

Hepatitis B Virus Infection & Socioeconomic Status in Females of Rural Population of North India: An Observation (A Three and Half Year Study)

Balram Ji Omar*, R.C. Pande**, Sandip Gupta***, Kriti Mohan****, Anupama Tandon*****

Author Affiliation

*Associate Professor,
Department of Microbiology, All
India Institute of Medical
Sciences, Rishikesh, Shivaji Nagar,
Veerbhadra, Uttarakhand 249202.

**Professor, Ex HOD Department
of Microbiology, UP Rural
Institute Of Medical Sciences &
Research Saifai (Etawah)

***Professor, Department of
Community medicine, UP Rural
Institute Of Medical Sciences &
Research, Saifai (Etawah).

****Associate Professor,
Department of Pediatrics, MLN
Medical College, Allahabad (UP)

*****Professor, Department of
Ophthalmology, BPS Government
Medical College, Khanpur Kalan,
Sonapat, Haryana.

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Balram Ji Omar, Associate
Professor, Department of
Microbiology, All India Institute
of Medical Sciences, Rishikesh,
Shivaji Nagar, Veerbhadra,
Uttarakhand 249202.

Email:
drbalramaiims@gmail.com

Abstract

Background and Objective: Health status of rural females is the most neglected in India. Hepatitis B is one of the highly infectious and sexually transmitted diseases which have a direct impact on the health of rural females as well on their siblings and family. So this study was undertaken to know the burden of Hepatitis B viral (HBV) infection in rural females so a prevention strategy can be made to curtail such dreaded infection in rural society. *Method:* A total number of 5035 female subjects of different age ranging from neonate to 90 years were grouped in 8 different groups designated as A to H. They were screened for detecting HBsAg both by Rapid Diagnostic tests and ELISA technique. *Results:* Maximum number of subjects belonged to age group 21-30 yrs of group C, followed by group D(31-40yrs) and B(11-20 yrs). Of 5035 subjects, 256(5.08%) were positive for HBsAg. The positivity was maximum in both the extremes of life, 7.8% & 21.9% & 19.5% percent respectively. In other group the HBs Antigen positivity varied from 2.5 to 5.8 percent. *Interpretation and Conclusion:* The high incidence of Hepatitis B Viral infection clearly reflects the uneducated and neglected health status of rural females. Prevention strategy and education can reduce the further transmission and thereby reducing morbidity and mortality with HBV infection.

Keyword: HBsAg; HBV; HBV in Females.

Introduction

Hepatitis B is a common but also serious infectious disease of the liver because of its severe pathological consequences like chronic hepatic insufficiency, cirrhosis of liver and hepatocellular carcinoma. Infections usually occurs during early childhood, may be asymptomatic but often leads to chronic carrier state and are capable of transmitting disease for many years. More than 2000 million

people are infected with HBV at some time of their life (WHO 2002) [1]. In spite of such serious consequences HBV has been overshadowed by HIV, which it deserves and as a result HBV has taken back seat in the mind of medical administration all over the world specially in India, but the virus continues to play its natural history of disease. In India many reports are available about the incidence of HBV in general urban population. In females the carrier rate of HBsAg has been studied only from cities and that too in mothers or from tribal population, but there is

no report available in literature about incidence of HBV in general female population of rural India. Inspite of the fact that rural females are most neglected community of Indian society, irrespective of cast and religion. They have to carry out all the household and field work till they are completely bed ridden. Maximum they get is medical consultation from unregistered medical practitioners or quacks .The present work has been undertaken with a view to study the health status of rural female population in relation to systemic infections like Hepatitis B which affects future life of the subjects. The incidence of HBV was studied in the general female population among different age groups.

Materials and Method

The present work was carried out in Department

of Microbiology, U.P. Rural Institute of Medical Sciences & Research(UPRIMS & R, Saifai, Etawah) from September 2006 to March 2010.This institute drain large rural population of western U.P. including Kanpur Dehat, Auriya, Etawah, Mainpuri, Farukhhaabad, Shikohabaad, Firozabad and even some parts of M.P. including Bhind .

Samples were collected from patients both from outpatient & indoor department. The test was carried out by commercially available kits including ELISA (S.D. make 3.0) & rapid (hepacard -immunopak and Viruchek-orchid) .Positive sample were stored at - 20° C for further study.

Observation

In the present study 5035 female subjects grouped in 8 designated group A to H were studied for the presence of HBsAg (Table1). This included subject of

Table 1: HBsAg positivity in different age group

Group	Age Group (In Years)	Number of Subjects	%	HBsAg Positivity	% Positivity	Maximum Age	Minimum Age
A	0-10	64	1.3	5	7.8	1 month	10 years
B	11-20	787	15.6	34	4.3	11 year	20 year
C	21-30	2590	51.5	108	4.2	21 year	30 year
D	31-40	863	17.1	39	4.5	31 year	40 year
E	41-50	357	7.1	23	6.4	41 year	50 year
F	51-60	203	4.0	11	5.4	51 year	60 year
G	61-70	114	2.3	25	21.9	61 year	65 year
H	≥71	57	1.1	11	19.3	70 year	90 year
	Total	5035	100	256	5.084		

Table 2: Showing HBV positivity in female Population report by different investigators

