

Viral Hepatitis during Pregnancy: A Study of Its Socio- Clinical Profile in A Tertiary Care Hospital

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Abstract: To determine the incidence of hepatitis in pregnancy and its association with various social, personal and environmental risk factors, a study was conducted at a Tertiary Maternity Care Hospital, Srinagar. During the one year study period patient selection was based on presence of clinical features suggestive of liver disease. The suspected patients were subjected to liver function tests and hepatitis serology (hepatitis A, hepatitis E, hepatitis B, hepatitis C) for diagnosis.

The incidence of viral hepatitis was found to be 0.8 per 1000 pregnant women and etiology in all cases was Hepatitis B viral infection. Fortunately none of the pregnant women had positive hepatitis E serology which has a fatal outcome in pregnancy. Pregnant women who are positive for Hepatitis B viral infection needs to be closely followed up for the adverse perinatal outcome and chronic morbidity associated with the condition. Risk factors associated with the development of infection were prevalent in the form of parental drug use, dental extractions, blood transfusion, residence at endemic areas and poor food hygiene. Sociodemographic variables and risk factors were found to have significant association with hepatitis. Hepatitis patients were mostly anicteric showing inadequacy of serum bilirubin in diagnosis. Screening for hepatitis in future should become an important component of antenatal care.

Key Words: Hepatitis, Pregnancy, Incidence.

I. Introduction

Jaundice and pregnancy is a deadly combination resulting in a very high perinatal as well as maternal morbidity and mortality and requires an early diagnosis and careful monitoring.

Of all the causes associated with jaundice in pregnancy, two most prevalent ones include viral hepatitis (Sims J and Duff P)⁽¹⁾ responsible for 50% of clinical cases of which there are six distinct types A, B, C, D, E and G and intrahepatic cholestasis of pregnancy that accounts for 20% of clinical cases (Eurekah Biosciences Collection-Gastroenterology)⁽²⁾. Less common causes include hyperemesis gravidarum, acute fatty liver of pregnancy, pre-eclampsia/eclampsia, chronic hepatitis, cirrhosis, acetaminophen over dosage, cholelithiasis and cholecystitis with obstruction of common bile duct.

Features of viral hepatitis overlap with the morning sickness symptoms of pregnancy. Furthermore icterus is frequently encountered sign in cholestasis of pregnancy. Thus diagnosis becomes difficult and hepatitis continues as subject of controversy and interest (3) In developed countries such as US & UK the course is similar to that of non-pregnant state but in developing countries it follows a more fatal course because of associated malnutrition and T& B cell inversions seen in addition to the normal increased demands of pregnancy (4,5). Mortality can range between 30-45% and it can be as high as 70% (6.). Women living in low socioeconomic groups are usually exposed to unsanitary living environment and consume untreated, unpurified water are at a greater risk of development of the disease.

Hepatitis A and E viral infection are water borne diseases and spreads by faeco-oral route. On the other hand, hepatitis B is spread through sexual contact, blood transfusion or exposure to an infected person's blood via cuts, open sores, needle sharing, razor sharing or ear piercing tools. Additionally, hepatitis B can be spread from mother to child. Formerly called non-A non-B hepatitis; hepatitis C is transmitted primarily by direct blood contact - via blood transfusion or and contaminated needles. Less common ways are through sexual contact or from mother to child. Formerly called delta hepatitis, hepatitis D is found mainly in intravenous drug users who are carriers of the hepatitis B virus.

