ORIGINAL ARTICLE

Prevalence of Hepatitis B Virus Infection among Jaundiced Children in Pakistan

ZUMRAH BILAL BUTT, SABEEN ZAHID, ALIZA HAMADANI

ABSTRACT

Aim: To determine the prevalence of Hepatitis B Virus (HBV) among jaundiced children admitted in pediatric unit of Jinnah Hospital Lahore.
Study design: Cross-sectional study.
Study duration: Aug. 2016 to Feb. 2017
Methods: A total number of 280 children with diagnosis of jaundice having age 1 to 15 years were included. Blood samples were takenand were sent to the central laboratory of the hospital for ELISA test. Data analysis was carried out using SPSS V16.Seropositivity of hepatitis B virus antigenwas presented as frequency and percentage. Chi-square test was applied to determine the association of age groups and gender with HBV infection, taking p-value ≤0.05 as significant difference.
Results: The mean age of children in this study was 8.66±4.00 years. There were 179(63.9%) males and 101(36.1%) females. The mean duration of jaundice in this study was 14.9±12.21 days. The mean serum bilirubin levels in jaundice patients were 8.09±2.91mg/dl. Hepatitis B virus (HBV) infection was diagnosed in 51(18.2%) patients. There were 38(21.2%) males and only 13(12.9%) females who were positive for hepatitis B virus antigen (p-value 0.05).
Conclusion: A higher rate of seropositivity of hepatitis B virus (18.2%) is found in children of jaundice. HBV is more common among males as compared to females.
Keywords: Jaundice, Hepatitis B virus infection, Gender.

INTRODUCTION

Hepatitis is a major health issue of both developed as well as developing countries. The prevalence of hepatitis B Virus (HBV) infection varies from country to country and even within a country. Hepatitis B virus infection has a close association with behavioral, host and environmental factors[1]. According to global estimates, about 350-400 million people are chronically infected with hepatitis B virus out of which about 80% are Asians[2,3]. The incidence of HBV virus in North America and Europe is about 1/1000 of normal population[3]. About 10 to 30 million people become infected with HBV every year worldwide and most of them are children and teenagers[4].

Hepatitis B virus is an important cause of acute or chronic liver disease and thus an important cause of mortality and morbidity worldwide[1, 5]. In developing countries like Africa and Asia about 2 billion people have markers of current or past HBV virus infection[6]. And about 15-25% of these people die due to chronic liver infections each year. Socio-economic factors and poorly developed health care system are the major contributor of ineffective control of HBV infection in developing countries[7]. HBV is transmitted through blood transfusion, very close contacts e.g. overcrowding, sexual contacts and by the use of common syringes, even without parenteral risk factors the infection can lead to fatal conditions like liver cirrhosis and hepatocellular carcinoma[8-10].

Martin et al found 24% frequency of HBV infection in admitted Jaundice children having age 1 to 15 years[3]. However, we did not found any study in Pakistan regarding prevalence of HBV in jaundiced children of our country. Therefore, we conducted this study to find the prevalence of HBV infection in children admitted to hospital due to jaundice. So that the exact frequency of HBV infection can be obtained based on the results of this study and a large scale vaccination awareness program of HBV recommendations can be recommended to the concerned authorities regarding hepatitis B virus infection in children to insure proper vaccination of our children to prevent them from this infection.

METHODS

This cross-sectional study was conducted in the department of medicine Jinnah Hospital Lahore from Aug. 2016 to Feb. 2017. A total number of 280 children with confirmed diagnosis of jaundice, age 1-15 years, and of any gender were selected. Children pre-vaccinated with hepatitis B virus infection and those suffering from any type of malignancye.g. hepatocellular carcinoma or gastro-intestinal carcinoma were excluded. An informed consent was signed by all children or their parents. The approval from ethical committee of Jinnah hospital was taken.

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Clinical history regarding age of children, duration of jaundice and other relevant information regarding study was taken from the parents or the children itself. Blood sample were taken from every children by a phlebotomist and were sent to the central laboratory of the hospital for ELISA test.

Data analysis was carried out using SPSS V16.Mean and standard deviation was calculated for age of children, serum bilirubin levels and duration of jaundice. Frequency and percentage were calculated for gender and seropositivity of hepatitis B virus antigen.

RESULTS

In this study, a total number of 280 patients were included. The mean age of children was 8.66±4.00 years. There were 179(63.9%) males and 101(36.1%) females. The mean duration of jaundice in this study was 14.9±12.21 days. The mean serum bilirubin levels in jaundice patients were 8.09±2.91 mg/dl. Hepatitis B virus infection was diagnosed in 51(18.2%) patients. while there were 229(81.8%) patients who were having jaundice due to other causes instead of hepatitis B.

The children were divided into three groups on the basis of age (from 1-5 years, 6-10 years and 11-15 years). There were 14(17.7%) children in age group 1-5 years who were diagnosed of having hepatitis B virus infection. And there were only 20(17.9%) children in age group 6-10 years who were diagnosed with hepatitis B virus infection and only 17(19.1%) children in age group 11-15 years were diagnosed of having hepatitis B virus infection. This difference in the frequency of hepatitis B virus infection was not statistically significant (P-value 0.97). There were 38(21.2%) males and only 13(12.9%) females who were positive for hepatitis B virus antigen (p-value 0.05) [Table 2].

