The Professional Medical Journal
www.theprofesional.com

ORIGINAL PROF-2516

HEPATITIS–B VIRUS INFECTION;
TO DESCRIBE THE CLINICAL PRESENTATION IN CHILDREN

Dr. Arif Zulqarnain[1], Dr. Imran Iqbal[2], Dr Naveed Anjum[3]

1. MBBS.FCPS. (Paediatrics)
   Medical Officer
   Paeds Cardiology
   CPE Institute of Cardiology Multan.
2. MBBS. FCPS (Paediatrics)
   Professor & Head of Paediatrics Department
   The Children Hospital and
   The Institute of Child Health Multan
3. MBBS.FCPS. (Paediatrics)
   Medical Officer
   The Children Hospital and
   The Institute of Child Health Multan

Correspondence Address:
Dr. Arif Zulqarnain
Al- Sikandar House Street No.6
Tariq Abad Colony Near
Civil Lines College, Multan.
drarif82@gmail.com

Article received on:
10/05/2014
Accepted for publication:
19/07/2014
Received after proof reading:
16/10/2014

ABSTRACT… Objective: To describe the clinical presentations of hepatitis B virus infection in children. **Methodology:** Children presenting with symptoms of liver diseases and other diseases who were found to be HBsAg positive by screening or ELISA method were enrolled. Children suffering from thalassemia, hemophilia and hemolytic anemia, which need multiple transfusions, were excluded. On the basis of history, examination and investigations the clinical presentation of the patient was categorized. Basic demographic data, relevant clinical history, physical examination, lab investigations and clinical presentations category were entered in the predesigned proforma. As this is the descriptive study, no hypothesis were required. **Design:** Descriptive case series. **Setting:** Paediatric unit-2 NishtarHospital Multan. **Period:** 16th May 2012 to 15th November 2012. **Results:** Study results consist of relative frequencies of different clinical presentations of HBsAg positive patients. Fifty children who were HBsAg positive were enrolled in a six month period. Out of 50 patients, 21 (42%) were of hepatic encephalopathy, 14 (28%) were with acute hepatitis, 12 (24%) were cirrhosis, 2 (4%) were asymptomatic carrier and 1 (2%) was presented with chronic hepatitis B. There were 40 (80%) males and 10 (20%) females. The overall male to female ratio was 4:1. **Conclusions:** Most common presentation was hepatic encephalopathy which has a very bad prognosis, next comes the acute hepatitis and then cirrhosis. There is another inference that males are more and severely affected by hepatitis-B virus infection.

Key words: Clinical presentations. Hepatitis-B virus. Children.

Article Citation: Zulqarnain A, Iqbal I, Anjum N. Hepatitis–b virus infection; to describe the clinical presentation in children. Professional Med J 2014;21(5):950-955.

INTRODUCTION

Hepatitis-B virus (HBV), a member of the Hepadnavirus family, is a non- cytopathic, hepatotropic virus and damages the hepatocytes by immune mediated mechanism[1]. Its incubation period ranges from 45-160 day. HBV is highly infectious, it can infect people of any age[2].

Hepatitis B virus infection is a serious paediatric health problem globally and an important cause of morbidity and mortality in endemic areas[3]. About 2 billion peoples who are infected with HBV and 400 million among them are suffering from chronic HBV infection, approximately 75% of them are found in Asia[4].

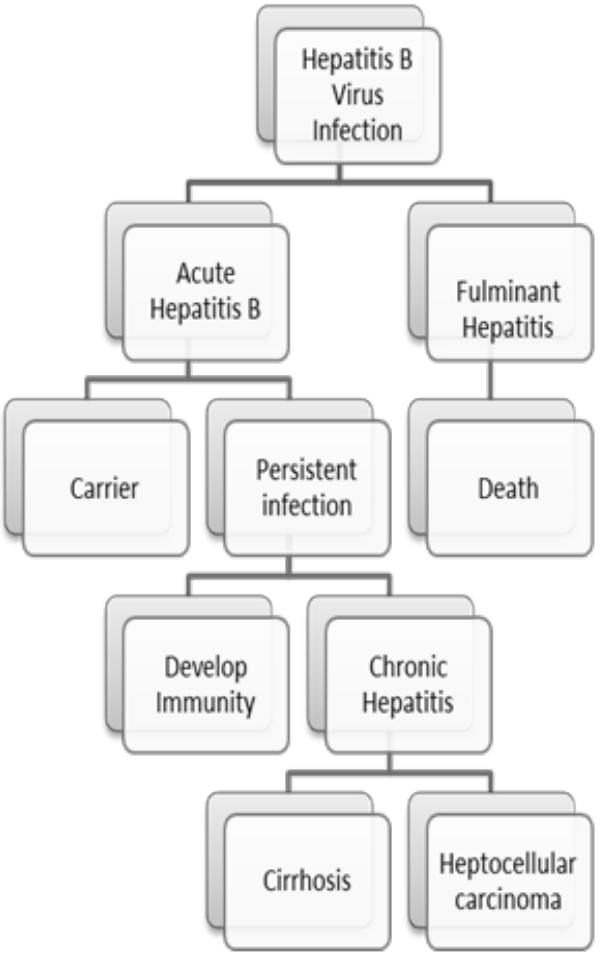
Worldwide, most infections occur from an infected mother to child during childbirth (Vertical transmission), from child to child contact in household settings, and from reuse of unsterilized needles and syringes (Horizontal transmission) thus most of the Hepatitis B pool develops in early childhood due to the combination of perinatal and horizontal transmission[5-6].

