

Recent epidemiological trend of Hepatitis B infection among indoor patients attending a tertiary care hospital in Kolkata.

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Abstract: Hepatitis B virus infection (HBV) is a global public health problem. HBV infection is among the most common causes of hepatitis and can progress to serious liver diseases, such as chronic hepatic insufficiency, cirrhosis and Hepatocellular carcinoma. The present study was conducted for a period of six months to find out the Epidemiologic trend & evaluate the risk factor(s) associated with HBV infection among clinically suspected patients attending the tertiary care hospital. Presence of HBsAg in the serum indicates HBV infection. The serum was separated & analyzed by an immunoassay based on the antigen capture or sandwich principle by using one step HBsAg Rapid Card Test. 97 out of 8520 (1.13%) serum samples were confirmed to be positive for HBsAg. 75% of the positive samples were Males and 25 % were females. The highest prevalence was found in the age group of 41-50years (29%). Notably, one HBV Seropositive adult patient suffered from dual infection by HCV. Maximum number of HBV infected patients have needle stick injuries(52.57%), other associated risk factors were multiple blood donation(28.9%); family history of patients(4.12%) & tattoo/acupuncture(13.4%). This study reemphasizes the need for aggressive nation-wide HBV education and prevention/control, along with mass immunization and adequate treatment of existing cases, in reducing the spread and multiplication of the virus among individuals and in the society at large.

Key words - HBV, Epidemiology, HBsAg Rapid Card Test.

Aim

To determine the Epidemiologic trend of HBV infection among clinically suspected patients attending a tertiary care hospital, Kolkata.

Objective

- i) To find out the distribution of HBV infection among study population with reference to age, sex, probable clinical indications for undergoing investigations,
- ii) Categorization of risk factors associated with HBV infection among clinically suspected patients attending a tertiary care hospital, Kolkata.

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I. Introduction :

Hepatitis B virus infection (HBV) is a global public health problem. India being the largest nation in South Asia region and by its sheer population bears the bulk of HBV burden accounting for 10-15% of the entire pool of HBV carriers of the world.

Hepatitis is the name given to liver inflammation, which is usually caused by a viral infection, although it can also be caused by toxic agents or other diseases, such as autoimmune and metabolic diseases. The causative agent of viral hepatitis type B is the hepatitis B virus (HBV). The virus interferes with the normal functioning of the liver by replicating in hepatocytes. The response by the immune system to combat and potentially eliminate the infectious agent causes pathological damage and liver inflammation.

HBV infection is among the most common causes of hepatitis and can progress to serious liver diseases, such as chronic hepatic insufficiency, cirrhosis (scarring of the liver), and Hepatocellular carcinoma. About 25% of adults who are chronically infected during childhood will die from cirrhosis or liver cancer.

II. Materials & Methods :

The present study was conducted for a period of six months to find out the Epidemiologic trend & evaluate the risk factor(s) associated with HBV infection among clinically suspected patients attending the tertiary care hospital. The inpatients in whom HBsAg detection was advised on the basis of clinical findings, demographic & risk factors, as a part of pre-operative screening & antenatal screening were included in the study. The subjects who had previous history of HBV immunization were excluded.

Presence of HBsAg in the serum indicates HBV infection.

Blood sample (2-3ml) was collected aseptically and transported to the lab for testing. In case delay was inevitable, serum sample was separated & stored in refrigerator at 2-8°C till further testing. Blood was allowed to clot & after centrifugation, clean clear serum samples were separated in clean test tubes. The sera were analyzed by an immunoassay based on the antigen capture or sandwich principle by using **one step HBsAg Rapid Card Test**, for qualitative detection of HBsAg as per the manufacturer's instructions. The kit has sensitivity of 99.8% & specificity >99%. The samples which were positive for HBsAg were further re-tested second time using same kit & method. Samples which were repeatedly reactive for HBsAg were considered positive .

III. Results :

Out of 8520 patients tested over a period of year, total number of positive cases were 97(1.13%) as shown in **Table I**.

