

PREVALENCE OF HEPATITIS B AND C IN FEMALE POPULATION REPORTING FOR ANTENATAL SCREENING AT COMBINED MILITARY HOSPITAL HYDERABAD SINDH, PAKISTAN

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ABSTRACT

Objective: To find out the magnitude of hepatitis B and hepatitis C seropositivity during antenatal screening of pregnant women aged 20 years and above.

Study Design: Cross-sectional study.

Place and Duration of Study: Department of Obstetrics and Gynaecology, Combined Military Hospital Hyderabad, Sindh Pakistan, from Jan 2014 to Dec 2014.

Methodology: This study was conducted on 1769 admitted pregnant females 20 years age and above which were selected by non-probability consecutive sampling technique. For sample collection 3ml of blood was taken in clot activated bottle. Quantitative detection of HbsAg and Hepatitis B from serum of patients were done by rapid chromatographic immunoassay (ICT kit used for HbsAg and Anti Hepatitis B by Healgen Scientific, London). Seropositivity for HbsAg and anti-hepatitis C virus among selected pregnant patients was also checked.

Results: Out of 1769 pregnant females mean age 22 ± 2.23 years screened for hepatitis B and C seropositivity, 129 (7.299%) females were found to be positive for serum antibodies for hepatitis B and C. Out of 129 seropositive females 99 (76.7%) were anti-hepatitis C virus (HCV) positive and 30 (23.3%) were HbsAg positive. Out of 129 seropositive females 80 (62%) patients delivered by caesarean section and 23 (38%) had normal vaginal delivery. Multiparas patients were 110 (85.3%) more than prim gravidas 19 (2%).

Conclusion: Magnitude of hepatitis B and C virus is alarming among pregnant women. This study shows high frequency of Anti-hepatitis C than HbsAg which is alarming due to non-availability of prophylactic vaccine against the disease.

Keywords: Hepatitis B and C, Hepatitis screening, Pregnant women.

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INTRODUCTION

Viral Hepatitis is a global problem causing deaths of 1.4 million people annually including pregnant females all across the globe¹. It is associated with both maternal and neonatal morbidity and mortality. Pakistan has a higher fertility rate that is exceeding four children per woman. Moreover, Pakistan carries one of the world's highest burdens of chronic hepatitis and morbidity due to liver failure and hepatocellular carcinoma. WHO has ranked Pakistan having the world's second largest prevalence of hepatitis C¹.

Infection from hepatitis B and C not only

imposes major health problem, but also a big socioeconomic burden². It is also associative with high risk for medical and paramedical personal. Hepatitis is inflammation of liver characterized by the presence of inflammatory cells in the tissue of the organ. It may occur with limited or no symptoms, but often leads to jaundice, anorexia and malaise. Hepatitis is acute when it is less than 6 months³.

Like the other developing countries, Pakistan is also facing high endemicity of hepatitis B and C with prevalence of 3 to 4 percent and 5 percent respectively. Estimates indicate that over 9 million people of Pakistan are suffering from hepatitis B virus and more than 10 million are victim of hepatitis C. Pakistan falls in the intermediate category of hepatitis B infection⁴.

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Keeping in view the higher fertility rate of Pakistan, the high rate of perinatal and vertical transmission of hepatitis B virus (HBV) and hepatitis C virus (HCV) can be well assessed⁵.

Viral hepatitis during pregnancy is closely related to high risk of maternal complications including preterm labour, placenta previa, gestational diabetes and mortality².

Ten percent infants born to the women with acute hepatitis virus infection during first trimester of pregnancy are HbsAg positive at birth and 80% to 90% of neonates become HbsAg without prophylactic therapy if actual maternal infection develops during third trimester of pregnancy⁶.

The importance of knowing the prevalence of hepatitis is critical because the transmission of infection from mother to off spring also traditionally known as perinatal infection affects both the mother and child. By definition; perinatal period begins from 28 weeks of gestation and ends at 28 weeks after delivery^{7,8}. Mother to child transmission (MTCT) takes account of all the infections before birth, during birth and early childhood, the importance of which as a group is their remarkably greater risk of chronicity compared to infections acquired later in life.

Theoretically, there are 3 possible routes of transmission of infection from mother to her infant⁹.

1. Trans placental transmission of hepatitis B virus (HBV) in utero.
2. Natal transmission during delivery.
3. Postnatal transmission during care or through breast feeding.

Unfortunately; hepatitis C virus (HCV) infection has no vaccine for new borns and despite the relatively excellent efficacy of high titer, HBIG and hepatitis B virus (HBV) vaccination as post exposure prophylaxis (PEP) in new born in 3% to 9% of children born to mother with positive hepatitis B virus serum marker¹⁰ the risk of post

exposure prophylaxis (PEP) failure is higher due to high level of hepatitis B virus DNA from mother.

