

# HBS-ANTIGENAEMIA IN IN- AND OUTPATIENT CHILDREN AT UNIVERSITY OF BENIN TEACHING HOSPITAL

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## SUMMARY

Abiodun PO and Okolo SN. HBs-Antigenaemia in In- and Outpatients at University of Benin Teaching Hospital, Nigerian Journal of Paediatrics 1991;18(3).105-112. Using the Elisa method, 437 children of both sexes and aged 2 months to 15 years, who had no signs suggestive of hepatitis B virus infection were screened for the presence of HBsAg in their sera. 267 of them attended the paediatric outpatient clinic while the remaining 170, were admitted into the ward on account of illness that were not suggestive of hepatitis. (10.88% of all the children screened were positive for HBsAg. 13.5% of those who were admitted into the ward were HBsAg positive. Nine percent of the outpatients study group who were generally less ill than the admitted patients, were HBsAg positive. There were no statistically significant difference in HBs-Antigenaemia in both groups of children. Since these children showed no signs or symptoms to suggest an admission diagnosis of hepatitis to the attending medical doctor, this finding shows a possibly high risk of exposure of Health workers to HBsAg. It therefore calls for extra care by health workers in handling blood specimens of patients of all categories independent of their admission diagnosis or the seriousness of their illness.

## Introduction

About 5-10% of the patients with acute hepatitis B virus (HBV) are known to

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become chronic carriers of the virus.<sup>1</sup> A good percentage of who could eventually develop chronic liver disease, liver cirrhosis or hepatocellular carcinoma. There are about 700,000 apparently healthy carriers of HBV in the USA and about 200 million the world over<sup>2</sup>. Infection with HBV is as a result of contact with blood or blood products of HBsAg positive individuals. As little as serum dilutions of up to 10<sup>-7</sup> has been found to

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be sufficient to transmit infection parenterally<sup>3</sup>, while oral infection is probably possible with 1ml of undiluted serum<sup>4</sup>. These healthy HBV carriers constitute a great danger as a source of infection and spread of the virus to the community. Particularly endangered are health workers, who come daily in contact with both acute and chronically infected hepatitis patients, as well as with their blood, blood products, tissues and organs from which they can be easily infected. Viral hepatitis has thus become recognised as an occupational risk among medical and paramedical personnel to variable degrees<sup>5,6,7</sup>. Most of these studies have been carried out in adults and in developed countries with a much lower HBsAg carrier rate than in developing countries which are mostly endemic for HBV. In a study by Maynard et al<sup>6</sup>, a serological survey of 6,216 adult admissions to a metropolitan hospital showed that in only 17% of the 59 patients in whom HBsAg was detected, there was an admission diagnosis of viral hepatitis or separate admission order for HBsAg determination. HbsAg sero-positivity was thus unsuspected in 83% of the admission.

In endemic areas, to which Nigeria has been reported to belong<sup>5-14</sup>, HBV infection in childhood is believed to be the mode of perpetuation of the virus<sup>15,16</sup>. Children are also more likely to be anicteric and asymptomatic, thus creating an expectedly high source of danger of infection to the unsuspecting health worker. The objective of this study was therefore to look at the prevalence of HBs-Antigenaemia in in- and outpatient

children in whom history and physical examinations on presentation raised no suspicion of HBV infection and thus an admission diagnosis of HBV infection was not made. The main aim is to have a fair idea of the degree of exposure of the health personnel to HBV in an endemic area.

### Subjects and Methods

The study was carried out at the Department of Child Health of the University of Benin Teaching Hospital, Benin City, which caters for both in- as well as outpatients. The case notes of all children who presented at the paediatric outpatient clinic were reviewed every other day except on weekends, while those admitted into the main paediatric wards were reviewed daily as much as possible, to recruit patients for inclusion into the study. Included were children who presented with symptoms and signs not suggestive of hepatitis to the reviewing doctors and for whom serological examinations for hepatitis or liver function tests were therefore not requested. Excluded were therefore all children with past or present history of jaundice, blood transfusion, or known contact with a jaundiced individual. All known patients with sickle cell anaemia or history suggestive of same were also excluded, included were only patients in whom the investigating doctors did not include hepatitis in the differential diagnosis after clerking and physical examinations of the patients. Most of these children had bronchopneumonia, urinary tract infection, meningitis, rickets, surgical problems among others. After

informed consent of the patients or guardians, 2-3mls of blood was obtained from each of the children, centrifuged at 5000rpm for five minutes within four hours of obtaining the blood. The serum was thereafter separated and stored at -20oc until the time of assay. The sera were brought out at the time of the assay, thawed at room temperature and analyzed for the presence of HBsAg using the ELISA-method (Enzygnost-HBsAg from Behring Institute, Marburg, FRG).

