

HEPATITIS C: FREQUENCY, RISK FACTORS AND PREGNANCY OUTCOME

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ABSTRACT

Objective To determine the frequency of HCV in pregnant women, to find out the risk factors for HCV in pregnant women and to compare the pregnancy outcome of HCV positive with HCV negative mother.

Study design Case - control study.

Place & Duration of study Obstetrics and Gynecology Department of Isra University Hospital Hyderabad, from Nov 2007 to August 2008.

Patients and Methods Study was conducted on pregnant women who were screened for HCV antibody during antenatal consultation and were admitted for delivery. Five ml blood was drawn from each patient and serum was tested for anti HCV by ELIZA. Detailed history was taken for evaluation of risk factors. All results were analyzed on statistical software SPSS version 16. Fishers exact test or Chi square were applied among the categorical variables. Frequencies and percentages and 95% confidence intervals were calculated. Student t test was also used to compare the mean (2 tailed) of numerical parameters. P value of less than or equal to 0.05 was considered as significant.

Results Frequency of hepatitis C in our study was 8% (n=23). After computing the measures of association for cases and controls with regard to the risk factors, history of previous surgery ($p=0.01$), blood transfusion ($p=0.02$), dental surgery ($p=0.004$) and history of injections ($p=0.01$) were found to have significant association with HCV positive status of the patients. Logistic regression was used to control the effects of various risk factors under study and to find out the direct effect of risk factors on HCV positive status. Using logistic regression, history of previous surgery ($p=0.01$), blood transfusion ($p=0.02$), dental surgery ($p=0.04$) and history of injections ($p= <0.001$) were found to have significant association with HCV positively in our study. Statistically no significant difference was found in birth weight, gestational age and Apgar score of new born in cases and control groups.

Conclusions Frequency of hepatitis C in our study was 8%. No adverse effect on pregnancy outcome was observed when compared to controls.

Key words Obesity, Overweight, Body mass index, Pregnancy, Maternal outcome, Perinatal outcome

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INTRODUCTION:

Hepatitis C is a major health problem globally casting an enormous burden on health care system and major source of patients misery.¹⁻³ Approximately 170,000,000 people worldwide and 4,000,000 in the United States are infected with HCV, 3-4 million people are newly

infected each year. Perinatal transmission from mother to fetus or infant is relatively low but possible (less than 10%).^{4,5} Seroprevalence of HCV in Pakistan is unclear and its epidemiology, particularly in women and children has yet to be established.⁶ The prevalence of HCV in general population ranges from 4-25.7%.⁷ The prevalence of HCV in a population can be predicted by risk factors associated with the transmission of infection. These risk factors include injection, drug use, blood product transmission, occupational injury and vertical transmission.⁸

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.⁹⁻¹¹ In Pakistan, over one third of the people are living in poverty and have a fragile health structure. Many patients cannot afford the costly treatment of these diseases. Estimated cost of treatment of HCV is 235.2 billion rupees per annum.¹² Concrete measures are required to develop a strategy to educate the public regarding risk factors to prevent this disease. For this it is necessary to evaluate the risk factors of HCV. The aim of this study was to determine the frequency of HCV in pregnant women, to find out the risk factors for HCV in pregnant women and to compare the pregnancy outcome of HCV positive with HCV negative mothers.

PATIENTS AND METHODS:

This was a case control study, conducted at Isra University Hospital, in the department of Obstetrics

and Gynaecology from Nov 2007 to August 2008. Study was conducted on pregnant women who were screened for HCV antibody during antenatal consultation and were admitted for delivery. Five ml of blood was drawn from each patient and serum was tested for anti HCV by ELIZA.

Detailed history was taken for evaluation of risk factors like past surgeries, blood transfusion, vaginal delivery, evacuation etc. pregnancy outcome was assessed in terms of gestational week completed at terms, Apgar score and weight of the newborn. All information was recorded on predesigned proforma. All results were analyzed on statistical software SPSS version 16. Fisher's exact test or Chi square was applied among the categorical variables. 95% confidence intervals, frequencies and percentages were calculated. Student t test was also used to compare the mean (2 tailed) of numerical parameters. P value of less than or equal to 0.05 was considered as significant.

RESULTS:

There were a total 287 patients. Out of these 23 patients were HCV positive (cases) while 264 patients were HCV negative (control). Frequency of hepatitis C in our study was 8%. Mean age of hepatitis positive women was 39.65 years with a standard deviation of 5.72. After computing the measures of association for cases and controls with regard to the risk factors, history of previous surgery (p=0.01), blood transfusion (p=0.02), dental surgery (p=0.004) and history of injections (p=0.01) were found to have significant association with HCV positive status of patients (table 1).

Table I: Association of risk factors among cases (HCV positive women) and controls (HCV negative).