The exact mechanism for prenatal transmission is not fully elucidated yet, however various possibilities are hypothesized as follow;

1. Breech in prenatal barrier.
2. Placental infection and transplacental transmission.
3. Hepatitis B virus DNA exists in oocytes of infected female.
4. Intrauterine transmission of hepatitis B virus ascending from vaginal secretion of the mother that contains the virus.

Following the identification of hepatitis C virus (HCV) and development of specific diagnostics assays, single stranded RNA blood born virus accounts for 15% to 20% of all cases of viral hepatitis.

Hepatitis C is a slowly progressing disease with long term sequelae including cirrhosis and hepatocellular carcinoma (HCC). This follows for infections with direct percutaneous exposure which is the most efficient mode of transmission¹¹. Current evidence suggests that vertical transmission may occur, particularly in highly viraemic and anti-human immunodeficiency (HIV) positive mothers, but details of the mechanism of vertical transmission is limited. The outcome of perinatal hepatitis C virus infection is unknown, but in babies who are infected at birth the lifetime risk of severe liver disease is likely to be high⁸⁻¹⁰.

The hepatitis C virus vertical transmission is rare in comparison to HBV pregnant women with high viral load of HCV or coinfection with anti-HIV has a high risk of vertical transmission. Epidemiological data shows that 70% to 85% of cases that become chronic, a quarter to the 3rd of them on average, involves a pattern of moderate to severe histological impairment requiring treatment. The remainder evolves more slowly.

Health professionals play a key role as care givers and therefore must reflect on the humanization of prenatal care and establishing a trusting relationship with clients in order to prevent and control injury to women during pregnancy and the post partum period, and ensuring their rights to safe motherhood. A wide prenatal screening including serological test, enables the prevention and early treatment of the disease vertically transmitted to fetus. Data on viral hepatitis during pregnancy is not readily available in many parts of Pakistan. The lack of knowledge and availability of preventive measures against infection by hepatitis B virus and hepatitis C virus are a serious public health problem, mainly because they are silent diseases. Therefore, this study aims at reporting the frequency of hepatitis B and hepatitis C seropositivity during antenatal screening of pregnant women aged 20 years and above.

METHODOLOGY

A cross-sectional study was conducted at the department of Obstetrics and Gynaecology, Combined Military Hospital (CMH) Hyderabad from January 2014 to December 2014. A sample size was calculated by WHO sample size calculator keeping 95% confidence interval, 5% margin of error and prevalence of hepatitis B and C 6.3%. The calculated sample size was 74, therefore this study has a sample size of 129 to give better evaluation of the results. Non-probability consecutive sampling technique was used. Those females who were pregnant with age 20 years and above till reproductive age (at any trimester) were included in the study, whereas the females with history of co-morbidities, previous exposure to hepatitis were excluded from the study. Sample was collected by taking 3 ml of blood in clot-activated bottle. HbsAg and HCV tests were done by rapid chro-matographic immunoassay (ICT kit used for HbsAg and anti HCV by heal-gen scientific, London) for quantitative detection of HbsAg and HCV. Data were collected to find out the prevalence of hep B and C among the selected patients. Frequencies and percentages of

the variable under study were reported. Results were presented in the form of tables and graphs.

RESULTS

Out of 1769 pregnant females with mean age 22 ± 2.23 years screened for Hepatitis B and C seropositivity. One hundred and twenty nine (7.299%) patients were found to be positive for serum antibodies for hepatitis B and C. Out of 129 seropositive patients 99 (76.7%) were anti hepatitis C virus (HCV) positive and 30 (23.3%) were HbsAg positive (figure).

Out of 129 seropositive patients 80 (62%)

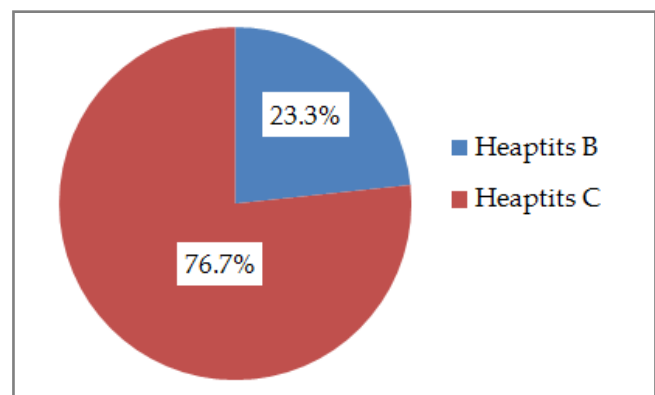


Figure: Seropositivity for Hepatitis B and C.

patients were delivered by caesarean section and 23 (38%) had normal vaginal delivery. Multipara patients were 110 (85.3%) more than primigravidas 19 (2%). Table below explains the detailed results of the study.

