PREVALENCE OF HEPATITIS E VIRUS (HEV) ANTIBODY IN PREGNANT WOMEN OF KARACHI

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Background: This study was aimed at determining the prevalence of HEV in Karachi. Methods: Prevalence of hepatitis | antibody in pregnant women was carried out in 65 pregnant women. They had history of acute viral hepatitis while 15 control pregnant women were included having no history of jaundice. ***Results:*** The statistical outcome of the present study indicates prevalence of HEV as 57% in pregnant women with jaundice. Majority of the patients (85%) were from lower socio-economic strata., with mean age of 25 years. All these patients had hemoglobin less than 10gm%. The mean ALT level in HEV positive cases was 452 IU/L over a range of 102-5328. It was also observed that HEV affected more women in the last trimester (62%) and in primigravida (67%). It was observed that it was more common in last trimester and in primigravida. Majority of the patients (85%) were from lower socio-economic strata. ***Conclusions:*** The findings of the present study proved the presence of HEV in pregnant women and confirmed that HEV is endemic in Karachi. The study confirms that it occurs in last trimester and in young adult.

INTRODUCTION

Viral hepatitis is a systemic disease. It primarily involves the liver[1]. In 1947, Zondeck and Bromberg studied the incidence of Hepatitis in pregnant women. Their studies established the nexus between infectious Hepatitis and pregnancy. The data of their studies evinced the fact that the Hepatitis was more severe in pregnant women than in non-pregnant women. The mortality rate was also higher (17.2%) in pregnant ladies suffering from Hepatitis[31].

In 1978 during an epidemic of Hepatitis attack in Kashmir Valley, the studies were carried out that showed that the rate of Non-A, Non-B Hepatitis (now called as Hepatitis E) was reported to be 17.3% and the mortality in pregnant women with Hepatitis was 22%

Formerly, only two broad categories of Hepatitis were recognized. They ‘"re referred to Infectious Hepatitis and Serum f (cpai.it is. There were, however, many cases of which were parentally and enterically transmitted but could not be placed into either of these groups. This third category was reckoned as Non-A, Non-B (NA, NB) Hepatitis[1].

Nonetheless, the latest studies have identified the causative agent of entrically transmitted NA. NB Hepatitis and gave it the name as Hepatitis E virus [1,2].

This virus is a non-enveloped icosahedral single stranded RNA with positive polarity. The particle morphology and genome are consistent with those of caliciviridae[3]. Clinician’s studies indicated that HEV is the principle etiological agent of water borne Hepatitis in Third World countries where Social-economical condition are very poor[4]. All sorts of viral Hepatitis are endemic in Pakistan. However, in adult population a different pattern of viral etiology is seen. In case of acute viral Hepatitis, 70% of the cases are due to HEV and 30% are due to HBV infection[1039,30]. The distribution of incidence, thus shows that it is primarily the disease of developing countries. The prevalence of HEV infection in Pakistan is 62%, India 37%, Nepal 37%, Bangladesh 27%, Haiti 3%, United States 2% et al[27].

Viral Hepatitis in pregnancy has been a subject of continuous interest and controversy. Reports from Europe and United States have shown that the course of viral hepatitis during pregnancy is, in no way different from that in non-pregnant women[5]. The incidence of viral Hepatitis in pregnant women varies widely in different parts of the world[30]. Hepatitis E virus (HEV) has increased incidence in pregnant women and during epidemics it occurred nine time more often in pregnant women than in men and non-pregnant women[23]. There is no difference in attack rate of HEV between the two sexes. However, the attack rates among women do appear to be significantly higher in pregnant women particularly in their second or third trimester. It exhibits fatality rate averaging 20% and incidence of fulminant Hepatitis failure amongst the pregnant women to be as high as 32%. Acute hepatitis failure occurs with fulminant hepatitis in pregnant women[11,3].

Recent studies show that the mortality rate is usually low but the illness may be particularly seen among pregnant women with mortality rate reading as high as 25%[38]. The HEV infection, thus, appears to have a predilection for pregnant women causing high maternal and neonatal morbidity and mortality as compared to non-pregnant women of same age group It has been observed that the pregnant women

generally, have poor prognosis and have significantly lower serum immunoglobin as compared to no pregnant woman. It is, therefore, suggested that immunosuppression during pregnancy might be a contributing factor for incidence of Hepatitis and apparent reason for poor prognosis [M]. It has also been reported that malnutrition influences the severity of the seqeuele of viral Hepatitis[l3].

There are areas of the world such as the Indian Sub-continent, the Middle East and Africa where both, the frequency and severity of Hepatitis are greater in pregnant women than in non-pregnant women or males[6].