Fig. 1: Frequency of Hepatitis B virus infection.

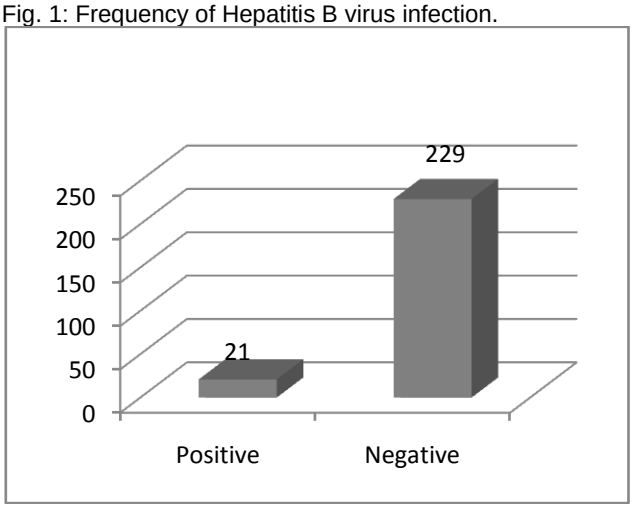

Table 1: Baseline characteristics.

Age (years)	
Mean	8.66
S.D.	4.00
Gender	
Male	179 (63.9%)
Female	101 (36.1%)
duration of jaundice (days)	
Mean	14.9
S.D.	12.21
Serum bilirubin levels (mg/dl)	
Mean	8.09
S.D.	2.91

Table 2: Association of age and gender with HBV infection.

Age Groups	Hepatitis B		P value
	Present	Absent	
1-5 Years	14 (17.7%)	65 (82.3%)	0.97
6-10 Years	20 (17.9%)	92 (82.1%)	
11-15Years	17 (19.1%)	72 (80.9%)	
Gender			
Male	38 (21.2%)	141(78.8%)	0.05
Female	13 (12.9%)	88 (87.1%)	

DISCUSSION

HBV infection is a worldwide health problem with higher burden on developing countries like Pakistan[11]. Pakistan is a high disease burden country of hepatitis A to E, with higher mortality rate due in hepatitis B, C and D. No or very few data is available regarding prevalence of HBV in jaundiced children in Pakistan. In current study, we evaluated the prevalence of HBV in children with jaundice.

In Pakistan, After HEV, HBV is the second most common cause of viral hepatitis. HBsAg positivity indicates an ongoing HBV infection ora newly infected patient.It the sole serologic marker detected during the first 3-5 weeks after infection.[12]After recovery from HBV, it usually disappearswithin 3-4 months, and anti-HBs develops. The global prevalence of HBV infection fluctuates broadly and its endemicity ranges from high (≥8%) to intermediate (2-7%) and low (<2%)[13].

In our study, we found 18.2% prevalence of HBV in jaundice children presenting at Jinnah Hospital Lahore. Nath et al. conducted a study in Katihar, India, and these authors found 24% prevalence of HBV infection in children with jaundice.[14] The prevalence of HBV in healthy children have been reported to be 0.22% in Saudi Arabia and 0.76% in Brazil[5,15]. Many other countries have also reported similarly low prevalence of HBV in healthy children. However, the prevalence of HBV is very high among jaundice children.

In our study, there were 74.5%males and only 25.5% females in whom HBsAg was positive. In a study by Nazet al[16], 68.3% males and only 31.7% females were HBsAg positive. Ahmad et al. in 2007

also announced a high predominance 64% in male children than female (36%)[17] Zubair et al in 2010; conducted a study on recurrence of hepatitis B infection in children havingchronic liver disease and discover a high 54% prevalence in male than females (46%).[18]Nwokediuko et al in 2010; likewise detailed an altogether higher (79.2%) disease rate in male when contrasted with the female (20.8%)[19].

Khan et al. found a significant effect of age on the incidence of hepatitis B virus infection. In their study, Prevalence of HBV rose from 13.39% in teenage 11-20 years to a peak of 34.93% and 23.83 % in people aged 21-30 years and 31-40 years respectively[20]. While it was less in very young 0-10 years 1.49% andin very old >60 years 1.65% persons. Cisneros-Castolo et al. also reported that the prevalence of HBV infection is higher in patients up to the age of 40 years[21] higher prevalence of HBV infection in this age group may be due to their more contacts and gatherings with society than children and old age persons. In our study, there was no effect of age on frequency of HBV infection because we only took pediatric population in our study.

Furthermore, Chronic HBV infection is also a major cause of hepatocellular carcinoma (HCC). The prevalence of HCC is escalating in the United States, Europe and in Pakistan that has pulled a higher economic burden in these countries[22,23]. So we should establish more effective and cost-effective management plan for control and management of viral hepatitis and its related complications. This will also help to reduce the hospital budgets[24].

Our study found that seroprevalence of HBV infection is high in jaundiced children. These results strengthens the significance of HBV vaccination at birth to inhibit peri-natal HBV transmission, and the inevitability of preventive measures such as educational activities to increase the awareness regarding HBV vaccination in childhood, to reduce the morbidity and mortality and the financial influence associated with the disease.

CONCLUSION

A higher rate of seropositivity of hepatitis B virus (18.2%) is found in children of jaundice. HBV is more common among males as compared to females.

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