



Detection of anti HCV antibody in pregnant women in Maternity ,Children and Teaching Hospital (MCTH)

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Abstract

To determine the prevalence of antibodies against Hepatitis C Virus (HCV), in pregnant women in the Governorate of Najaf. This study was conducted on a random sample of 238 pregnant women who visited Maternity and Children Hospital, as well as outpatient, and tests were carried out using ELISA technique. The study detected the presence of eleven positive cases of the total and up (4.62%), the study found also that pregnant women of the residents of the rural more vulnerable to infection compared to urban residents with rates of (5.38% and 3.70%), respectively. As for age groups the study revealed that the highest rate among pregnant women with age between (31-35 years) and by ratio of (5.55%).

Introduction

Hepatitis C virus (HCV), a positive single strand RNA virus which is related to flavivirus family. (Afdhal, 2004). Hepatitis C virus (HCV) is one of the major aetiological agents of parenterally acquired hepatitis. (Luksamijarulkul, *et al.*, 2004).

Hepatitis C virus infections among Peoples blood donors : antibody prevalence, risk factors and development of risk screening form. HCV infection is asymptomatic in a large proportion of cases (65-75%) and revealed only accidentally by abnormal liver function tests and /or anti-HCV positivity. (Mudawi, 2007).

HCV has been found in every country where it has been sought for. The disease is transmitted by exposure to blood and body fluids, probably via contaminated needles and syringes, which can also be important. Sexual transmission probably occurs, but much less readily than with hepatitis B (Bannister *et al.*, 2000). Prenatal transmission of HCV infection occurs between 0 and 15% of cases (Van der poel *et al.*, 1998). There remains a debate as to the role of this route of HCV spread (Koff, 1992).



Viral hepatitis during pregnancy is associated with high risk of maternal complications, has a high rate of vertical transmission causing fetal and neonatal hepatitis and it has been reported as a leading cause of maternal mortality (Simpore, 2005). Vertical transmission from mother to child has been reported in a number of studies (Weintrub *et al.*, 1991; Wejstalet *et al.*, 1992; Paccagnini *et al.*, 1995 and Aizaki *et al.*, 1996). Little is known about hepatitis C virus infection in pregnant women in Asia.

The seroprevalence of anti-HCV antibody in the healthy general population of Saudi Arabia, was found to be 1.5 per cent each in 234 voluntary blood donors and 65 pregnant women (Osoba, 2002). HCV infection was detected in 250 randomly selected antenatal women in Shimla (Himachal Pradesh) (Ganju, and Goel, 2001). In a preliminary

study, 14 of 1900 (0.73%) pregnant females were tested anti-HCV seropositive (Kumar, 2005).

More than 170 million people worldwide are chronically infected by the hepatitis C virus (HCV). According to the WHO report of 2002, chronic liver diseases were responsible for 1.4 million deaths, including 796 000 due to cirrhosis and 616 000 due to primary liver cancer. At least 20% of these deaths are probably attributable to HCV infection—more than 280 000 deaths. (Serag, 2002).

The basic epidemiological data for these viruses might be of great importance to the programme managers and health planners, so as to initiate the relevant vaccine and screening packages in the antenatal care clinics. While, much data exist about the epidemiology of viral hepatitis during pregnancy (Wurie, *et al.*, 2005 and Laurent *et al.*, 2001). The prevalence of hepatitis C virus infection (positive anti-HCV) among women of childbearing age in the United States is approximately 1% corresponding to an estimated 40,000 births to hepatitis C virus infected pregnant women each year (Alter, *et al.*, 1998). Over two thirds may be expected to have chronic infection with detectable HCV RNA. Among HIV-infected pregnant women, the seroprevalence of HCV has been reported to range from 17.1% to 54% (Thomas, *et al.*, 1998).



Pregnancy does not affect the clinical course of acute or chronic hepatitis C, although several studies have shown improvement in biochemical markers of liver damage in HCV-positive women during pregnancy (Conte,*et al.*, and Gervais,*et al.*,2000). This may be explained by hemodilution in pregnancy, because transaminase levels returned to prepregnancy levels shortly after delivery. However, it may be possible that changes in the immune response during pregnancy play a role in the host–HCV interaction. In contrast to improved indices of liver dysfunction, a linear increase in HCV viremia has been shown throughout pregnancy, a fact that may be compatible with impaired immune reactivity (Conte,*et al.*, and Gervais,*et al.*,2000). The rise appears to be on the order of 50% above baseline, although observations regarding HCV RNA levels in pregnancy have been highly variable.

Materials and Methods

Subjects

Two hundred and eighty-three pregnant women visited the Maternity and Children Hospital in addition to outpatient clinics in AL-Najaf city, Maternal and clinical data were recorded during the first antenatal visit.

