Frequency of Hepatitis B and Hepatitis C in Pregnant Females of Rawalpindi.


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Original Article

Abstract

Background: Viral hepatitis B and C is an emergent concern worldwide especially in developing countries like Pakistan. In particular, pregnant females have been focused on due to the alarming maternal and fetal complications. We conducted this study to explore the sero-prevalence of hepatitis B and C among apparently healthy pregnant ladies of Rawalpindi with special reference to age distribution and gravidity.

Methods: This was a multi-centred cross-sectional study conducted at Gynecology and Obstetrics department of the 3 Allied hospitals of Rawalpindi Medical College during May-July 2016. A total of 519 pregnant women were included in this study through systematic random sampling. Data was collected by using available records of the pregnant females who had already undergone serological testing for hepatitis B and C. A structured check list was used to record the serological findings from reports of ELISA test. Data was entered and analyzed in SPSS version 21.

Results: Out of 519 pregnant females, 31 (6.0%) were found to be anti-HCV positive and 7 (1.3%) were HBsAg positive. 97.36% fell within the age group of 15-35 years. HCV was much more frequent in multigravid females (70.96%) while HBV in the primigravid (42.85%).

Conclusion: Sero-positivity of anti- HCV antibodies was higher as compared to HBsAg in pregnant females of Rawalpindi. In addition to routine antenatal screening and vaccination programs, other preventive measures should also be strictly implemented to prevent the transmission of these infections.

Key Words: Pregnant females, viral hepatitis, vertical transmission, HBsAg, Anti- HCV antibody.

Introduction

Hepatitis is an inflammation of the liver.1 The main causes being infection with hepatitis viruses, toxins like alcohol, drugs and plants, other infections and autoimmune diseases.2 It is a major public health problem worldwide especially in developing countries like Pakistan.3 According to World Health Organization it infects 12-15 million people annually.4 Of the 2 billion people infected by HBV, one fifth (350 million) are chronic carriers and about 200 million people have HCV infection across the globe.5 As estimated by World Health Organization (WHO), chronic hepatitis C infection has its highest prevalence in Africa.6 Pakistan bears the 2nd highest burden of HCV in the world with a prevalence of 4-10%, while HBV prevails in 10% of general public of Pakistan.3 Hepatitis B and C infections are transmissible both vertically, from mother to fetus and horizontally via blood products and body secretions.7 The risk of disease transmission is high among IV drug abusers, homosexuals, health professionals with needle stick accidents and patients on dialysis.8 Also, poverty, illiteracy and poor hygienic conditions in our country add to the prevalence of HBV and HCV.9 Vertical transmission is the most common route of HBV transmission5 accounting for 35 to 40% of new cases of Hepatitis B worldwide.7 The third trimester of pregnancy is very crucial for infants of HBsAg and HBeAg positive mothers as the risk of transmission is very high (65-93%) compared to the first trimester (10-15%).9 HCV has less common perinatal transmission with infection primarily occurring parenterally.7 Pregnant females is a high risk group for these infections, especially multiparous females due to previous hospitalizations, blood transfusions and multiple injections.4 It is anticipated that maternal mortality is high in these ladies due to increased risks of placenta previa, premature placental separation, vaginal bleeding, gestational diabetes and PROM.9 Fetal risks associated with maternal hepatitis include preterm delivery and risk of vertical transmission.3 In case of maternal hepatitis B, new born can be protected by active and passive immunization. It is also important for health care team to be extra cautious for their own safety while attending these patients. As regards the pregnant females of Pakistan, Hepatitis B prevails in about 2.5% and Hepatitis C in
6.7% women. However, the exact prevalence of these infections in Pakistan is yet unknown.

According to our knowledge, only one retrospective study regarding this issue was conducted in twin city at PIMS hospital from 2002 to 2008. The study revealed the prevalence of HBsAg in 1.9% and HCV antibody in 7.4% of pregnant females. We are lacking sufficient recent statistics that highlight the disease burden. There is hence, a dire need to investigate the current prevalence so as to promote early diagnosis and prompt treatment, thereby preventing many serious consequences. We conducted this study with an objective to assess the sero-prevalence of hepatitis B and C among pregnant ladies of Rawalpindi with special reference to age distribution and gravidity. Our findings may be useful for health care planners for evidence based interventions. This is important for the safety of the patients who can be referred before the disease progresses, and to prepare before hand for these maternal complications.