Hepatitis B virus infection has a wide spectrum of liver diseases, ranging from acute or fulminant hepatitis, chronic hepatitis, and cirrhosis to hepatocellular carcinoma[7-8].

Acute hepatitis B is defined by the abrupt manifestations of hepatic injury that occur within 6 months after exposure to HBV and that resolve within 6 months after onset[9].

Acute hepatitis is a self-limiting, so needs no treatment other than bed rest and careful monitoring of liver function, by measuring serum transaminases and prothrombin time[10].

There are >200 million HBV carriers worldwide. Chronic carrier prevalence reaching up to 10–



Flow chart of Natural Course of Hepatitis B Virus Infection.

15% in endemic regions.

The inactive HBsAg carrier state has been defined by the AASLD as: (1) HBsAg positive > 6 months; (2) HBeAg negative, anti-HBe positive; (3) serum HBV DNA < 105 copies/ml; (4) persistently normal ALT/AST; and (5) liver biopsy confirms absence of significant hepatitis[11].

Carriage risk is inversely proportional to age, with neonates being at highest risk of becoming carriers. About 90% of infected neonates and 25% of children infected under the age of 7 years will become carriers, compared to 5–10% who are infected above the age of 7 years[12].

Approximately 20–30% of inactive HBsAg carriers may undergo spontaneous reactivation of hepatitis B.Treatment is not recommended for inactive carriers. These carriers should be monitored and treatment instituted if they should progress to chronic hepatitis[13].

Chronic hepatitis B has been defined by the AASLD as: (1) HBsAg positive >6 months; (2) serum HBV DNA > 105 copies/ml; (3) persistent or intermittent elevation in ALT/AST; and (4) liver biopsy showing chronic hepatitis[14].

The clinical sequelae of chronic HBV infection includes acute hepatitis, chronic liver disease, cirrhosis and hepatocellular carcinoma. It is estimated that a significant proportion (15–40%) of chronic HBV infected persons will progress to a liver-related event such as cirrhosis or hepatocellular carcinoma[15]. Periodic screening with liver ultrasound scan and Alpha Fetoprotein in children with chronic HBV infection is recommended.
The latest Asian-Pacific Association for the Study of the Liver (APASL) consensus recommendations suggest that IFN-α, pegylated IFN-α-2a, lamivudine, and Adefovir can be used as first-line therapies for chronic hepatitis-B.

Hepatic encephalopathy is a complex, potentially reversible neuropsychiatric condition that occurs as a consequence of acute or chronic liver disease[16].

Hepatic encephalopathy may arise spontaneously but more commonly will develop as a result of some precipitating factor in the course of acute or chronic liver disease. The most important aspect of management is prompt recognition and treatment of precipitating factors.

Cirrhosis is defined as the histological development of regenerative nodules surrounded by fibrous bands in response to chronic liver injury. Cirrhosis appear to be an infrequent complication of HBV infection during childhood[17].

Cirrhosis have been often asymptomatic (Compensated cirrhosis) until complications of liver disease present. Diagnosis of asymptomatic cirrhosis is usually made when incidental screening

tests such as liver transaminases or radiological finding suggests liver disease and by liver biopsy. Clinical features of cirrhosis are jaundice, anorexia, fatigue, weight loss, splenomegaly, nodular liver, ascites, palmer erythema, flapping tremors and gynecomastia[18-19].

Complications of cirrhosis (Decompensated cirrhosis) are varices bleeding, ascites, encephalopathy, renal failure and spontaneous bacterial peritonitis.