Blood

For preparation of sera, about 10 ml of venous blood was withdrawn from every pregnant women in this study, and the serum were aspirated to glass test tube and centrifuged at 3000r.p.m for 15 minutes and separated in glass tube in deep freeze (-20 C°) until analysis.

Detection of anti HCV by ELISA

HCV was detected via Enzyme-Linked Immunosorbant Assay for anti- HCV .ImmunoWEEL HCV kits were processed according to the manufacturing company (GenBIO, U.S.A).

Quality Control

Following the standard operating procedure, ELISA test was expressed as optical density (OD). For anti-HCV, any sample with an (OD) equal or greater than the cut off value is considered to be reactive.

Statistical analysis



Statistical analysis was performed using Graphpad Prism software version 5 (Graphpad software, San Diego, Ca, USA). All descriptive variables were expressed as mean ± standard error. The groups of patients were analyzed using ANOVA and Tuekey’s post hoc analysis. The correlations among various parameters were tested using Pearson’s correlation test. P value less than 0.05 was considered statistically significant.

Results

The results for Presence of anti HCV antibody in serum sample of pregnant women was detected in 11 (4.62) % of the 238 samples including duration of pregnancy groups, the result showed ratio as high as(6.32%) in 4-6 months of pregnancy duration and decreased to(2.28%) in 1-3 months, (Table 1). According to residence the prevalence’s in rural area was higher than in urban area, out of 11 pregnant women who were anti HCV anti body positive, 7 (5.38%) were of rural residence while 4 (3.70%) were of urban (Table 2) . The age groups of pregnant women of (31-35)years showed higher ratio which increased to 3 (5.55%), while decreased to 1 (2%) with the age group of (21-25)years(Table 3).

Table 1: detection of anti HCV antibody in pregnant women.

Pregnant duration (months)	NO. of sera test	NO. of positive	Positive percentage
1-3	84	2	2.38%
4-6	79	5	6.32%
7-9	75	4	5.33%
Total	238	11	4.62%

Data are expressed as mean ± standard error (SE) – p< 0.0001.

5



Table-2:detection of anti-HCV antibody in pregnant women according to residence

Characteristics	anti HCV antibody				Total	
	positive		Negative			
Rural	7	5.38%	123	94.62%	130	54.62%
Urban	4	3.70%	104	96.30%	108	45.38%
Total	11	4.62%	227	95.38%	238	100%

Data are expressed as mean ± standard error (SE) – p< 0.0001.

Table 3:Anti HCV antibody according to age groups of pregnant women

Age group	NO.of sera test	positive	Positive percentage
<20	27	1	3.70%
21-25	50	1	2%
26-30	55	2	3.63%
31-35	54	3	5.55%
36-40	37	2	5.40%
>41	15	2	13.33%
Total	238	11	4.62%

• Data are expressed as mean ± standard error (SE) – p< 0.0001.

6



Discussion

This study was conducted on a group of pregnant women who visited Maternity and Children Hospital in the Governorate of Najaf and outpatient clinics for the purpose of detection of antibodies to the virus HCV with special attention to duration of pregnancy and age as well as residence.

The present study revealed the presence of anti HCV antibody in 11 pregnant women out of 238 and the study detected the presence of 7 positive cases (5.38%) of women of rural residence and an increase compared with 4 (3%) of urban as well study that pregnant women between 3-6 months showed highest infection rate compared to the rest groups and study also showed that the highest proportion of infection found in pregnant women with ages between 31-35 years. The highest greatest prevalence of infection occurs among individuals of reproductive age.

Age is a known risk factor for hepatitis C infection; seropositivity has been reported to increase until the age 40 and then declines over time¹⁷. This can be explained by the greater probability of exposure of these women to risk factors.

In our study of predominantly young pregnant women, the prevalence was found to increase up to the age of 25 but decrease after that. But the lack of association may be due to less number of subjects in the older age group. (Leikin *et al.*, 1994).

Earlier studies have found an association between the prevalence of HCV infection and the known risk factors of this infection i.e., blood transfusion, intravenous drug abuse, multiple sexual partners, and homosexuality (Pappalardo, 2009).

In present study there are significant differences of HCV infection between residence area, with the highest rate for rural and the lowest for urban. The major factors influencing the geographical distribution of prevalence were hygiene, access to



medical services, empirical treatments/treatments at home, and the proportion of population below the national poverty threshold.

In study by Dafallah, *et al.*, (2003) demonstrated that there was a difference in the prevalence of HCV and difference between rural and urban settings. Only those who were residents of rural areas were classified as belonging to a rural setting. However, this is very difficult to control and because some of those in the 'Urban group' spend some of their time in an rural setting they might therefore have the same exposure as rural dwellers.

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