India has a medium prevalence risk for hepatitis and pregnancy is a state which provides opportunities for contraction of infection because of the decreased defence mechanisms and healthcare related exposure to

risk factors of hepatitis. Khuroo(7) from Kashmir, studied the early prognostic indicators for acute liver failure in endemic zones for hepatitis E virus. Of the total of 180 [69 males and 111 females: age (mean +/- SD) 31.1 +/- 14.7 years] with acute liver failure, 131 (72.8%) patients died. Hepatitis E virus was the aetiological cause in 79 (43.9%) patients, in one-third the cause remained unknown. Of 83 women in childbearing age, 49 (59.0%) were pregnant, 33 (67.3%) of them were in the third trimester. Forty-seven (95.8%) pregnant women had HEV infection. With such background and the fact that till date studies were conducted on hospitalized patients, that too during epidemics; this study was undertaken to elucidate the incidence of viral hepatitis complicating pregnancy. The study also aimed to determine the socio-clinical profile of hepatitis seen during pregnancy

II. Material And Methods

The present study was conducted at Lalla-Ded Hospital which is a Tertiary Care Maternity Hospital associated with Government Medical College, Srinagar and caters to most of the obstetrics patients of Kashmir valley. Study was conducted for one year period during which, all antenatal females irrespective of gestational age and parity attending outpatient department for the first antenatal checkup were included. A total of 8750 patients were screened clinically for presence of jaundice and prodromal gastrointestinal symptoms of hepatitis (as fever with right upper quadrant pain, anorexia, malaise, myalgia, arthralgia and vomiting). Previously diagnosed cases of cholelithiasis, choledocholithiasis and known chronic liver disease were excluded from study. 362 patients fulfilling the inclusion criteria were subjected to detailed history that included information regarding age, residence, obstetric history, clinical symptoms suggestive of liver disorder, past history of jaundice in pregnant / non-pregnant state, family history of jaundice in pregnant / non-pregnant state. Socio-economic status of the patients was done by Prasad's Method (based on per capita income per month) Environment and sanitation history was evaluated. Further enquiries were made into their personal lives for various risk factors such as parenteral drug use, jaundice in spouse, travel / residence at high risk area of jaundice, exposure to blood transfusion, ingestion of food from roadside vendors and maintenance of food hygiene (washing hands before eating, washing fruits and vegetables before consumption)

Clinical examination was followed by screening for liver disorders by liver function tests that included Serum Bilirubin, Alkaline Phosphatase, Alanine Transaminase, Aspartate Transaminase.

Elevation in the serum Alanine phosphatase / Aspartate Transaminase twice above the normal value was taken as an indicator of hepatocellular damage. These patients were then further subjected to hepatitis serology for hepatitis A, B, C and E by using ELISA kits for detection of IgM antibody against HAV, HCV, HEV. Diagnosis of HBV infection was based on the presence of Hepatitis B surface antigen.

The criteria for diagnosis of acute viral hepatitis was taken as more than two times elevation in Alanine Transaminase / Aspartate Transaminase along with positive serology for any of the viruses viz A, B, C & E.

All patients with negative hepatitis serology but more than two times elevation in Alanine Transaminase / Aspartate Transaminase were considered as having hepatitis, but not due to common hepatotropic A,B, C and E types.

Statistical analysis was carried out by using standard statistical methods of significance. For the study to be statistically significant, p value of less than 0.05 ($p < 0.05$) was taken at 5% significance level and 95% confidence limits with normal deviate exceeding 2.

III. Results:

Amongst the 350 patients evaluated for hepatitis based on the inclusion criteria most of the suspected patients belonged to the age group of 26-30 years accounting for 58.5%. Primigravida accounted for 38% and multipara were in majority(41.1%).

Common complaints were itching (80%) followed by passage of high colored urine in 32%, loss of appetite in 22%, malaise in 20.8% and yellowish discoloration of skin/eyes in 20%. Other complaints were vomiting in 20%, arthralgia in 20% and myalgia in 20%. Only 14% of the study group complained of right upper abdominal discomfort. Of the 350 patients studied and screened, 6% of the patients had serum bilirubin levels $\geq 2\text{mg/dl}$.

