

# Prevalence of Hepatitis B Surface Antigenaemia in Healthy Children

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## Introduction

The information about HBsAg carriage rate in children is scanty worldwide. There are few reports which suggest that chronic viraemia may be high in the developing countries<sup>1-4</sup>. The majority of HBV carriers acquire infection before the age of 6 years and 25-30% of them will eventually die of chronic liver disease or liver cancer. Data on the status of HBV carriage rate in Pakistani children is scarce though its status in adults and pregnant females is well documented<sup>5-8</sup>. Various methods are available for testing Hepatitis B surface antigen (HBsAg) in blood, the commonly used being Serodia and Elisa methods. This study was done to determine the prevalence of HBsAg in healthy children and to compare the sensitivity of Serodia technique with Elisa technique.

## Subjects, Methods and Results

Six hundred and sixty-four apparently healthy children between the ages of 0 to 12 years were studied between February, 1995 to January, 1996. Five hundred and nineteen were apparently healthy children attending hospital for minor complaints but without any history of liver disease, blood transfusion of serious illness and 145 (6 to 12 years) were from one of the model schools of Islamabad city. A verbal consent was obtained from the parents and, the study design was cleared by the Ethical Committee of the hospital. Sera obtained from venous blood samples were stored at -20°C and later analyzed for HBsAg by Elisa technique. The positive results with Elisa technique were rechecked by reverse passive hemagglutination technique (RPHA) to find the sensitivity of the latter technique. The data was entered in EPI-INFO. 5.1 and statistical analysis by chi-square test was performed. Of 664 children studied, 481 (72%) were male and 183 (28%) female. Their mean age was 5.04±3.71 years. The overall positivity rate for HBsAg detected by Elisa technique was 3.6% (24 out of 664). The positivity rate was also checked in three age groups of 0-<1, 1-<5 and 5-<13 years (Figure).

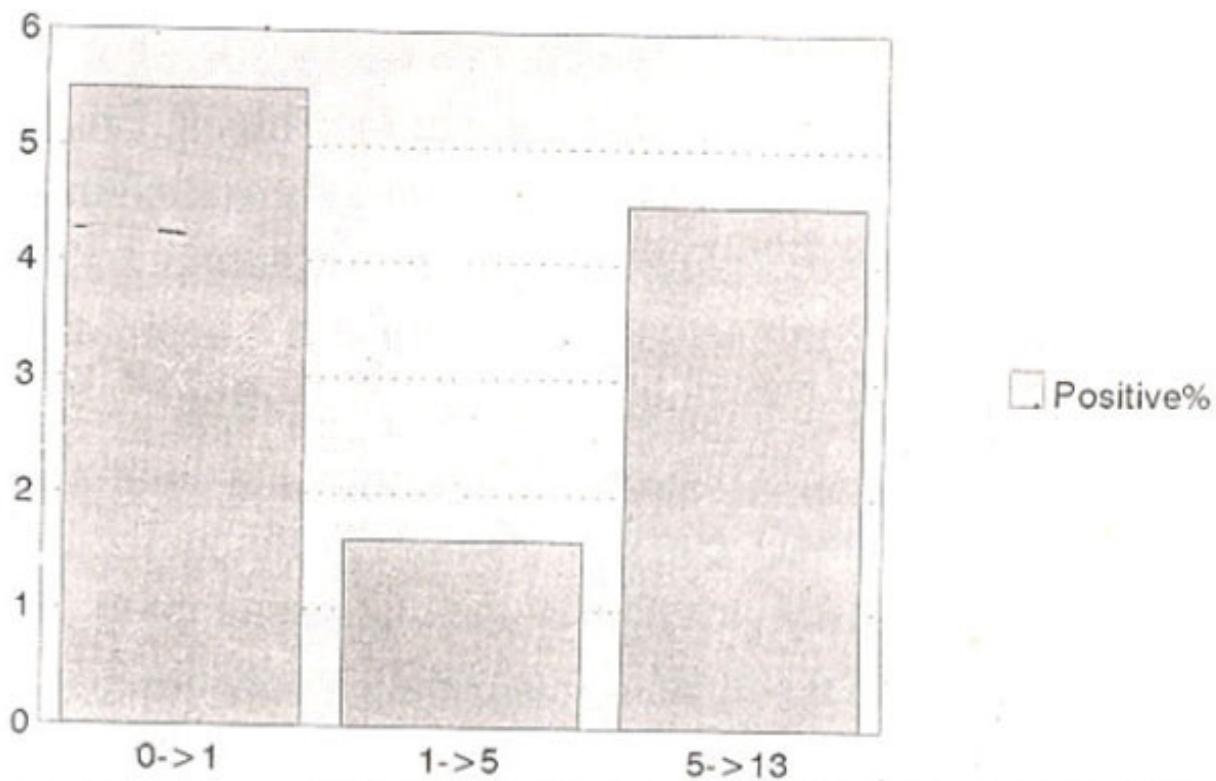


Figure .Prevalence of HBsAg in different age groups (years) of 664 healthy children.

'Age and sex had no significant effect on the frequency of HBs antigenaemia. The results of school children were compared with those of hospital children. HBs Antigenaemia was detected in 4.8% (7/145) of school and 4.3% (7/164) of hospital children of the same age (5-<13 years). Twenty-four samples found positive for HBsAg by Elisa technique, were rechecked by Semdia technique. There were 17 positive, 4 non-specific and 3 negative results. The sensitivity of the Serodia method was 71%. The false negative results were due to the fact that the antigen is detectable at a concentration of >2.5 ng/ml with Serodia and 0.5 ng/ml with Elisa technique. Non-specific results may be due to the presence of cross reacting or non-specific proteins which are interfering in the reactions occurring in the Serodia technique.

### Comments

HBs antigenaemia was detected in 3.6% of 664 apparently healthy children. Prevalence in Pakistan is therefore higher than 0.8-2.5% reported from both developed and developing countries. This figure is also more than 2%, which according to WHO is significant from the point of vaccination programme<sup>10</sup>. If our data is considered representative of national situation the total number of carriers in Pakistani children can be estimated to be about 2.2 million. This study confirmed that the HBsAg carrier rate is high in childhood population in Pakistan. The reason for this high endemicity may be the younger age at which infection occurs, resulting in an inability to clear virus or in developing active immunity. Over-crowding, repeated use of unsterilised syringes and needles for injections and vaccinations, lack of mandatory testing of HBsAg for blood transfusion must have significantly contributed to the uninhibited transmission of HBV infection. It is concluded that as in adults, HBsAg carriage rate is high in Pakistani children and for testing HBsAg, Elisa technique seems to be more reliable than Serodia technique.

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