

Prevalence of Hepatitis B Infection among Female Patients Attending Integral IMS & Research Hospital, Lucknow

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Abstract

Hepatitis B infection is caused by hepatitis B virus (HBV), an enveloped DNA virus belonging to family Hepadnaviridae that infects the liver and causes hepatocellular necrosis and inflammation which are serious public health problem worldwide. The Present study was conducted in the department of microbiology on 456 female patients. The serums were obtained by centrifugation & test was done. The Hepatitis B surface Ag was detected by using HEPACARDS kit. In our current study on 456 female patients were screened for HBsAg and we found that 5.3% female patients were reactive with HBsAg in serum and 94.7% were Non reactive with HBsAg out of 456 female patients. Higher prevalence of HBsAg was reported in most sexually active age group i.e. 21-40 years (57.5%) and least in age group 81-100 (0.4%). In the light of current study, it can be concluded that the Hepatitis B contributes significantly to chronic liver diseases in India and being transmitted through parenteral, sexual or perinatal mode. The study revealed high prevalence rate of HBV among female patients (5.3%).

Keywords: Hepatitis B infection, Prevalence, Female patients.

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INTRODUCTION

Hepatitis B infection is caused by the hepatitis B virus (HBV), an enveloped DNA virus belonging to family called Hepadnaviridae that infects the liver and causes hepatocellular necrosis and inflammation which are serious public health problem worldwide [1]. Hepatitis is the inflammation of liver, most commonly caused by viral infections. Five hepatotropic viruses (A to E) are known to cause hepatitis. Of these, hepatitis B Virus (HBV) and hepatitis C virus (HCV) are of greater importance and among the most frequent viral infections in humans [2, 3]. Baruch S. Blumberg (1925–2011) reported for the first time publicly on the discovery of a new antigen named Australia antigen. Thereafter, viral hepatitis type B became a driving force for the development of modern virus diagnostics and vaccines [4].

The highest concentrations of infectious HBV are found in blood & serum. However, other serum-derived body fluids, such as semen and saliva, are also infectious. Persons with chronic HBV infection are the major reservoir for transmission, although any person testing positive for HBsAg is potentially infectious to both household and sexual contacts. The virus may be detected within 30 to 60 days after infection and can

persist and develop into chronic hepatitis B. Transmission from a chronically infected woman to her infant during delivery is efficient and is one of the most common routes of HBV infection worldwide [5]. The development of chronic infection is very common in infants infected from their mothers or before the age of 5 years.

The prevalence of hepatitis B virus infection varies markedly in different geographical areas of the world. Based on the prevalence of Hepatitis B surface antigen (HBsAg), countries are classified as having high (where $\geq 8\%$ of the population is HBsAg positive), intermediate (2–7%) or low (< 2%). Areas of high endemicity include South-East Asia, China, most of Africa, most of Pacific Islands, the Amazon basin and parts of the Middle-East. The areas of intermediate endemicity (2–7%) include South Asia, Eastern and Southern Europe, Russia and Central and South America. On the other hand, the areas with low endemicity (< 2%) include United States, Western Europe and Australia). India is the largest nation in the region and by its sheer population bears the bulk of HBV burden in South Asia and accounts for 10-15% of the entire pool of HBV carriers of the world [6].

MATERIALS AND METHODS

The present current study conducted in the department of Microbiology of Integral Institute of Medical Sciences & Research hospital Lucknow after taking permission from Institutional Review Committee (IRC) & the Ethical Review Committee (ERC). Before enrolment in the study, written consent was taken from the female patients and the risk & benefits had been explained in the consent form. Information about the study was delivered to patient and consent obtained then face to face interview was conducted. Informed written consent was obtained from the 456 female patients who agreed to participate in the study were requested for screening of Hepatitis B surface antigen test and blood sample was sent for screening of Hepatitis B surface antigen test and blood sample was sent for screening of Hepatitis B surface antigen in central research lab. IIMS&R, Lucknow, were enrolled in the study.

The blood sample was collected in clean clot activator vacutainer and the blood was allowed to stand for 30 minute so that it may clot. Then the serum was obtained by centrifugation & test was done immediately. The HEPACARDS was brought out from refrigerator and equilibrate with room temperature and Hepatitis B surface Ag was detected by using HEPACARDS. It is one step immunoassay based on antigen capture or sandwich principle. This method

uses monoclonal antibodies conjugated to colloidal gold & polyclonal antibodies immobilized on a nitrocellulose strip in a thin line.

Test sample is introduced which mixes with the signal reagent .If the sample contains. HBsAg, colloidal gold antibody conjugate binds to the antigen, forming an antigen-antibody colloidal gold complex. Complex then migrates through the nitrocellulose strip by capillary action. When the complex meets the line of immobilized antibody test line “T” the complex is trapped forming antibody-antigen-antibody colloidal gold complex. This forms a pink band indicating the sample is reactive for HBsAg.

Statistical Analysis

The data was transferred to computer and Chi-square test was used for categorical variable. P <0.05 was considered as significant.

OBSERVATION AND RESULTS

In this study total 456 female patients were screened for HBsAg. The distribution of female patients according to their age and we found that maximum patients (57.5%) belonged to age group 21-40 years, followed by 41-60 years (27.4%),0-20 years (12.5%),61-80 years (2.2%) and least in age group 81-100 (0.4%) showing in Table-1.