Liver function tests revealed that 25 patients amongst 350 (18.85%) had elevation in serum Alkaline Phosphatase levels. Of the 25 patients with elevation in serum Alanine Transaminase / Aspartate Transaminase more than two times above normal, 11 (44%) were having serum bilirubin $\geq 2.0\text{mg/dl}$. The association between elevated serum bilirubin and elevation in transaminases was significant ($p = 0.000$)

Table 1:

Relationship Of Elevated Serum ALT And AST With Clinical Features				
		AST/ALT elevated more than twice normal		
Clinical features	Number	Elevated n=25	Not elevated n=325	χ^2 Value
Yellow discoloration of skin /eyes	70	15	55	P= 0.000 Sig
Itching	280	10	270	P= 0.001 Sig
Malaise	73	17	56	P= 0.000 Sig
Myalgia	70	16	54	P= 0.000 Sig
Arthralgia	70	16	54	P= 0.000 Sig
High colored urine	112	23	89	P= 0.000 Sig
Loss of appetite	77	19	58	P= 0.000 Sig
Abdominal discomfort	49	10	39	P= 0.000 Sig
Vomiting	112	16	96	P= 0.000 Sig

Amongst these 25 patients, 84% were consuming water treated at source and boiled again at consumer level. 4% were consuming untreated water nevertheless being boiled at consumer level. 12 were resorting to in- sanitary means of excreta disposal. The association was found to be non-significant ($p>0.05$). None of the patients had any episode of jaundice in non-pregnant or pregnant state.

Of 25 patients who were subjected to hepatitis serology, 7 were found positive for hepatitis B surface antigen suggestive of acute hepatitis B infection. None of the patients was having serology suggestive of acute hepatitis A, E and C viral infections.

71.4% patients with positive serology were in the third trimester. 28.5% patients were in the second trimester with none of the patients in first trimester. Of the 7 hepatitis patients majority belonged to Class V (n=3), 2 were from urban area and 5 from rural area. Non-significant association was seen between the place of residence and presence of acute viral hepatitis. Five people were resorting to insanitary disposal methods and the association was found to be non-significant. All the patients were consuming water treated at source followed by boiling at the consumer level. Of the hepatitis patients two had known risk factors in the form of parenteral drug use , blood transfusion in two cases and dental intervention in one case. Three cases were having poor food hygiene and one was habitually consuming food from roadside vendors.

Only 3 had serum bilirubin > 2 mg/dl. Thus 4 patients with positive serology were in the anicteric state of the disease. Positive hepatitis serology had non-significant ($p>0.05$) association with serum bilirubin levels.

Table II:

Incidence of Liver disease during pregnancy		
LIVER DISORDER	n	%
Hepatitis due to HBsAg or other causes	25	0.28
Cholestasis of pregnancy	66	0.75
Gilbert's syndrome / unknown cause	1	0.01
Total	93	1.06

Jaundice manifesting during pregnancy can be an indication of diseases which are either inherent to pregnancy or due to various infective causes. Viral hepatitis is the major cause of jaundice during pregnancy. In our study seven patients were found to be positive for viral hepatitis (all types) giving an incidence of 0.8 per 1000 pregnant women (0.08% of 8750 women examined). de Silva HJ, Jayawardene J et al have shown 0.35 cases of viral hepatitis in every 1000 pregnancy related admissions⁽⁸⁾ Sharda Patra, Ashish Kumar⁽⁹⁾ et al have reported 0.6% incidence of jaundice due to viral hepatitis in pregnant women.

In contrast to above findings Khuroo MS, Teli MR⁽¹⁰⁾ have reported 8.8%, 19.45% and 18.6% incidence of hepatitis in pregnant in 1st, 2nd and 3rd trimesters. This gross difference can be explained on the basis of the fact that their study was conducted in the period of epidemics of HEV in the state.

28% patients of the 25 screened for hepatitis had Hepatitis B infection. Sharda Patra⁽⁹⁾ has also shown that amongst non HEV acute viral hepatitis in pregnancy Hepatitis B Viral infection was the commonest.

Beniwal et al⁽¹¹⁾ from North India studied 97 consecutive pregnant patients in third trimester with acute viral hepatitis (AVH) or fulminant hepatic failure (FHF). Hepatitis E virus (HEV) was the causative agent in 47.4% of the cases of viral hepatitis and 52.6% were caused by non-E viruses (HAV-5.2%, HBV-7.2%, HCV-0%, non A-E 47.4%). HEV was responsible for 36.2% of the cases of AVH and 75% of the cases of FHF. The mortality was 24.7% (24/97).