Table I

Total no. of sample received	No. of HBsAg positive samples	Percentage of HBsAg positive samples
8520	97	1.13

Gender specific prevalence

Table II

	Male	Female
Total No. of HBsAg Positive cases	72	25

Age specific prevalence in Males

Among males maximum number of HBsAg positive cases belonged to the age group 41-50 years (26.38%) as shown in **Table III**

Table III

Age group (years)	HbsAg positive cases	Percentage(%)
0-10	0	0
11-20	2	2.77
21-30	8	11.11
31-40	13	18.05
41-50	19	26.38
51-60	11	15.27
61-70	16	22.22
71-80	2	2.77
81-90	1	1.38
Total	72	100

Age specific prevalence in Females

In case of females, maximum number of HBsAg positive cases were also in the age group 41-50 years (32%) as shown in **Table IV**

Table IV

Age group	HbsAg Positive	Percentage(%)
0-10	0	0
11-20	1	4
21-30	4	16
31-40	6	24
41-50	8	32
51-60	4	16
61-70	2	8
71-80	0	0
81-90	0	0
Total	25	100

Categorization of Hepatitis B patients according to the risk factors associated

Table V

Associated Risk factors	Needle stick injury	History of multiple blood transfusion	Family History	Associated HIV/HCV infection	Tattoo/ Acupuncture	Total
No. of HBV infected patients	51	28	4	1(HCV)	13	97
Percentage of HBV infected patients	52.57%	28.87%	4.12%	1.03%	13.4%	100%

IV. Discussion :

This present study showed that 97 out of 8520 (1.13%) serum samples were confirmed to be positive for HBsAg. The prevalence reported here is lower than 2.86%, 2.5%, 2.28%, 4.9%, 12%, 8.3%, 7.6%, 9.3%, 3.9% prevalence reported in a previous study conducted by IJPS/vol 4/Issue1/jan-mar/2014/19-24; Bhatta CP et al; Choudhary et al; Osman E1 et al in Khartoum; Luka et al at Ahmadu Bello university, teaching hospital, Zaria, Kaduna state; Chukwuka et al; Ezegebudo et al; Ugwaja et al and higher than 0.02% prevalence reported in a study conducted by Karandeep et al.

The present study depicted higher Seropositivity rate in males as compared to females (approx 3:1) which is similar to the studies done by IJPS/vol 4/Issue1/jan-mar/2014/19-24 (approx 5:2) and the study done in Nigeria by Okonko IO et al who also reported male predominance with the observation that male sex was an important risk factor for HBsAg positivity.

In the present study, the prevalence of seropositivity was highest in the age group 41-50 years, both in males as well as in females i.e. 26.38% and 32.00% respectively. This higher prevalence was reported in most sexually active age group. These findings are similar to the study done by IJPS/vol 4/Issue1/jan-mar/2014/19-24 & Easow LM who also reported highest seropositivity among age group 21-30 years. These findings are also in concordance with the study done by Buseri FI et al who reported HBV prevalence to be highest among age group 18-27 years.

In our present study, we observed that maximum number of HBV infected patients have needle stick injuries (52.57%) among the other risk factors like multiple blood donation (28.9%); family history of patients (4.12%); tattoo/acupuncture (13.4%). We also observed (1.03%) dual infection of patients with HBV & HCV infection both.

V. Conclusion:

The present study was conducted for a period of six months to find out the epidemiologic trend & evaluate the risk factor(s) associated with HBV infection among clinically suspected patients attending the tertiary care hospital. Presence of HBsAg in the serum indicates HBV infection. The serum was separated & analyzed by an immunoassay based on the antigen capture or sandwich principle by using one step HBsAg Rapid Card Test. 97 out of 8520 (1.13%) serum samples were confirmed to be positive for HBsAg. 75% of the positive samples were Males and 25% were females. The highest prevalence was found in the age group of 41-50 years (29%). Notably, one HBV Seropositive adult patient suffered from dual infection by HCV. Maximum number of HBV infected patients have needle stick injuries (52.57%), other associated risk factors were multiple blood donation (28.9%); family history of patients (4.12%) & tattoo/acupuncture (13.4%). This study reemphasizes the need for aggressive nation-wide HBV education and prevention/control, along with mass immunization and adequate treatment of existing cases, in reducing the spread and multiplication of the virus among individuals and in the society at large.

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