

Prevalence of hepatitis B in Gaziantep province, Turkey: a hospital-based serosurvey of 2045 children

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SUMMARY

A hospital-based serosurvey of the prevalence of hepatitis B virus (HBV) was conducted in Gaziantep province, Turkey. Two thousand and forty-five children were tested for HBV markers with commercial enzyme-linked immunosorbent assay kits. One-hundred and fifty-one of the 2045 children (7.3%) were found to be positive for HBsAg, 373 (18.2%) to anti-HBs. Significant differences were seen between the prevalence of HBsAg in males (4.5%) and females (2.8%). HBsAg and anti-HBs seropositivity were increased with the age in both sex. Among the 567 household members of 151 HBsAg positive children, prevalence of HBsAg and anti-HBs were 19% and 34.9% respectively. Perinatal transmission of HBV infection, high prevalence in pre-adolescent/adolescent group and familial clustering of the infection should be taken into account for the dynamics of HBV infection in this part of Turkey.

Key words: seroepidemiology, hepatitis B virus, HBsAg

ÖZET

Gaziantep yöresinde hastaneye başvuran 2045 çocukta hepatit B sıklığı

Bu çalışma Türkiye'nin Gaziantep yöresinde hepatit B virus (HBV) prevalansını belirlemek amacı ile hastaneye başvuran pediatrik yaş grubundaki çocuklar üzerinde yapıldı. HBV belirleyicileri 2045 çocukta enzim immunoassay yöntemi ile çalışıldı. Çalışma kapsamındaki 2045 çocuktan 151'inde HBsAg (%7.3), 373'ünde (%18.2) anti-HBs pozitif bulundu. Erkeklerde (%4.5) ve kadınlarda (%2.8) HBsAg'nin prevalansı anlamlı derecede farklı bulundu. Her iki cinsiyette HBsAg ve anti-HBs seropozitivitesi yaş ile beraber yükseldi. HBsAg'si pozitif 151 vakanın 567 aile üyesinde HBsAg ve anti-HBs sırasıyla, %19 ve %34.9 nisbetinde pozitif bulundu. HBV enfeksiyonunun perinatal bulaşımı, adölesan öncesi ve adölesan çağda yüksek oranda prevalans ve enfeksiyonun aile içindeki yoğunluğu HBV enfeksiyonunun Türkiye'nin bu bölgesindeki diamlıkları açısından dikkate alınmalıdır.

Anahtar kelimeler: seroepidemioloji, hepatit B, HBsAg

INTRODUCTION

It is estimated that more than 350 million people worldwide have been infected with hepatitis B virus (HBV). It is also very well known that HBV is the main cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma, resulting in approximately one million deaths per year. The prevalence of HBV infection differs significantly throughout the world. Some geographic areas of the world such as Southeast Asia, China and Africa have the highest prevalence of the infection while low endemicity occurs in North America, Western Europe and Australia (1-4). Our country takes place between these extremities in terms of frequency of infection (5). Neonatal and horizontal transmission of the infection in childhood may

presumably result in higher prevalence and chronic HBV disease (6). However, in adolescents and adults sexual and parenteral transmission play a crucial role (7).

This study was conducted to determine the frequency of HBV infection in children in this part of Turkey aiming to help the prevention and vaccination strategies.

MATERIAL and METHOD

In this study 2045 (1093 male; 952 female) children, who has applied to our pediatric outpatient clinic between 1993-1998 and did not have any clinical findings or history of hepatitis and jaundice were included. The age of the population tested were between 0-18 years. The children were divided in three groups (Group I: 0-6 age; Group II: 7-12 age; Group III: 13-18 age). The number of children in groups were as follows; in Group I 872, in Group III 2708, and in Group III 465. Collected blood samples were separated by centrifugation and stored at -30 C° until tested within two weeks. HBsAg and anti-HBs were assayed by ELISA (Alpha4; SFRI Laboratories, Bergantou, France) using

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Table 1. Age and sex specific hepatitis B virus markers in population of the study

Age	Group	Number of cases	HBsAg-positive		Anti-HBs positive		HBV infected	
			Male	Female	Male	Female	Male	Female
0-6	I	872	24 (2.7%)	10 (1.1%)	62 (7.1%)	56 (6.4%)	86 (9.8%)	66 (7.5%)
7-12	II	708	32 (4.5%)	29 (4.1%)	67 (9.4%)	64 (9%)	99 (13.9%)	93 (13.1%)
13-18	III	465	36 (7.7%)	20 (4.3%)	65 (13.9%)	59 (12.6%)	101 (21.%)	79 (16.9%)
Total		2045	92 (4.5%)	59 (2.8%)	194 (9.4%)	179 (8.7%)	286 (13.9%)	238 (11.%)

commercial kits (Biokit) of the same company in sera of the children. HBsAg positive cases have been followed between 6 months to 5 years. Parents and siblings of the HBsAg positive cases were also tested for the HBV markers.