The first documented large HEV out-break was recorded in Dehli, India in 1955 through 1956. In 1976 Ahmedabad (1975 - 76) similar out-break was also recorded clinically. The main characteristics of these out breaks were their association with consumption of contaminated water[8]. A high attack rate in young adults and high fatality rate in pregnant women were also observed in several other reported out-breaks[9,26].

In general Hepatitis E is a mild, self-limiting disease with no known tendency for chronicity.

The seum studies show that IgM. IgA and IgG appear early with the onset of jaundice. While comparing the three classes of antibodies, anti HEV IgA and IgM are detected earlier and disappear during the convalescent period. Anti HEV IgG is also detected in high level in the specimens of patients in, acute phase[16,22, 28].

HEV Enzyme immuno assay (EIA) studies provide a practical method for diagnosis of acute HEV infection. Soild phase enzyme assay has been developed to detect anti-HEV immunoglobin IgG by using synthesized polypeptide or recombinant protein from OrF_2 and OrF_3 This test has sensitivity of 94% and specifically of 95% [17,18] This study was undertaken in order to detect the prevalence of Hepatitis E in women of different trimester of pregnancy and its nexus with socioeconomically status and Haemoglobin percentage.

MATERIALS AND METHODS

This study was designed to find out the prevalence of anti-HEV antibodies in pregnant women. In this study, 65 patients were pregnant ladies who had the history of jaundice for more than 6-10 weeks' duration. The cases were collected from the Department of Obstetrics and Gynaecology, Medical Wards and Intensive Care Units of Jinnah Postgraduate Medical Centre, Civil Hospital and Liyari General Hospital, Karachi.

As control subjects, 15 normal healthy pregnant women of same age group and same socio-economic status with no history of jaundice or liver disease were also included in this study.

Every patient was investigated for AIT level (Spinreact kit method). Bilirubin level (Spinreact kid method). Abbott's HEV EIA kit was used for detection of anti-HIV in the department of Microbiology, BMSI, Jinnah Postgraduate Medical Center Karachi.

RESULTS

Results of the present study which included 65 patients having jaundice with pregnancy and 15 normal control pregnant women with no jaundice are summarized in the following table.

Table l shows the number of patients studied, mean age, and socio-economic status of pregnant patient with Hepatitis and women of control groups.

ATTACK AND PREVALENCE RATE OF HEV IN DIFFERENT TRIMESTERS

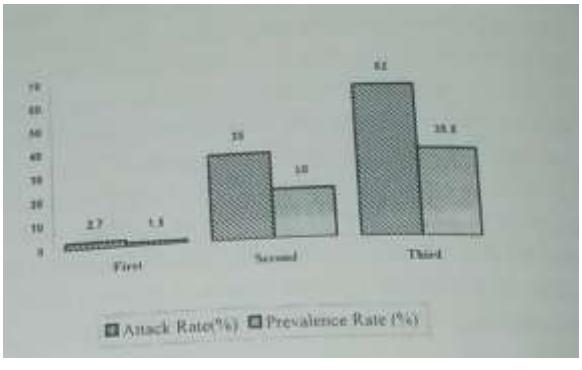

Table 2 & Figure 1 shows the results of anti- HEV in patients and control subjects. Amongst these 65 patients, 37 (57%) were found initially reactive for IgG anti-HEV and 28 (43%) were non-reactive. All positive cases were found reactive to IgG anti-HEV.

Table 3, shows the ALT and Bilirubin levels among HEV reactive and non-reactive patients with jaundice. In 37 anti-HEV reactive cases, mean ALT level was 453 I U/l and mean serum Bilirubin was level 5.7 mg/dl.

Table 4, shows Haemoglobin level in HEV reactive patients. Out of 37 HEV reactive cases, 15 (14%) patients had Haemoglobin level of 3-5 gm% and 32 patients (86%) had 6-10 gm% of Haemoglobin.

Table -5 & Figure 2, shows attack rate of HEV reactive cases in different was HEV reactive. The attack rate in these patients was 2.7%. In second trimester.

13 patients were HEV reactive. Patients had attack rate of 35% (62%) in third trimester and (Table 5) it was more common in primigravida, 25 cases (67.5%).

Table 6 & Figure 3 shows the attack and prevalence rate in relation to parity HEV reactive patients. It was more common in primigravida.

Table 7 shows the clinical features of HEV reactive and non-reactive patient.

