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SEROPREVALENCE OF HBs ANTIGEN AMONG CONTRACTUAL WORKMEN IN A SMALL-SCALE FACOR ALLOY FACTORY

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ABSTRACT

Aim: To know the seroprevalence of HBs antigen among the contractual workers engaged in small-scale Facor Alloy Factory located in rural area. **Materials and methods:** Blood samples collected from 1139 contractual workmen were screened for HBs antigen by using two rapid tests in tandem. They were asked about the risk factors associated with hepatitis B virus infection. **Results:** Forty workmen (3.5%) were positive for HBs antigen. The prevalence rate was highest in 51-58 years of age (6.7%). Fifty percent of HBs antigen positive individuals gave past history of tattooing compared to 19.1 % of those negative for HBs antigen. Fifteen percent of HBs antigen positive individuals had close household contact with a patient suffering from jaundice compared to 1 % in HBs antigen negative individuals. **Conclusion:** Overall seroprevalence rate of HBs antigen in the study group was less compared to other studies from rural areas. Tattooing and close household contact were the most common risk factors for acquiring hepatitis B virus infection in the present study.

Key Words: Seroprevalence, HBs antigen, Rural area.

INTRODUCTION

Hepatitis B Virus infection is a global issue with more than 2 billion infected individuals throughout the world which includes more than 3 million chronically infected carriers (1). The prevalence of carrier rate varies in different countries in relation to their loving standard and life style. India belongs to intermediate endemic zone with carrier rate between 2-7%, with higher carrier rate in the southern part and lower rate in the northern part of the country (2). The prevalence of HBs Antigen in India varies from 1-13%, with an average of 4.7% (3-8). There are studies from India regarding its prevalence among blood donors (9), children (8) and in different tribal population (10-14). There are only few studies available based on its prevalence in rural population (15-16) and poor urban slums (17). Hence, the present study was undertaken to know the seroprevalence of HBs antigen among the contractual workers engaged in small-scale Facor Alloy Factory located in rural area.

MATERIAL AND METHODS

Study group: A total of 1,139 contract workmen of Facor Alloy Factory, located in Sriramnagar village of Garividi Mandal, 20 km away from MIMS, between 30 to 58 years old and not suffering from any acute illness were included in the study. They belong to low income group with low literacy rate. They were asked about previous episodes of jaundice and potential risk factors for acquiring hepatitis B virus infection, such as close house hold contact with a patient suffering from jaundice, tattooing, parenteral interventions like intravenous fluid, blood transfusion and intramuscular injection; and alcoholism. None of them had received hepatitis B virus vaccine.

Duration of study: From October 2009 to December 2009.

Setting: The tests were carried out in the Dept. of Microbiology and Biochemistry, MIMS, after an approval taken from the head of the institution and owner of the factory. Written consent was taken from each individual included in the study to undergo the required tests. 5 ml venous blood was collected from each subject at the factory site and subjected to the tests on the same day in MIMS taking precaution to avoid cross contamination.

Serology: Screening for HBs antigen was done by the test based on immunochromatography method (Hepacard, J.Mitra & Co Pvt. Ltd). Samples tested positive in first test were subjected to second test based on two-site sandwich immunoassay (Acon HBs Ag, Acon Biotech Co Ltd, China) (18)**.** All the tests were performed in accordance with the manufacturers' instructions with adequate controls. The specimens reactive for HBs antigen were subjected to liver function tests (LFTs) in the Dept. of Biochemistry.

Workmen reactive for HBs antigen were counseled to consult an expert once in six months and health education was given to prevent its transmission.

RESULTS

Overall seroprevalence of HBs antigen among the study population was 3.5 %. The seroprevalence rate increased from third to sixth decades of life. Fifty percent of HBs antigen positive individuals gave past history of tattooing compared to 19.1 % of those negative for HBs antigen. Fifteen percent of HBs antigen positive individuals had close household contact with a patient suffering from jaundice compared to 1 % in HBs antigen negative individuals.

DISCUSSION

This is a cross-sectional study reporting seroprevalence of HBs antigen among contractual factory workmen of rural area with low literacy rate. Different studies from India and abroad reported a higher hepatitis B virus carrier rate among rural population with low income which varied from 12 % among rural Kenyans (19) to 5.3 % among rural West Bengal population (15). The overall seroprevalence of HBs antigen among South Indian population was reported to be 5.7 % (20). But in the present study, overall seroprevalence of HBs antigen was found to be 3.5 % which is low in comparison to other studies from India. In our study group, there is four folds increase in its prevalence from third to sixth decades of life. This suggests that although most of India's hepatitis B virus carrier pool is established during early childhood as major spread of this infection in the community occurs at this age through vertical transmission and close contact with a patient or a carrier, other routes of transmission may also be important in its spread. Practices like use of shared razors, tattooing and ear piercing using unsterile instruments are more common in rural area and have been reported to transmit hepatitis B virus infection (21, 22, 23). In the present study tattooing and close household contact with hepatitis B virus were the most common risk factors for acquiring this infection. A study from South India also reported family contact with hepatitis B virus as the most significant risk factor (20).

CONCLUSION

The overall seroprevalence of HBs antigen among the study population was low with a four folds increase in its prevalence from third to sixth decade of life. Tattooing and close household contact were the most common risk factors.

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Table No. 1: Seroprevalence of HBs antigen (n=1139)

Age group In years	Number of workmen screened for HBs antigen	Number of workmen positive for HBs antigen	Percentage
30 - 40	285	05	1.8 %
41 - 50	629	20	3.2 %
51 - 58	225	15	6.7 %
Total	1139	40 *	3.5 %

Table No. 2: Association of risk factors for hepatitis B virus infection

Risk factors**	Among workmen Positive for HBs antigen (n=40)		Among workmen Negative for HBs antigen (n=1099)	
	number	percentage	number	percentage
Jaundice	6	15 %	100	9 %
Close contact	6	15 %	11	1 %
Tattooing	20	50 %	210	19.1 %
Parenteral interventions	4	10 %	107	9.74 %
Alcoholism	30	75 %	932	84.8 %

***All HBs antigen positive sera had liver function tests within normal limits.**

****Some individuals had more than one risk factor.**

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