RESULTS

Among 2045 children studied, 151 cases (7.3%) were found to be HBsAg seropositive while anti-HBs positivity were found much higher (373 case; 18.2%) so exposure rate to HBV was 25%. In all age groups HBsAg prevalence were 4.5% in males and 2.8% in females and HBV exposure rate has been found 13.9% in males and 11% in females (Table 1). HBsAg and anti-HBs seropositivity were increased with the age in both sex (Figure 1). Among the 567 household members of 151 index cases, prevalence of HBsAg, anti-HBs and HBV infection were 19%, 34.9% and 55% respectively (Table 2). The prevalence of HBsAg and anti-HBs were highest among the siblings of HBsAg positive children in Group III while lowest in Group I (Table 3).

DISCUSSION

The distribution of HBV infection in Turkey is quite different among geographic regions of the country. Although, age distribution of the children in studies reported from Turkey is not unique, the highest rate were in east while the

lowest were in the west (8-11). In this study we found 7.3% of HBsAg positivity which is almost similar to reports coming from east part of Turkey (10,11). The current study showed that the prevalence HBsAg has been higher in males (4.4%) than females (2.9%) in all age groups, a finding also noted in studies from Middle East (12,13). This finding can be related to higher HBV exposure rate of males versus females. The prevalence of HBV infection and HBsAg seropositivity were increased directly with age as reported previously (5,13,14). The highest rate of HBV infection (37.9%) was observed in Group III which covers pre-adolescent and adolescent age group. This may be partly related to parenteral or/and sexual transmission of HBV. Horizontal transmission is also likely to be increased by age that results in a long duration to exposure to HBV. Interestingly, in siblings of this group, HBV exposure rate, and HBsAg positivity were also high. Our data revealed that in-Group I (0-6 age) HBV exposure rate were 17%. This suggests that perinatally transmitted HBV infection was a significant contributing factor to the high prevalence of HBV in this population. In this group 45% of mothers were HBsAg positive, suggesting that HBsAg positive mothers do transmit HBV to their offspring perinatally. Familial clustering of HBV infection among

Table 2. Hepatitis B virus (HBV) markers in family members of index cases.

	No.of persons	HBsAg-positive	anti-HBs positive	HBVinfected
Mother	149	37 (24.8%)	54 (36.2%)	91 (61%)
Father	150	23 (15.3%)	53 (35.3%)	76(50.6%)
Siblings	268	48 (17.9%)	89 (33.2%)	137 (51.1%)
Total	567	108 (19%)	196 (34.5%)	303 (53.4%)

Table 3. Age specific HBV markers in siblings of index cases

Age	Group	siblings(n)	HBsAg-positive	anti-HBsAg positive	HBV infected
0-6	I	60	7 (11.6%)	16 (26.6%)	23 (38.3%)
7-12	II	123	20 (16.2%)	42 (34.1%)	62 (50.4%)
13-18	III	85	21 (24.7%)	31 (36.4%)	52 (61.1%)
Total		268	48 (17.9%)	89 (33.2%)	137 (51.6%)

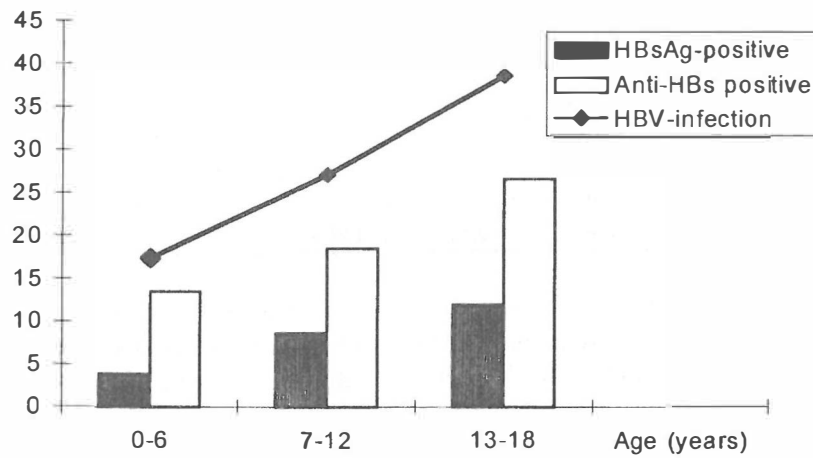


Figure 1. Prevalance of HbsAg, anti-HbsAg and HBV infection by age in the study

HBsAg positive children was also a marked finding in this study.

Our data suggest that perinatal transmission of HBV has an important role, additionally high prevalence of HBV in adolescents, familial clustering of the infection and higher rate of HBsAg positive mothers should be major criteria's for the prevention of HBV infection in

this part of Turkey. Although, Turkey has an intermediate endemicity for HBV infection, the dynamics of HBV are quite different in every part of the country, therefore prevention of HBV in children and particularly in adults should be conducted according to surveys carried out in different regions of Turkey.

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