Table-1: Age and socio-economic status of patients with Hepatitis and controls subjects

	PATIENTS (65)	CONTROL (15)
Age (years) Mean	25	25
Range	18-40	18-40
Socioeconomically status Poor	55 (85%)	10(67%)
Average	10 (15%)	5 (33%)
Good	Nil	Nil

Table-2: HEV reactivity in patients with hepatitis and controls

SUBJECTS	ANTI-HEV REACTIVE	ANTI-HEV NON-REACTIVE
Patients (65)	37 (57%)	28 (43%)
Controls (15)	Nil	15 (100%)

Table-3: ALT levels and bilirubin levels in HEV reactive and non-reactive group of patients

Category	ALT level IU/L	Bilirubin level (mg/dl)
HEV reactive (37)	Mean:452.43 Range: 102-5328	Mean:5.7 Range: 2-19
HEV non-reactive (28)	Mean:266.35 Range: 102-286	Mean:4.8 Range:2-10

Table-4: Haemoglobin values in patients and in control subjects

Haemoglobin (gm%)	Patients (65)	Control (15)
3-5	7(11%)	2(13%)
6-10	55(85%)	13 (87%)
> 10	3(4%)	

Table-5: Attack and prevalence rates of HEV in different Trimesters of pregnancy

Trimester	HEV reactive (37)	Attach rate	Prevalence rate
FIRST (2)	1	2.7%	1.5%
SECOND (20)	13	35%	*20%*
THIRD (43)	23	62%	35.5%

Figures in parenthesis indicate total number

Table-6: Attack and prevalence rates of HEV in different gravida

Gravida	No. of cases	Reactive to anti-HEV (37)	Attack rate	Prevalence rate (28)
Primi	36	25	67.5%	38.5%
Second	19	7	18.9%	10.8%
Multi	10	5	13.5%	7.7%

Table-7: Clinical features of HEV reactive and non-reactive patients

Clinical feature	Reactive	Non-reactive
Jaundice (65)	37(100%)	28 (100%)
Fever(51)	36 (70%)	15 (53.6%)
Anorexia(65)	37(100%)	28(100%)
Vomiting (50)	37(100%)	13 (46%)
Enlargement of liver (55)	35 (94.5%)	18 (64%)
Enlargement/t of spleen	3 (100%)	0

DISCUSSION

Liver disease in pregnancy is not uncommon (AVH) being the most frequent. The course of acute hepatitis is unaffected by pregnancy accept in patient with hepatitis E virus28.

Acute viral hepatitis is a most common cause of jaundice in pregnancy. The course of other viruses A, B,C,D do not seem influence the course of pregnancy or to be associate with foetal risk in contrast to women who have Hepatitis E infection during pregnancy have a relatively high risk during pregnancy and develop fulminant hepatitis30.

Pregnant women generally have poor prognosis and have significantly lower immunoglobulin as compared to non-pregnant women. It is suggested that immuno-suppression during pregnancy might be responsible factor for increased susceptibility to acute hepatitis and poor prognosis14.

It has been reported that malnutrition influences the severity of the sequelae of viral hepatitis13. Our study has also proved this fact, because this is the disease of developing country where social-economical condition is very poor.

In 1973 Berhanmanesh et al. undertook another study. They studied 61 pregnant women with jaundice. All were primarily from low socioeconomic group. Mortality rate was recorded as 34.3%. The disease occurred mainly in the last trimester of pregnancy l5.

An epidemic of Non-A, Non-B hepatitis broke out due to gross contamination of water in 1981, the incidence rate of 17.3% and mortality rate of 75% amongst pregnant women. The incidence of viral hepatitis in first, second and third trimester was 8.8%, 19.4% and 18.6% respectively 5.

A study is carried out in Ethiopia the prevalence of HEV in pregnant women was 59%. Maternal death occurred in women in their last trimester 13. The results of the present study also revealed more or less similar data for predilection of HEV in pregnant women. In the subject study, majority of patient were primigravida. The mean age of affected cases was 25 years. Most affected individuals were adults and the pregnant women had

A worse outcome. Ivan et al., studies infectious hepatitis and pregnancy in the department of Medicine, Locmanya, Bombay, India, 1968. Out of 225 subjects (63%) were pregnant women, out of which three fourth patients progressed to coma [9]. 1 he prevalence of HEV in the present study was 57% and mortality rate was 16.2%. These results correlate with the above findings, probably due to the fact that Pakistan has almost the same socio-economic conditions and the hygienic, sanitary and climatic conditions are also comparable. In 1993 Tsega et al. carried out a study in the Department of Internal Medicine. Addis Ababa. Ethiopia on the prevalence of HEV in pregnant women. They reported 59% of pregnant women being HEV positive. Maternal death occurred in women in their third trimester, four had premature labour and foetal loss [13].

This study also yielded more or less similar results, probably again due to the fact that background of Ethiopia and our century is similar in many aspects. The result of the present study also revealed more or less similar data for predilection of HEV in pregnant women. In the subject study majority of patients were primigravida The mean age of affected cases was 25 years. A study was carried out in Rawalpindi and Islamabad in 1992. Out of 120 patients 52 were HEV positive and 10 out then were pregnant women[21]. We confirmed that HEV is endemic in Pakistan, especially in pregnant women of low socio-economical strata.

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