**Statistical Analysis**

The prevalence of HBs-Antigenaemia in both the in- and outpatients was obtained. Comparisons were made, where appropriate, using the Chi-square.

**Results**

A total of 437 children aged between 2 months and 15 years were studied. Of these, 267 children (133 males and 134 females) were from the Paediatric outpatient clinic. Twenty four (8.99%) of the out-patient children were HBsA positive. Seventeen (12.7%) of the 133 males and 7 (5.2%) of the 134 females were HBsAg Positive (Table 1). A total of 170 inpatient children (92 males and 78 females) were studied (Table 2). Twenty three comprising (16 males and 7 females) were HBsAg positive. Thus, among this group of children, 17.4% of the males and 9% of the females were HBsAg positive.

The age distribution HBs-Antigenaemia in both in and outpatient children

showed an increase with age (Table 3;  $\chi^2 = 8.5487$ , p, df=3; Fig 1). Although the prevalence of HBs-antigenaemia tended to be higher in inpatients, this was not statistically significantly different from outpatients (Tab. 4).

Table 5 shows the prevalence of HBs-antigenaemia in all the children pooled together. A total of 225 male and female children were studied. Forty seven (10.8%) were HBsAg positive consisting of 33 males and 14 females. The prevalence of HBsAg in the males (14.7%) was statistically significantly higher than in females (6.6%;  $\chi^2 = 7.3929$ ; P ).

The trend of increasing prevalence of HBs-antigenaemia with increasing age was also found in this group. (Fig. 1).

Table I

HBs-Antigenemia in Children attending the Outpatient Clinic

Sex	No.	No. Pos.	%Pos.
Male	133	17	12.78
Female	134	7	5.22
Total	267	24	8.99

Table II.

HBs-Antigenemia among Inpatient Children

SEX	No.	No. POS	%POSITIVE
Male	92	16	17.4
Female	78	7	9.0
Total	170	23	13.5

$\chi^2 = 2.5561$ ; P 0.05

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Table III.

### Age Distribution of HBs-Antigenemia in all Children (In- and Outpatients)

AGE	NO	NO. POS	% POSITIVE
1 yr	55	3	5.5
1-5 yrs	202	16	7.9
6-10yrs	109	15	13.8
11-15yrs	71	13	18.3
Total	437	47	10.8

Table IV

### Comparison of Prevalence of HBs-Antigenaemia in In- and Outpatient Children

Sex	Outpatients <sup>a</sup>		Inpatients <sup>b</sup>	
	No. Pos.	% Pos.	No. Pos.	% Pos.
Male	17 (n=133)	12.8	16 (n=92)	17.4
Female	7 (n=134)	5.2	7 (n=78)	9.0
Total	24 (n=267)	9.0	23 (n=170)	13.5

a vs b: no significant difference

Table V.

