

Changing trend of viral hepatitis — “A twenty one year report from Pakistan Medical Research Council Research Centre, Jinnah Postgraduate Medical Centre, Karachi”

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Abstract

Objective: To determine the frequency and pattern of Hepatitis B and C over the past twenty one years, in a liver research unit of Karachi.

Methods: Retrospective analysis of the records of PMRC, Research Centre, Jinnah Postgraduate Medical Centre, Karachi, from 1987 to 2007 were reviewed. A special flow sheet was made where information of all patients with viral liver disease was entered. Patients having complete information of viral markers were included in the analysis. Cases with HBsAg, Anti HBc IgM positive and raised ALT were considered as acute Hepatitis B. HBsAg/ Anti HBc IgG positive were considered as chronic Hepatitis B. Delta antibody positive with or without HBsAg were considered as Delta Hepatitis. Anti HCV positive and raised ALT more than ten times for less than 6 months were considered as acute Hepatitis C, whereas Anti HCV and HCV-RNA positive with or without raised ALT for more than six months were considered as chronic Hepatitis C. Anti HEV IgM and Anti HAV IgM positive were considered as acute Hepatitis E and A respectively.

Results: A total of 5193 cases fulfilling all criteria of viral hepatitis were seen in the past 21 years. Of the total 3247 (62.5 %) were males and 1946 (37.5 %) females giving a male to female ratio of 1.7:1 Hepatitis C was the most common infection seen in 2896 cases (55.8 %), followed by Hepatitis B in 1691 cases (32.6 %). Seventy five percent cases of Hepatitis B were males and 25 % females while 55% Hepatitis C cases were males and 45 % females. Hepatitis B was seen a decade earlier in different age groups than hepatitis C. Overall, out of the total 5193 cases, 2294 (44.2%) were of chronic hepatitis, 1430 (27.5%) cirrhosis, 1083 (20.8%) carriers and 346 (6.7%) had acute hepatitis (hepatitis B; 214 (61.8%), hepatitis C; 21 (6.0%). While hepatitis B and hepatitis C both were present in 3 (1.3%). Hepatitis E was 70 (20.2%) hepatitis A 12 (3.5%) and all markers were negative in 26 (7.5%) cases). Forty cases (0.8%) were of Hepatocellular carcinoma. Year wise analysis of proportion of hepatitis B and C showed gradual decline of Hepatitis B and rise of Hepatitis C with a transition period between 1995 and 1996.

Conclusions: Hepatitis C is the most common viral hepatitis, followed by hepatitis B both are more common in males. Hepatitis B is seen a decade earlier than hepatitis C. Rising trend of hepatitis C and declining evidence of hepatitis B could be due to increased awareness and detection of hepatitis C and effective vaccination for hepatitis B in the country (JPMA 60:86; 2010).

Introduction

There are 5 distinct viruses which can cause viral hepatitis in humans. The regional incidence of these viruses varies in each country and statistics show a lower incidence in industrialized and developed countries and higher in less-developed regions.¹

Two of the viruses, hepatitis A virus (HAV) and hepatitis E virus (HEV) are water born and spread principally by faeco-oral means, on the other hand hepatitis B virus (HBV), hepatitis C virus (HCV), and hepatitis D virus (HDV) are blood borne and spread principally by exposure to blood and its products, although hepatitis B virus is frequently spread by reuse of syringes, improper sterilization of surgical and medical consumables, needle

stick injuries, prenatal exposure and unprotected sex.²

According to National Health and Nutrition Examination Survey (NHANES) data, prevalence of hepatitis B virus did not change significantly between 1976 and 1994 and reasons for these stagnant figures could be that the routine immunization for infants began in 1992 and for adolescents in 1995, therefore the study period may have been too short to detect the benefits of hepatitis B virus vaccination on disease prevalence.³

In Taiwan, the prevalence of hepatitis B virus infection (HBsAg-positivity) in children less than 9 years of age declined from 10% in 1984 (prior to the vaccination programme) to <1% in 1994 (10 years after the implementation of the programme). More importantly, the

annual incidence of hepatocellular carcinoma in children decreased from 0.52 per 100,000 in 1974-1984 to 0.13 per 100,000 in 1984-1986.⁴

At the end of second millennium, chronic hepatitis C virus infection (HCV) was recognized as a major public health problem. The global prevalence of chronic hepatitis C virus infection is around 3% with extremely low hepatitis C virus prevalence (0.1%) reported among blood donors in U.K and Scandinavian countries and highest prevalence (28%) reported from Egypt.⁵