Risk factor for HCV	Cases n = 23(%)	Controls n = 264(%)	Odds ratio	95% CI	P value
H/O previous surgery	10(43.5%)	50(18.9%)	3.29	1.36 – 7.93	0.01*
H/O previous delivery	09(39.1%)	62(23.5%)	2.09	0.86 – 5.07	0.12
Blood transfusion	14(60.9%)	95(36.0%)	2.76	1.15 – 6.63	0.02*
Dental surgery	10(43.5%)	44(16.7%)	3.84	1.58 – 9.32	0.004*
H/O Jaundice	05(21.7%)	36(13.6%)	1.75	0.61 – 5.03	0.34
Family H/o Jaundice	04(17.4%)	43(16.3%)	1.08	0.35 – 3.33	0.77
H/O D & C	07(30.4%)	62(23.5%)	1.42	0.56 – 3.62	0.45
H/O Injections	04(17.4%)	116(43.9%)	0.26	0.08 – 0.81	0.01*

* P value is statistically significant calculated by Fisher's exact test of Chi square

Logistic regression was used to control the effects of various risk factors under study and to see the direct effect of risk factors on HCV positive status. Using logistic regression, history of previous surgery (p=0.01), blood transfusion (p=0.02), dental surgery (p=0.04) and history of injections (p= <0.001) were found to have

significant association with HCV positively in our study (Table 2). Statistically no significant difference was found in birth weight, gestational age and Apgar score of new born in cases and control groups (Table 3).

Table II: Comparison of Obstetric Outcome with HCV Positive Status of Mothers.			
Outcome	Cases n = 23	Controls n = 264	P value
Baby weight (in Kg)	2.64 + 0.46	2.69 + 0.56	0.66
Gestational age (in weeks)	37.7 + 2.09	36.9 + 4.3	0.39
Apgar score	8.0 + 0.00	7.7 + 0.90	0.11
Results are expressed as Mean + Standard Deviation computed by Student's t test			

Table. III Logistics Regressions for Hepatitis C				
Risk factor for HCV	n = 0 (%)	Adjusted Odds ratio	95% confidence interval	P value
H/O previous surgery	60(20.90%)	0.17	0.04 – 0.72	0.01*
H/O previous delivery	71(24.73 %)	2.32	0.48 – 11.0	0.29
Blood transfusion	109(37.97%)	0.21	0.05 – 0.79	0.02*
Dental surgery	54(18.81%)	0.23	0.06 – 0.93	0.04*
H/O Jaundice	41(14.28%)	0.43	0.09 – 1.99	0.28
Family H/o Jaundice	47(16.37%)	1.12	0.23 – 5.24	0.88
H/O D & C	69(24.04%)	1.50	0.36 – 6.12	0.56
H/O Injections	120(41.81%)	24.41	5.25 – 112.47	< 0.001*

DISCUSSION:

Various studies have shown seroprevalence in Pakistan ranging from 0.7% to 20%.¹³ Prevalence of hepatitis C antibodies among 300 pregnant women in prenatal clinic of Lady Aitchison Hospital, Lahore, was found to be 6%¹⁴ while in our study HCV antibodies were positive in 8% cases. Seroprevalence of HCV in pregnant women varies markedly from place to place. A study conducted on Egyptian pregnant women revealed a very high prevalence of HCV antibodies,¹⁵ whereas a study conducted on pregnant women from inner city of London showed a prevalence of 0.8%.¹⁶ A similar

study in central Asia, which is considered to be an area highly endemic for hepatitis C infection, revealed a seroprevalence of 19%.¹⁷

The highest prevalence of infection occurs among individuals of reproductive age.¹⁸ Age is a known risk factor for HCV infection. Seropositivity has been reported to increase until the age 40 and then declines over time.¹⁹ This can be explained by the greater probability of exposure of these women to risk factors. In our study the mean age of hepatitis C positive women was 39.65 years.

Transfusion of contaminated blood, surgical operations, dental procedure with inadequately sterilized instruments, repeated injections (reused) has been well known risk factors for HCV transmission.²⁰ People who visit regularly for any kind of dental procedure had more prevalence rate of HCV²¹ as compared to those who do not visit for any kind of dental procedure and we found this the case in our study. History of surgical operation was recorded as risk factors as seen in other studies.²²

Results of our study also showed the history of previous surgery, blood transfusion, dental surgery and history of injection are risk factors of HCV in pregnant women. In a study from Pakistan when previous vaginal deliveries with episiotomy, previous surgery and D&C were taken as independent variables, only past history of surgical procedures was found to be the most important factor for transmission of hepatitis C virus infection.²³ In our study history of previous delivery and D&C were not found to be the risk factors for transmission of HCV infection.

There is a debate going on regarding screening for hepatitis C as diagnosis of HCV can result in significant psychological morbidity, stigmatization and discrimination including by medical staff and if it does not affect pregnancy outcome and nothing has to be done during pregnancy. Pregnancy may not be the right time to offer this screening program.²⁴ Universal HCV screening in pregnancy is considered to be unjustified given the absence of an intervention to prevent mother to child transmission.²⁵ In developing countries like Pakistan, because of poverty and lack of facilities, women have poor access to the hospitals, so screening for HCV should be carried out during antenatal visits as this might be their only visit to a health care facility. Antenatal HCV testing provides an opportunity to identify asymptomatic women with chronic disease who, following pregnancy, may benefit from antiviral therapy at a time when they are most receptive to medical intervention. It has been found that selective antenatal screening policy based on risk factors, failed to identify over half of the infected patients. Moreover screening of asymptomatic pregnant women for hepatitis C virus infection is not cost effective.

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