### HBs-Antigenemia in all the Children (in and Outpatients)

SEX	NO	NO. POS	% POS
Male	225	33	14.7
Female	212	14	6.6
Total	437	47	10.7

$\chi = 7.3929$ ;  $P < 0.05$

## Discussion

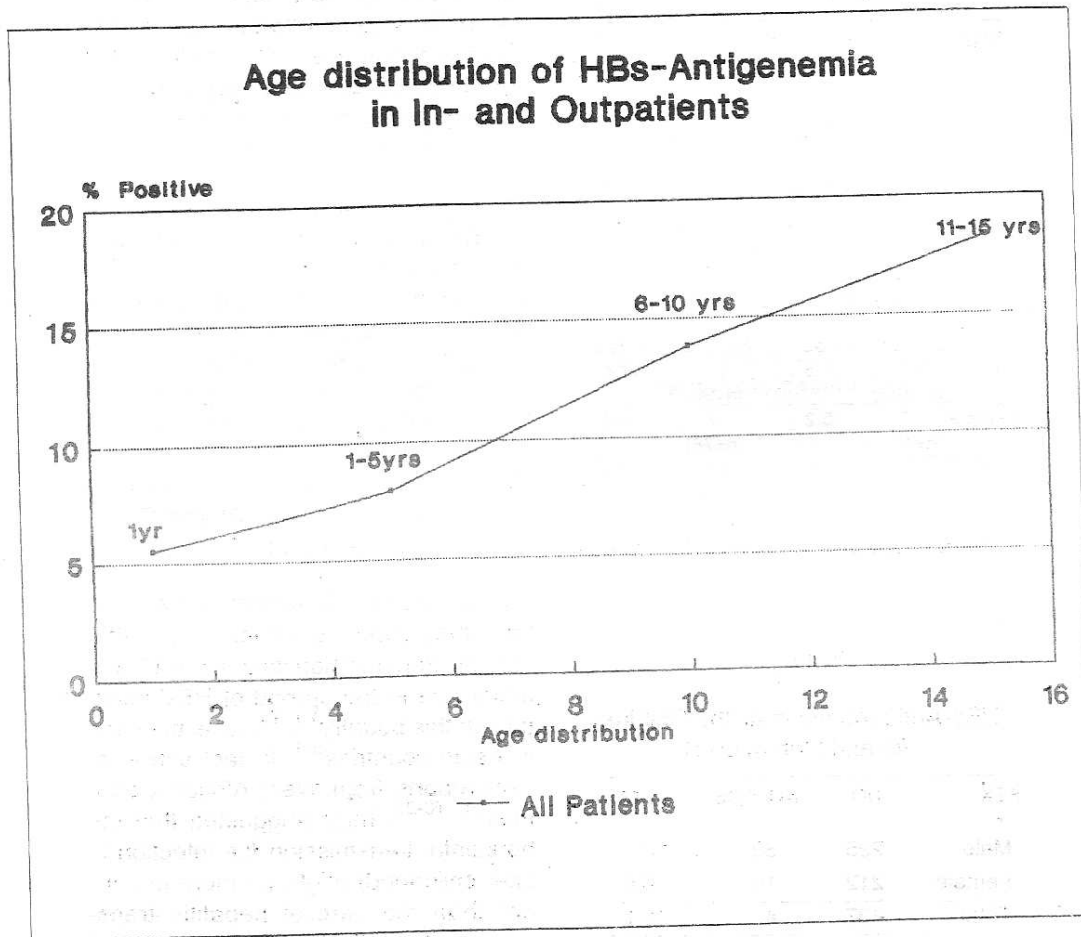
This study confirms reports from U.S.A.<sup>6</sup> in which a high percentage, (83%) of HBsAg positive patients of hospitalised patients were unsuspected during their hospital stay (i.e there was no admission diagnosis of viral hepatitis nor was there any separate admission order for determination of HBsAg status in these patients). This means that irrespective of admission diagnosis of a patient, the possibility of additional asymptomatic HBsAg positivity should always be borne in mind.

The high prevalence, 13.5% and 9.0% of HBsAg seen in ward and outpatient clinic respectively stresses the fact that even in mild ailments, that could be treated on outpatient basis, the danger of hepatitis infection is high. This result also confirms the endemicity of the HBV-infection in Nigeria and the fact that infection with HBV in childhood is high, as earlier reports from Nigeria<sup>8-11, 12, 14</sup> and other West African Countries<sup>18, 19</sup>, have indicated.

The increase in HBsAg with age seen in this study supports earlier reports that vertical transmission might not play a major role in the spread of HBV infection, in this country<sup>10, 14</sup>, as is the case in Asian countries<sup>8,9</sup>. In fact some recent reports from West African Countries<sup>14, 18-20</sup>, have suggested that the horizontal transmission (i.e infection in later childhood) might be more important than the vertical hepatitis transmission (i.e infection in the perinatal period) in West African Countries.

In conclusion, the results obtained in this study showed that a good percentage of children who present in the hospital with other diseases and ailments, even without symptoms or signs suggestive of hepatitis could in fact in addition be HBsAg positive. This high percentage of unsuspected HBsAg positive patients could constitute a potential source of

infection to health workers who are involved in the day to day management of these patients. Added to the potential danger as a source of possible infection, from these unsuspected sources, are those among the excluded ones whose suspected diagnosis of hepatitis B infection were confirmed. This therefore calls for extra care on the part of health



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personnel dealing with all categories of patients. The importance of precautionary measures when handling any specimens from patients, irrespective of the admission diagnosis of such patients, to minimise the likelihood of hepatitis B infection, cannot be overemphasized.

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