DISCUSSION

In Pakistan, hepatitis C and B infections are reported to be 6.7% and 2.5% respectively¹²⁻¹⁶. The present hospital based study of 1 year reveal that the proportion of hepatitis C virus (HCV) infection is much lesser i.e. 5.6% than the study conducted by Kumari *et al* at Sir Syed College of Medical Sciences and Trust Hospital, Karachi i.e. 13.3%, also the proportion of hepatitis B infection was less i.e. 1.7% in our hospital as compared to the study conducted in Karachi that was 2%¹⁷⁻²¹.

The results of our study present much lower prevalence of hep B and cas compared to the study carried out at the university hospital, Hyderabad conducted by Yausfani *et al*²² with the

prevalence of hepatitis B virus (HBV) as 12.6% and hepatitis C virus as 16.5%.

Compared to a study conducted in Meerut, India by Garg *et al* anti-hepatitis C virus (HCV) load reported was much lower i.e. 0.1% and hepatitis B virus (HBV) was 2.9%⁶.

The average prevalence reported in a study conducted on an Arab country by Gasim *et al* was much higher for hepatitis B virus (HBV) infection ranging 2% to more than 8%, while the

The World Health Organization (WHO) has estimated that over 350 million people world wide are chronically infected with hepatitis B virus. World wide hepatitis B is the most common cause of hepatitis. Developing and developed countries that have the infectious disease burden have an estimated 10% or more of the population inflicted with chronic hepatitis B infection. These high prevalence regions include Sub Sahara Africa, most of the Asia and the

Table: Total no of Hepatitis B and C Seropositive Pregnant Women.

Months	No. of Patients	HbsAg	Hepatitis C virus (HCV)	Lower section C-section	Normal vaginal delivery	Others Diseases	Prim gravida	Multi para
Jan	10	-	10	07	01	02	01	09
Feb	06	03	03	03	02	01	02	04
Mar	03	-	03	01	01	01	-	03
Apr	13	04	09	07	03	03	01	12
May	03	-	03	01	01	01	-	03
Jun	21	04	17	13	02	06	02	19
Jul	23	03	20	16	05	02	05	18
Aug	10	05	05	07	-	03	01	09
Sep	21	07	14	16	04	01	03	18
Oct	03	02	01	01	02	-	01	02
Nov	09	01	08	04	01	04	01	08
Dec	07	01	06	04	01	02	02	05

prevalence of hepatitis C virus (HCV) infection was variable i.e. between 0.4% to 23%. Among under developed, unstable socioeconomic and unstable political countries, Africa has comparatively higher prevalence of both i.e. 37% hepatitis B are in some parts of Africa and prevalence for hepatitis C virus (HCV) is in the high to intermediate range i.e. 2% to 2.9%²³⁻²⁵.

The literature reveals that patients who had surgical intervention were twice more at risk of developing hepatitis C virus (HCV) which is almost same for our study in which patients with surgical delivery 62% and vaginal delivery 38% were seropositive for hepatitis C and B respectively.

Comparing the parity, multi paras was more affective as compared to prim gravida and these results support the results of a study conducted in Karachi by Ghias *et al*²³.

Pacific Island. In UK around 1% in 350 people is thought to have chronic hepatitis B infection. The greatest decline has happened among children are adolescents due to routine hepatitis B vaccination²⁵.

In the UK, the prevalence estimated for pregnant women was similar to the prevalence in general population i.e. 0.3% and 0.4% respectively. The prevalence in pregnant women in north of Italy was estimated 1.7%. As view of health caretaker for a disease having prevalence of 7.2% is much greater for a disease which has many risks associated with chronicity of disease mainly the socio economical background factor.

RECOMMENDATION

- All pregnant women should receive, screening for HbsAg and anti-hepatitis C virus.

- Infants of hepatitis B seropositive mothers must be properly immunised.
- Close contacts must be tested and if negative they must be vaccinated.
- Antenatal counselling should incorporate awareness about the risk factors, transmissions and disease process of these viruses to the pregnant females and their attendants during antenatal visits.

CONCLUSION

Magnitude of hepatitis B and C virus is alarming among pregnant women. This study shows high frequency of Anti-hepatitis C than HbsAg which is alarming due to non-availability of prophylactic vaccine against the disease.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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