**Patients and Methods**

This was a multi-centred cross-sectional study conducted at the Gynecology and Obstetrics department of three allied hospitals of Rawalpindi Medical College (RMC) from May 2016 to July 2016. The allied hospitals include Benazir Bhutto Hospital (BBH), Holy Family Hospital (HFH) and District Headquarter Hospital (DHQ). The study population comprised of the pregnant females coming for routine antenatal visit at Gynecological department of these three public sector hospitals who had undergone serological testing for hepatitis B and C.

Using WHO sample size calculator, minimally required sample size was calculated for both the study outcomes i.e. hepatitis B and Hepatitis C prevalence and the larger sample size was selected. According to the reference study, the expected proportion of pregnant females with hepatitis B and C would be 1.9% and 7.4% respectively and by keeping 95% confidence interval with a 5% margin of error, minimally required sample size for this study came out to be 31 and 106 respectively. However, a sample of 519 was taken in order to make it more representative of the general population. Systematic random sampling technique was used in this study.

The study was approved by the Institutional research forum of Rawalpindi medical college. The data was collected using the available records of the pregnant females who had already undergone serological testing for hepatitis B and C. A structured check list was used to record the serological findings from the serological reports of ELISA test. Demographic data and co-variables obtained include age and gravidity. All the data was entered and analyzed in SPSS version 21. Frequencies and percentages were calculated for categorical variables and for continuous variables means and standard deviation were calculated.

**Results**

Total of 519 subjects was included in this study with a mean age of 27.45±6.28 years. Out of these 519 pregnant women, 31 (6.0%) were found to be anti-HCV positive and 7 (1.3%) were found to be HBsAg positive. The combined frequency of hepatitis B and C was found to be 38/519 (7.32%).

Majority of our patients, 37 (97.36%), were within the ages of 15-35 years. The age wise distribution of the study cases is expressed in Table I. In our study 163 (31.4%) women were primigravida, 281 (54.1%) were multigravida and 75 (14.5%) were grand multigravida. The frequency of hepatitis B in primigravida, multigravida and grand multigravida was 3/7 (42.85%), 2/7 (28.57%) and 2/7 (28.57%) respectively. Whereas, the frequency of hepatitis C in primigravida, multigravida and grand multigravida was 3/31 (9.67%), 22/31 (70.96%) and 6/31 (19.35%) respectively.

**Table I. Age distribution of the study participants and positive cases of Hepatitis B and C**

<table>
<thead>
<tr>
<th>Age Groups (Yr)</th>
<th>Total study participants f(% out of 519)</th>
<th>HBsAg +ve f(% out of total participants in each age group)</th>
<th>Anti-HCV +ve f(% out of total participants in each age group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-25 years</td>
<td>243 (46.8%)</td>
<td>3 (1.23%)</td>
<td>15 (6.17%)</td>
</tr>
<tr>
<td>26-35 years</td>
<td>257 (49.5%)</td>
<td>4 (1.55%)</td>
<td>15 (5.83%)</td>
</tr>
<tr>
<td>36-45 years</td>
<td>19 (3.7%)</td>
<td>0 (0.00%)</td>
<td>1 (5.26%)</td>
</tr>
</tbody>
</table>

**Discussion**

Having been an emergent concern in the developing as well as developed nations for the past few years, viral hepatitis B and C has been thoroughly studied all over the globe. In particular, the pregnant females have been focused on due to the alarming complications, affecting both the mother and the new born. The liver dysfunction in expecting mothers is most probably attributed to these deadly viral infections. We conducted this study, to find the sero-prevalence of HBsAg and Anti HCV antibody in apparently healthy
pregnant females visiting antenatal clinic at tertiary care hospitals of Rawalpindi.