Table-1: Showing the distribution of female patients according to age group

| Age group in years | Numbers of patients | Percentage |
|--------------------|---------------------|------------|
| 0-20 | 57 | 12.5% |
| 21-40 | 262 | 57.5% |
| 41-60 | 125 | 27.4% |
| 61-80 | 10 | 2.2% |
| 81-100 | 2 | 0.4% |
| Total | 456 | 100% |

In our study we found that majority of patients (234) belonged to rural areas as compared to those who belonged to urban areas (222), as shown in Figure-1.

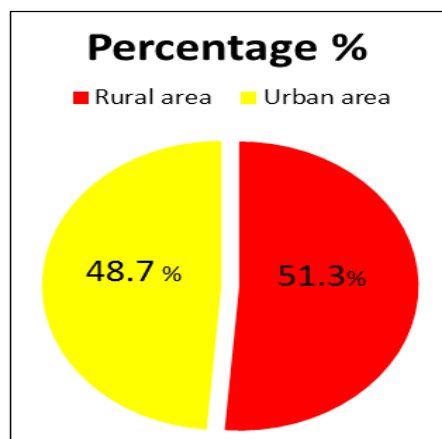


Fig-1: Showing distribution of female patients according to their residential status

On evaluating the educational status of the female patients enrolled in current study, we observed that majority were illiterate (42.3%) followed by

education up to primary (22.0%), high school (21.3%), Pre Primary (9.0%) Graduate (5.0%) and Higher Secondary (0.4%) as shown in Table-2.

Table-2: Showing educational status of female patients according to their education level

| Educational status | Number of patients | Percentage |
|--------------------|--------------------|------------|
| Graduate | 23 | 5.0% |
| Higher secondary | 2 | 0.4% |
| High school | 97 | 21.3% |
| Primary | 100 | 22.0% |
| Pre primary | 41 | 9.0% |
| Illiterate | 193 | 42.3% |
| Total | 456 | 100% |

In our study we found that majority of female patients 424 (93.0%) were married and 32 (7.0%) were unmarried as shown in Table-3.

Table-3: Showing the distribution of female patients according to their marital status

| Marital status | Total no. of female patients | Percentage |
|----------------|------------------------------|------------|
| Married | 424 | 93.0% |
| Unmarried | 32 | 7.0% |
| Total | 456 | 100% |

In our study we found that 5.3% female patients were reactive with HBsAg in serum and 94.7% were Non reactive with HBsAg out of 456 female patients in Table-4.

Table-4: Showing distribution of female patients according to the reactivity of HBsAg in serum

| Result of HBsAg Reactivity | Number of female Patients | Percentage |
|----------------------------|---------------------------|------------|
| Reactive | 24 | 5.3% |
| Non reactive | 432 | 94.7% |
| Total | 456 | 100% |

DISCUSSION

HBV infection is one of the most common viral infections known to humanity. Nearly, 350-400 million people suffer from this infection globally with 1 million deaths per year due to complications of this infection [7]. Prevalence of hepatitis B varies from country to country and depends on a complex interplay of behavioral, environmental and host factors. In general, it is lowest in countries with high standards of living such as Australia, North America and North Europe and highest in countries where socioeconomic level is lower such as China, South East Asia and South America [8]. India lies in intermediate zones of prevalence rates as set by the World Health Organization.

The overall rate of seropositivity for HBsAg varies from 2% to 4.7% with the highest prevalence recorded in natives of Andamans and Arunachal Pradesh [9, 10]. The result of our study indicated that the prevalence of HBsAg among female patients attending IIMS & R Lucknow was 5.3%. This is similar to previous study from Jamnagar [11] which reported prevalence of Hepatitis B among pregnant female to be 4.2%. Classified as a region of high endemicity, India

accounts to 10-15% of the total HBV carrier in the world. Prevalence of HBsAg in our study is nearly similar than the study done by Osman EI *et al.*, [12] in Khartoum who reported a moderate prevalence of 4.91%. India lies in intermediate zones of prevalence rates as set by the World Health Organization.

There is a wide variation in HBsAg prevalence in different geographical regions in India. The higher prevalence among 21-40 years age group could be due to higher exposure to occupational risk factors as well as high risky behavior among young individuals [13]. According to established criterion, the prevalence of HBV among pregnant women is classified as high intermediate (5-7.99%) [14]. This finding is comparable with those among pregnant women from southern Ethiopia 6.1% [15] and 7.3% among antenatal clinic attendees in Gondar Health Center, northwest Ethiopia [16]. But it is higher than 4.9% of prevalence in Dessie referral hospital and 3.8% in Bahir Dar city [17].

The reason for high infection rate among the females may be due to habits such as multiple sexual partners, unprotected sex, sharing of needles in I/V drug abusers, tattooing, acupuncture and sharing of tooth

brushes. Safe and effective vaccines against HBV are available. People who are elderly, obese, heavy smokers, undergoing hemodialysis or immuno compromised have sub optimal antibody responses when vaccinated. For this reason, the key is to vaccinate the younger population as broadly as possible for maximal prevention [18]. The similar study was done among pregnant female in tertiary care hospital Allahabad. Out of 4000 female patients, 0.9% female was positive for HBsAg [19].

In the our country in the different regions there is a wide variation in prevalence and a high prevalence has been reported by Prakash et al in North India (9.5%) [20]. an extensive review by INASL has arrived at a consensus figure of 4.7 % as the national average for carrier state [21].

CONCLUSION

In the light of current study, it can be concluded that the Hepatitis B contributes significantly to chronic liver diseases in India. Being transmitted through parenteral, sexual or perinatal mode. The study revealed high prevalence rate of HBV among female patients (5.3%). This higher prevalence of HBsAg was reported in most sexually active age group.i.e.21-40 years (57.4%) and least in age group 81-100 (0.4%).

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