METHODOLOGY

This study was conducted at paediatric unit-2 Nishtar Hospital Multan from 16th May 2012 to 15th November 2012.It was a descriptive case series study and fifty cases, age more than one month to less than 12 years which were HBsAg positive, prospectively recruited by Non-probability purposive sampling.

Children suffering from thalassemia, hemophilia and hemolytic anemia who need multiple transfusions were excluded from this study. Informed consent of the patient was taken before the enrollment .The parents were provided the information for the prevention of further spread of infection. Permission for the study was taken from the Hospital Ethical Committee. Based on history, examination and investigations, the clinical presentation to the patient was categorized. Basic demographic data, including name, age, sex, weight, address, socioeconomic status and the relevant clinical history, physical examination , lab investigations and clinical presentations category were entered in the proforma.

Clinical history of the onset and duration of fever, jaundice, abdominal pain and abdominal distension, blood in the vomitus or stool and deterioration of conscious level were included. Physical examination performed to look for the palmer erythema, clubbing, jaundice, bruises, hepatomegaly, splenomegaly, caput medusae, flapping tremors and conscious level. More emphasis was on clinical observation so relevant investigations including complete blood count, serum electrolytes, serum bilirubin, HBsAg, HBeAg, Anti HCV, prothrombin time, liver function tests, abdominal ultrasonography and alpha-fetoprotein were performed, where indicated.

The data was statistically analyzed by using SPSS-10.Descreptive statistics include means and standard deviations for numerical data, including age, weight, serum bilirubin, liver enzymes, prothrombintime, hemoglobin and serum electrolytes, proportions and frequencies for categorical data including, sex, positivity for Anti HCV and HBeAg and clinical presentations categories including asymptomatic carrier, acute hepatitis, hepatic encephalopathy, chronic hepatitis and cirrhosis. As this was a descriptive study so no statistical test was applied.

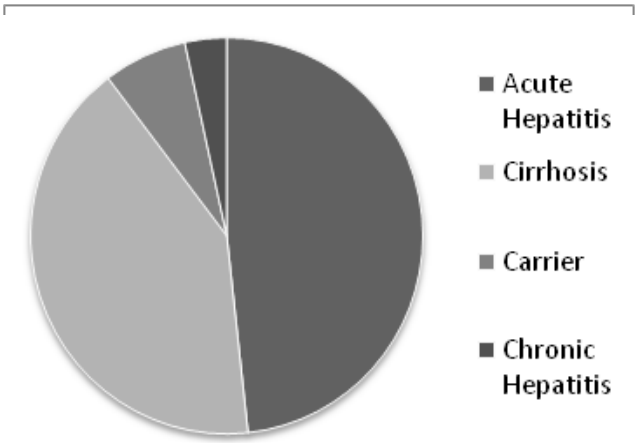
RESULTS

A total of fifty children who were HBsAg positive were enrolled in a six month period. Out of 50 patients, 21 (42%) were of hepatic encephalopathy, 14 (28%) were with acute hepatitis, 12 (24%) were cirrhosis, 2 (4%) were asymptomatic carrier and 1 (2%) was presented with chronic hepatitis B. There were 40 (80%) males and 10 (20%) females. The overall male to female ratio was 4:1.

The proportions of symptoms and signs of acute hepatitis B were, yellowness of eyeballs in 11 (78.57%), fever 8 (57.14%), vomiting 5 (35.71%) ,pain abdomen 5 (35.71%) , bleeding diathesis 4 (28.57%), lethargic/irritability (21.42%), regarding signs there were Jaundice in 11 (78.57%), Hepatomegaly 6 (42.86%) and bruises 3 (21.42%).

Symptoms of hepatic encephalopathy were yellowness of eye balls 16 (76.19%) ,unconsciousness 18 (85.71%) , irritability 3 (14.28%) , fits 5 (23.81%) , and the signs were jaundice 20 (95.24%) , low GCS in all patients (100%).

The proportions of symptomatic presentations of cirrhosis 8 (66.66%), yellowness 7 (58.33%), bleeding diathesis 4 (33.33%), and the signs were jaundice 10 (83.33%), as cites' 8 (66.66%), hepatomegaly7 (58.33%%), splenomegaly in all patients (100%).



Graph: Graphical Presentation of Percentage of different clinical presentations.

Clinical presentations	Male No. (%)	Female No. (%)	Total (%)
Asymptomatic carrier	1(2%)	1(2%)	2(4%)
Acute hepatitis	12(24%)	2(4%)	14(28%)
Hepatic encephalopathy	14(28%)	7(14%)	21(42%)
Chronic hepatitis	1(2%)	-Zero	1(2%)
Cirrhosis	12(24%)	-Zero	12(24%)

Table-I. Number and sex distribution of clinical presentations of HBV infection.