Hepatitis B and C are the major causes of chronic liver diseases in Pakistan. Using meta analysis of the previous 10 years data, it has been found that the prevalence of hepatitis B virus in Pakistan is around 3-4%⁶ and hepatitis C virus is around 5-7%.⁷

Some parts of the country show higher frequency for hepatitis B and hepatitis C virus. Both viruses spread through blood, its products and body secretions. For the prevention of hepatitis B virus a potent vaccine is available which has over 95% protection rates. It was introduced in Pakistan in early 80s and incorporated in Expanded Programme of Immunization (EPI) in 2000. Many children and adults have been vaccinated through awareness, campaigns and medical camps throughout the country. It is time that we should see the drop in hepatitis B virus especially chronic liver disease. Unfortunately, no vaccine is available for hepatitis C virus. In Pakistan the frequency of hepatitis C virus appears to be increasing and the possible sources include frequent use of therapeutic injections for minor ailments, improper sterilization of invasive medical devices and unscreened blood transfusions.⁸

Present review was done to determine the frequency and pattern of hepatitis B and C over the past twenty one years.

Patients and Methods

Records of patients visiting the out-patients department of Pakistan Medical Research Council (PMRC) Research Centre, Jinnah Postgraduate Medical Centre, Karachi, for the diagnosis or treatment for liver disease was analyzed over the last 21 years (1987 to 2007). The analysis included demographic parameters like age, gender, liver function tests and viral markers.

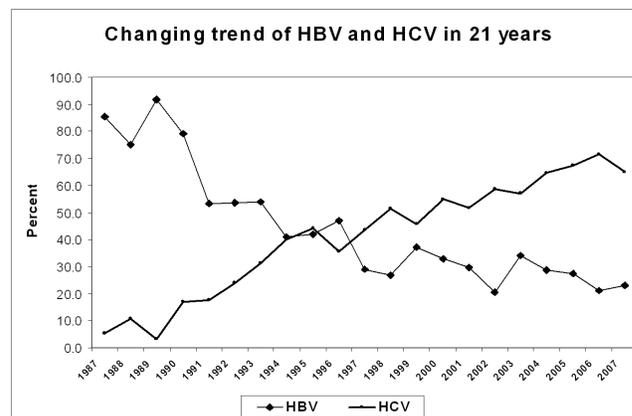
The data was put on an excel flow sheet where information of all patients with liver disease was entered. Only patients having complete information of viral markers were finally included in the analysis. Cases with HBsAg and anti HBc IgM positive and raised ALT were considered acute Hepatitis B. HBsAg / Anti HBc IgG positive were considered chronic Hepatitis B. Delta antibody positive with HBsAg were considered Delta Hepatitis. Anti HCV positive and raised ALT more than ten times for less than 6

months were considered as acute Hepatitis C. Those cases of hepatitis C who were HCV-RNA positive with or without raised ALT for more than six months were considered chronic Hepatitis C. Anti HEV IgM and anti HAV IgM positive were considered as acute Hepatitis E and A respectively.

Results

A total of 5193 patients with hepatitis were seen, out of these 3247 (62.5 %) were males and 1946 (37.5 %) females. Patients with chronic hepatitis were 2294 (44.1%), 1430 (27.5%) cirrhosis, 1083 (20.8%) carriers and 346 (6.7%) cases had acute hepatitis [(hepatitis B; 214 (61.8%) cases, hepatitis C; 21 (6.0%), both hepatitis B and hepatitis C virus; 3 (1.3%), hepatitis E; 70 (20.2%), hepatitis A; 12 (3.5%) and all markers negative 26 (7.5%) cases]. Forty cases (0.8%) were of hepatocellular carcinoma. Further break up of the cases is given in the Table.

Hepatitis B was prevalent predominantly in the age group of 20 - 39 years in both genders. Hepatitis C was seen with a maximum frequency in the age group of 30 - 49



HBV: Hepatitis B Virus Infection; HCV: Hepatitis C Virus Infection.

Figure: Changing trend of HBV and HCV over the past twenty years at Pakistan National Research Council Liver Research Unit of Jinnah Postgraduate Medical Centre, Karachi.

years. Hepatitis B and C both were more prevalent amongst males. Seventy five percent of Hepatitis B cases were male and 25 % female. Fifty five percent of Hepatitis C patients were male and 45 % female. Associated Delta virus was present in 185 (10.9 %) of HBV infected patients. One hundred thirty five had co infection and 50 patients had super infection. Amongst the total cases 294 were having all markers negative, out of these 183 had cirrhosis, 81 chronic hepatitis, 26 (7.5%) acute hepatitis and 4 hepatocellular carcinoma.