![Frequency of HBV & HCV according to Gravidity](image)

Our results heralded a 6% sero-positivity of anti HCV antibodies in pregnant females which was significantly higher than a study carried out by Sania et al in Swat (2.52%).\(^3\) It was comparable to a study conducted in Multan (7%)\(^3\) and PIMS hospital Islamabad (7.4%)\(^4\) but much lower than that in Karachi (13.3%).\(^1\)

When compared internationally, our results were lower as compared to the studies conducted by Ephraim et al in Ghana and Murad et al in Yemen, where it was found to be 7.7% and 8.5% respectively.\(^9,10\) Where by the prevalence was astonishingly low in similar studies conducted at Nigeria, Brazil and Sudan being 1.39%, 0.098% and 0.6% respectively, as these are low endemic areas for HCV infection.\(^11,7,12\)

On the other hand, our study revealed a seroprevalence of HBsAg in only 1.3% of the pregnant females. This was near similar to a study held at Swat and Islamabad with seroprevalence of 1.37% and 1.9% respectively.\(^3,4\) Another study conducted by Kumari et al in Karachi yielded 2%,\(^3\) and that in Multan yielded 4.6%\(^5\) seropositivity for HBV in pregnant ladies. Both of these proportions were higher as compared to ours. Our results were consistent with the WHO's grading of prevalence for Hepatitis B. According to WHO, Pakistan falls in the category of low prevalence of HBsAg positivity i.e. <2%. Various studies carried out in different parts of the world showed higher prevalence of Hepatitis B as mentioned afore. Studies carried out in Ghana, Ondo State General Hospital Okitipupa Nigeria, Benin Hospital Nigeria, Brazil, Yemen and Sudan showed seroprevalences of HBsAg as 9.5%,\(^6\) 6.78%,\(^11\) 12.5%,\(^13\) 5.64%,\(^7\) 10.8%,\(^10\) and 5.6%,\(^12\) respectively, all of which were significantly higher as compared to our results.

In our study majority of the HCV as well as HBV positive pregnant ladies fell within the age group of 15-35 years. This might be attributed to early marriages and early age pregnancies in our setup. Our results were quite similar to the results of Taseer et al in Multan\(^5\) and somehow comparable to a study held by Sania et al in Swat.\(^3\)

As regards the gravidity, most of our study population encompassed multigravida HCV seropositive pregnant females which was in concordance with the results of Taseer et al\(^5\) and Ogbebor et al (Benin Nigeria).\(^13\) One of the possible explanations for this is an increased risk of exposure associated with repeated hospital admissions, multiple episiotomies, cesarean sections, home deliveries, miscarriages and unsafe blood transfusions, which raise the chances of acquiring infection under these circumstances. Conversely, a greater number of HBV positive females were primigravida in our study which was congruous to the results of Rashid et al (Tanzania).\(^14\) This might be because many of them had vertically acquired the infection from their mothers and had been asymptomatic for years. However, future research is recommended in this area as very little has been reported about it in the literature before.

Despite all the efforts done, our study had a few constraints. Firstly, we included only those females who could approach antenatal care facility, which might have masked the actual prevalence in the area under study. Secondly, these women were not investigated for co-infection with other viruses like HDV, HIV and other STDs, nor were their partners screened for HCV and HBV. Also the patients who seek private health care services were not included in our study. Therefore, the results cannot be generalized to all the population of Rawalpindi as a whole but still represent a large population. In this regard, a community-based survey with large sample, including the females visiting the private setup in addition to public facilities is strongly recommended in the future. It is known that a number of people in our community are victimized only because they are illiterate and non-affording, so they have to seek the sub-standard health facilities offered by the Quacks. Hence forth, steps are to be taken to improve the knowledge and awareness of population regarding this important health issue. Policy makers should make plans for educating the community for the prevention of hepatitis and to encourage people to participate in the screening programs. Although routine antenatal screening is being carried out for the detection of such cases in Pakistan and there are programs available for
vaccination of all neonates against hepatitis B, further precautionary measures are still needed to be observed. Blood and blood products should be screened for HBV and HCV before transfusion. Hospital waste management should be strictly checked upon. Vaccines should be made available to every single individual of the community at affordable costs. Infants who are born to HBV sero-positive mothers shall be given ‘at birth dose’ vaccination. Moreover, all the pregnant females who are sero-negative for HBsAg should be vaccinated to minimize the risk of vertical transmission.

**Conclusion**

There is a higher sero-positivity of anti-HCV antibodies as compared to HBsAg in pregnant females of Rawalpindi. Both HBV and HCV sero-positivity was found to be more common in the age group of 15-35 years. HCV was much more frequent in multigravid females while HBV was commoner in the primigravid.

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