	Asymptomatic carrier	Acute hepatitis	Hepatic encephalopathy	Chronic hepatitis	Cirrhosis
Age (yr)	12 ±	8.5±2.72	8.2 ± 2.76	12	9.7±2.7
Wt.(Kg)	27±	23.2±5.3	20.71±5.08	27	22.5±4.77
Bilirubin (mg/dl)	1.65 ±	12±9.85	19.55± 10.44	1.6	4.9±3.1
SGPT (IU/dl)	84 ±	701.2±791.68	1864.7±1649.79	403	108.6±73.04
SGOT (IU/dl)	91.5 ±	463±537.93	1102.55±792.20	426	245.4±534.48
Prothrombintime (Sec)	13 ±	28.7±16.68	66.24±32.78	12	20.8±8.75

Table-II. Mean and standard deviation of Demographic and baseline Features of each clinical presentation.

DISCUSSION

Hepatitis B virus infection is a serious public health problem throughout the world and has very serious consequences. The pediatric age group is a very vulnerable group to acquire hepatitis B infection.

In Pakistan, viral hepatitis is endemic with periodic outbreak, however the prevalence varies from area to area and population to population due to variability in ethnicity and socioeconomic condition. The exact burden of disease in Pakistan is not clear but available data suggest a steady increase. Few population based surveys, to determine the prevalence of Hepatitis B, have been carried out in different parts of the country, showing Hepatitis B surface antigen carrier rate at 10-15%. A study showed that 31% cases of acute viral hepatitis, 60% cases of chronic liver disease and 59% of hepatocellular carcinoma are due to HBV infection.

Hepatitis B is one of the major diseases of mankind that can be prevented with vaccination. Universal vaccination at birth is recommended in conjunction with antenatal maternal screening for hepatitis B surface antigen. In Pakistan, HBV vaccine is included in Expended Program of Immunization in 2004.

My study showed that hepatic encephalopathy was the most common presentation. Almost all the patients presented with complaint of sudden onset of jaundice and loss of consciousness. On physical examination, there were positivity of jaundice and the GCS were low, had raised billirubin, SGPT and SGOT and prothrombin time as compared to other clinical presentations of hepatitis B virus infection in children. This study is in contrast to previous studies which showed that hepatitis B virus infection in not the predominant cause of Hepatic encephalopathy in children.

Acute hepatitis was the second most common

presentation. Acute hepatitis results in accordance of previous study done in Pakistan.

Cirrhotic patients were about 24% of total patients, and all were of the male gender. Previous study shows that cirrhosis were only 3 percent. On ultrasonography abdomen, hepatomegaly as well as shrunken the liver size and splenomegly were found in all the cirrhotic patients.

MY study showed that male children were more affected than females, and the chronic scale like chronic hepatitis and cirrhosis were more prevalent in the male population, which is accordance with the previous study.

The study on this health issue is important because HBV infection has very serious consequences but the important thing is that it can be prevented, also there is a paucity of data on this subject in Pakistani studies therefore focus on this important health issue was vital.

SUGGESTIONS

Following measures should be started to reduce the HBV infection burden in our society.

1) Because most HBV infections occur during infancy or early childhood, when HBV infection is more likely to become chronic, vaccination of infants beginning at birth is the key strategy for preventing chronic HBV infection 92.
2) All pregnant women should be screened for HBV and immunized with Hepatitis B vaccine, to prevent vertical and horizontal transmission. All infants born to HBsAg-positive mothers, regardless of birth weight, should receive a single dose of single-antigen HBV vaccine and HBIG (0.5 ml) within 12 hours of birth and complete the vaccine series. It breaks the perinatal transmission from infected mother to infant with approximately 95% efficacy. This treatment allows a mother to safely breastfeed her child. So it is necessary to improve birth notification and strengthen immunization services 93.
3) For persons who have been exposed to HBV within the prior two week period, post-exposure prophylaxis should be given to prevent symptomatic infection. Post-exposure prophylaxis consists of two therapies: the HBV vaccine and hepatitis B immunoglobulin (HBIG) 94.
4) Care must be taken to ensure all family members are immunized against HBV. It is also recommended that the child be immunized against hepatitis A.
5) Educate patients and their families about the need for screening and vaccination to eliminate hepatitis B.
6) Too many people suffering from a preventable and costly disease. Hepatitis B should be our national health priority with the slogan of" THE NATION'S FIGHT AGAINST HEPATITIS"

CONCLUSIONS

Most common presentation is hepatic encephalopathy, which has very bad prognosis next comes the acute hepatitis and then cirrhosis. There is another inference that males are more and severely affected by hepatitis B virus infection. The knowledge gained is helpful for making a rapid clinical diagnosis, providing early management and planning preventive measures, according to our limited resources and facilities.