Year wise analysis of the case of hepatitis B and C shows that, hepatitis B was more prevalent till 1995 and

Table: Frequency of viral hepatitis over the past twenty years at Pakistan National Research Council liver research unit of Jinnah Postgraduate National Centre, Karachi.

Status of infection	Viral Hepatitis						Total (N)	%
	HBV (N)	HCV (N)	HBV and HCV (N)	HEV (N)	HAV (N)	Others (N)		
Acute	214	21	3	70	12	26	346	6.7
Chronic hepatitis	541	1548	124	-	-	81	2294	44.2
Carrier	523	520	40	-	-	-	1083	20.8
Cirrhosis	397	788	62	-	-	183	1430	27.5
HCC	16	19	1	-	-	4	40	0.8
Total	1691	2896	230	70	12	294	5193	100.0

HBV: Hepatitis B Virus; HCV: Hepatitis C Virus; HAV: Hepatitis A Virus; HCC: Hepatocellular Carcinoma; HEV: Hepatitis E Virus.

1996; thereafter a proportionate decline of hepatitis B and gradual rise of hepatitis C was observed as evident by Figure.

Discussion

The frequency of hepatitis C in the present study is 55.8 % which is much higher than the 40.8% reported earlier.[9] This high frequency of hepatitis C could be the reflection of high incidence in the community and increased detection from the existing pool of cases, with increased awareness. Various studies in different populations in Pakistan report a disease prevalence between 4.6 to 23.8 %.¹⁰

The prevalence of HCV in chronic liver disease cases in some previous studies was 16.6 %¹¹ while recent studies show a much higher figure of 60-70 %.¹²

In the present study the frequency of hepatitis B was 32.6 %. The disease showed a progressive peak till 1990 and then a gradual decline. Small peaks were seen in the last ten years. The decrease in frequency may be related to the implementation of the vaccination programme for hepatitis B while small peaks might be due to increasing trend towards screening and awareness of hepatitis B virus which is already existing in the community. There is a sharp decline in hepatitis B after 1995 while HCV showed a rising trend as reported earlier.¹³

The epidemiology of hepatitis A virus is highly influenced by personal and public hygiene. The disease has almost vanished in developed and industrialized countries of northern and western Europe and North America.¹⁴ Although hepatitis A is pandemic in Pakistan¹⁵ with mini epidemics occurring during the summer and rainy season. However, a low frequency of hepatitis A in this cohort of patients was due to the sample size being mainly of adult population.

Since universal vaccination against hepatitis B in USA and other developed countries the seroprevalence of delta infection has drastically gone down.¹⁶ Seroprevalence of delta virus is low in blood donors (1.4% to 8%), mental institutions with low percutaneous or mucosal exposure, and is highest in those with repeated percutaneous exposures such as injection drug users (20-53%) and haemophiliacs (48-80%).^{17,18}

Among patients with chronic hepatitis B virus infection referred to gastroenterologists, the hepatitis D virus seroprevalence rates vary from 13% to 41% with an average of 27%^{19,20} which is quite high when compared to the prevalence in the present study of 10.9%.

Hepatitis E has a universal distribution as seen by a positive anti-HEV in every country where it has been checked. For example 1-5% of healthy blood donors in United States were found positive for anti-HEV,²¹ a prevalence of antibody 10 times higher than that for anti-HCV.²²

Low prevalence of hepatitis E virus in this study is due to the recognition of this centre as a chronic liver disease centre, hence, mostly patients with hepatitis B virus and hepatitis C virus present.

Very interesting aspect highlighted in this study is the changing pattern of viral hepatitis over the two decades. Hepatitis B was the commonest virus for chronic liver disease before 1995-1996, but after the identification of HCV virus now this is becoming the predominant etiological agent for chronic liver disease in our patients and same is reported by other workers.²³

Conclusion

Hepatitis C is the most common viral hepatitis, followed by hepatitis B both are more common in males. Hepatitis B is seen a decade earlier than hepatitis C. Rising trend of hepatitis C and declining evidence of hepatitis B could be due to increased awareness and detection of hepatitis C and effective vaccination for hepatitis B in the country. However, the drawback in this study is that it is a hospital based data of only one centre, and hence a referral bias cannot be excluded. We suggest larger population based studies to confirm our findings.

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