risk of acquiring HBV infection. In our study, occupational exposure was found to be (3.07%) of HBV seropositive patients which is comparable to studies from Sarwar et al²² and Naz et al²³. Khokhar N et al from Islamabad reported that prevalence of HBV was 12.4% in patients on hemodialysis²⁴ which is quite high as compared to our study (2.04%) History of dental treatment was observed to be (6.96%) of HBV seropositive patients which is quite low as compared to a study from Rawalpindi which showed it to be (16.7%)²⁵.

CONCLUSIONS

A high prevalence of known etiological risk factors for HBV infection in the HBV positive patients documented in our study should not go without serious concern. Public awareness programs should be launched through mass media to discourage the malpractices related to risk factors.

SUGGESTIONS & RECOMMENDATIONS

Great emphasis should be laid on the awareness about transmission of HBV infection and prevention of Hepatitis B virus infection. Avoidance of unnecessary injection practices, strict screening of blood/ blood products before transfusion, sterilization of medical instruments and proper disposal of biological waste must be ensured. Prevention of different modes of HBV transmission is very much important to control the spread of such infections. Mass media should launch awareness campaigns for general public to impart preventive knowledge about the risk factors of HBV to minimize its transmission. Safety protocols should be introduced and explained to dentists, street barbers and ear/ nose piercers by local health authorities. Their education

about the significance of sterilization of their instruments before piercing/ tattooing may reduce the disease progression/ spread. Immunization against HBV also plays a vital role. All the neonates and non-infected individuals particularly health care professionals must be vaccinated on priority basis.

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PREVIOUS RELATED STUDIES

Ejaz Ahmed, Ghulam Rasool Maiken, Mohd Luqman . Chronic hepatitis b virus infection; current treatment and future prospects (Review) Prof Med Jour 13(4) 716-720 Oct, Nov, Dec, 2006.