Year	Investigator	Place of study	Sample size	No. of Positivity	Percentage
1980	Khatri et al	Bombay	1276	8	0.62
1989	Biswas et al	Chandigarh	1000	23	2.3
1991	Panda et al	Delhi	8431	191	2.26
1992	Gupta et al	Chandigarh	2337	58	2.48
1996	Sharma et al	Aligarh	157	16	10.19
1998	Prakash et al	Delhi	1112	106	9.5
2001	Abbas et al	Delhi	6910	70	1.01
2004	Varghese et al	Delhi	6341	52	0.82
2004	Sahani et al	Delhi	987	22	2.22
2005	Chakravorty et al	Delhi	400	17	4.25
2005	Banerjee et al	Kolkata	400	15	3.75
2012	Pande and Omar(present study)	Rural western UP	5035	256	5.084

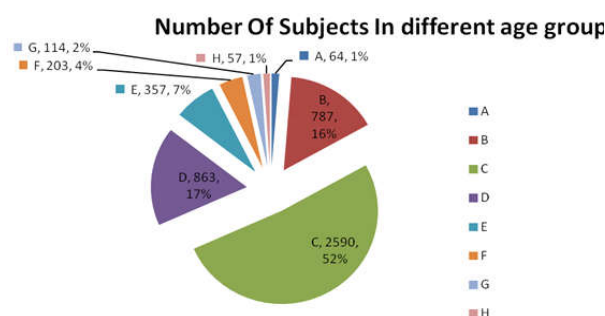


Fig. 1:

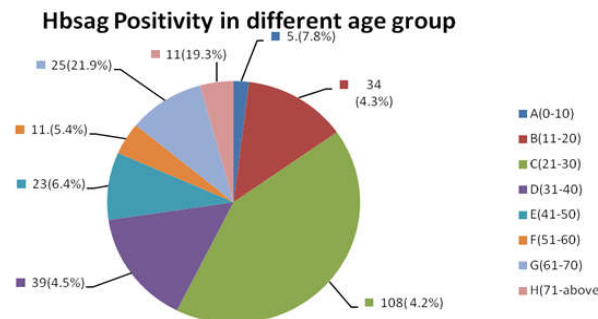


Fig. 2:

youngest neonate and old of 90 years. Maximum no. of subjects belonged to age group C(21-30years), 2590(51.5%) followed by group D(31-40years) 863(17.1%) and B(11-20years) 787(15.6%). Positivity for HBsAg was maximum in group G (61-70years) 21.9% and group H (71yrs and above) 19.5%. The youngest positive case in present study was a neonate and oldest subject of 90 years old lady.

Discussion

Five thousand and thirty five female subjects belonging to rural population of western U.P., ranging between age of neonate to 90 years were screened for presence of HBsAg. Out of 5035 subjects screened for HBsAg, 256(5.084%) were found to be positive. The youngest subject positive for HBsAg was a neonate and oldest lady was of 90 years age. The maximum HBSAg positivity was found in the oldest group i.e. (61-70years) and group H (71 years and above) and it was 21.9% and 19.3% respectively. In the age group C (21-30 years) and Group D (31-40 years) to which highest numbers of subjects were screened showed a positivity of 4.2% and 4.5% respectively. Group C and D age groups most important for rural ladies not only because of its sexually active age group but also because they have shoulder full responsibilities of house, children, and husbands and in laws. These age groups are also important because mother to child transmission of HBsAg may also occur if the female is positive for HBsAg and later this will increase the problems of rural female and family both mentally and economically. Incidentally there is increase in the incidence of HBsAg positivity after 40 years also.

There is no report available in literature about incidence of HBsAg positivity in rural population of India. Various Investigators have detected HBV markers in mothers of urban population or in tribal population but not in rural population. Reports available from neighboring areas like Delhi [2-6],

Aligarh [7] and Chandigarh [4]. The reports from Delhi itself showed wide variation about HBV positivity ranging from 0.82% in the study of Varghese et al(2004) [12], to 9.5% by Prakash et al (1998) [8] Table 2.

Other Investigators have reported figures ranging between the above two extremes, Abbas et al (2001)¹ found HBV positivity -1.01%, Panda et al (1991) [7] 2.26%, Shahini et al (2004) [10] 2.22% in the mothers only. From Aligarh Sharma et al (1996) [11] reported positivity of 10.19% among mothers. In contrast from Chandigarh, Biswas et al (1989) [3] reported 2.3% positivity in 1000 cases while Gupta et al (1996) [5] reported 2.48% of positivity in a study in their 2337 subjects. From Bombay (now Mumbai) Khatri et al (1980) [6] reported only 0.62% and From Kolkata Banerjee et al (2003) [2] reported 2.81 % positivity. In the present study the HBV positivity in rural population in females of western U.P. is nearer and slightly on higher side to those reported from studies of urban population of Delhi by Chakravorty et al (1997)-4.25% and Banerjee et al -3.75%, but these data are from urban population who are educated and relatively better of economically in contrast to rural population which is by and large uneducated and relatively poor. Higher percentage of positivity clearly reflects the status of rural population.

Concluding, a good vaccination strategy, information and education may will definitely reduce the incidence of HBsAg positivity in them and thereby have a positive impact on female health status of rural India.

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