REFERENCES

1. Pickering LK, Snyder JD .Viral hepatitis. In: Behrman RE, Kliegman RM, Jenson HB, eds. **Nelson textbook of pediatrics.**19th ed. Philadelphia: W.B.Saunders Co; 2012: 1327-8.

2. Shah SMA, Khan MT, ZahourUllah, Ashfaq NY. **Prevalence of Hepatitis B & Hepatitis C virus infection in multitransfused thallasemia major patients in North West Frontier Province.** Pak J Med Sci 2005; 21(3): 281-4.

3. Memon IA, Lal MN, Shahid A. Lodhi T. **Prevalence of hepatitis B in Pakistani children.** MedChan2002; 8(3): 22-3.

4. Farooq MA, Iqbal MA, Tariq WUZ, Hussain AB, Ghani I. **Prevalence of Hepatitis B and C in a healthy cohort.** PakJ Pathol 2005; 16(2): 42-46.

5. Chen CJ, Iloeje UH, Yang HI. **Long-term outcomes in hepatitis B: The REVEAL-HBV Study.** Clin Liver Dis, 2007, 11(4):797–816.

6. Dienstag JL. **Hepatitis B virus infection.** NEngl J Med.

2008; 359 (14) 1486-1500.

7. Chang MH. **Hepatitis B virus infection.** Semin Fetal Neonatal Med. 2007; 12 (3) 160-167.
8. Park BK, Park YN, Ahn SH, Lee KS, Chon CY, Moon YM , Park C, Han KH. **Long-term out come of chronic hepatitis B based on Histological grade and stage.** J GastroenterolHepatol, 2007, 22(3):383–388.
9. Kao JH. **Diagnosis of hepatitis B virus infection through serologicaland Virological markers.** Expert Rev GastroenteroHepatol. 2008; 2 (4) 553-562.
10. Rotman Y, Brown TA, Hoofnagle JH. **Evaluation of the patient with hepatitis B.** Hepatology.2009 ; 49 (5 Suppl) S22-S27.
11. McMahon BJ. **Epidemiology and natural history of hepatitis B.** Semin Liver Dis 2005; 25(Suppl1):3-8.
12. Squires RH, Shneider BL, Bucuvalas J, Alonso E,SokolR, Narkewicz MR, et al. **Acute liver failure in children: the first 348 patients in the Pediatric acute liver failure study group.** J Pediatr 2006; 148:652-658.
13. Sargent S, Fullwood D. **The management of hepatic encephalopathy and cerebral oedemain acute liver failure.** Br J Neuroscience Nurs 2006; 2: 448-53.
14. Lok AS, McMahon BJ. **AASLD practice guidelines. Chronic hepatitis B: update 2009.** Hepatology, 2009, 50:1–36.
15. Elgouhari HM, bu-Rajab Tamimi TI, Carey W. **Hepatitis B: a strategy for evaluation and management.** CleveClinJ.Med. 2009; 76 (1) 19-35.
16. Liaw YF, Leung N, Guan R, Lau GK, Merican I, McCaughan G, et al. **Asian-Pacific consensus statement on the management of chronic hepatitis B: a 2005 up date.** Liver Int 2005; 25:472-489.
17. Alam I, Razaullah, Haider I, Humayun M, Taqweem A, Nisar M. **Spectrum of Precipitating factors of Hepatic Encephalopathy in liver cirrhosis.** Pak J Med Res 2005; 44: 96-100.
18. Wiseman E, Fraser MA, Holden S, et al. **Perinatal transmission of hepatitis B virus: an Australian experience.** MJA 2009; 190(9):489-492.
19. Ali AS, Donahne RM, Qureshi H, Vermund SH. **Hepatitis B & Hepatitis C in Pakistan: Prevelence& Risk factors.** IntJ Infect Dis.2009 Jan;13(1):9-19.

CORRECTION

The amendment of the Professional Vol: 21, No.02 (Prof-2367) on page 316 is as under;

INCORRECT

Dr. Humayun Suqrat Hasan Imam[3]
Associate Professor of
Community Medicine
Punjab Medical College, Faisalabad

CORRECT

Dr. Humayun Suqrat Hassan Imam[3]
Assistant Professor
Department of Community Medicine
Punjab Medical College, Faisalabad