In a series of 290 cases of jaundice complicating pregnancy, Lahiri⁽¹²⁾ from Kolkata reported that 90% were due to viral hepatitis. Bhosale et al⁽¹³⁾ reported the incidence of viral hepatitis to be 0.28%. Viral marker study revealed that 45% women were affected with HEV, 21.4% with HBV, 19% with HAV.

The 7 patients with positive HBsAg had associated risk factors for hepatitis B virus transmission. All the risk factors in the study have already been established as the major modes of transmission of Hepatitis B infection⁽¹⁴⁾ although in the present study they had a non-significant association with acute viral hepatitis. Similar findings were shown by Bryan JP, Reyes Let al⁽¹⁵⁾ where they concluded acute hepatitis B as the most common cause of viral hepatitis in pregnancy but the modes of transmission remained obscure.

Presence of acute viral hepatitis B had non-significant association with type of water consumption, mode of excreta disposal and social class. Acute viral hepatitis due to HEV poses a risk to travelers in endemic areas⁽¹⁶⁾. The main source of infection of HEV is contaminated drinking water⁽¹⁷⁾. In view of the above-mentioned facts, the absence of hepatitis A viral infection and hepatitis E viral infection can be because of the fact that all the risk factors for the development were seen in lesser proportion of the patients screened for hepatitis serology. 96% of the 25 patients were consuming tap water with purification at source (water treatment/ filtration plants).

The high incidence of HEV infection shown by Khuroo MS, Teli MR⁽¹⁰⁾ and high prevalence of HEV (86%) among pregnant viral hepatitis patients⁽¹⁸⁾ could have been because the study was conducted on hospitalized pregnant patients with viral hepatitis in a Gastroenterology ward and can not corroborate for the presence of hepatitis when the pregnant community is considered as a whole. The high level of precautions practiced by the pregnant could be the possible reason for absence of such cases. Other patients with more than 2 times elevation in ALT/AST but negative for hepatitis A-E serology can be contributed to presence of non A-E hepatitis. These findings have earlier been demonstrated also⁽¹⁹⁾.

IV. Conclusion

Hepatitis B viral infection was the commonest type of hepatitis. The risk factors for contraction of acute viral hepatitis B are prevalent in pregnant community in the form of parental drug use, blood transfusions during pregnancy, intrapartum and post partum period in addition to their inherent vulnerability to infections during pregnancy due to decreased resistance.

With a high degree of hygiene in terms of safe drinking water, proper excreta disposal, hepatitis A and E viral infections were conspicuously absent in the present study. Information, education and communication activities can further sustain such practices in the community whereas people need to be made aware about the parenteral modes of transmission in case of hepatitis B, C and D viral infections.

V. Recommendations

1. Patients with more than two times elevation in serum transaminases in absence of hepatitis A-E serology favour the presence of non A-E forms of hepatitis. Further studies for demonstration of causative agent are needed.
2. Hepatitis B viral infection in the present study showed an incidence of 0.08% of the pregnant included in the study. It is an indirect reflection of the burden of disease in the pregnant women in the community and general population of which they form a part. Majority of the cases being anicteric with upper gi symptoms common for hepatitis & the pregnant state itself advocates Hepatitis B screening as an important part of antenatal workup.

Bibliography

- [1] Sims J, Duff P "Viral Hepatitis in pregnancy" *Semin Perinatol* 17: 384, 1993.
- [2] "Liver Diseases not specific to pregnancy" *Eurekah Biosciences Collection-Gastroenterology-Spectrum of Maternal Liver Diseases*. Chapter 51403, Section 51406 year 2000.
- [3] Lee, W.M. Pregnancy in patients with chronic liver diseases, *Gastroenterol Clin North Am*. 1992; 21: 889-903
- [4] Adams, R.H., Combes R. Viral hepatitis during pregnancy. *JAMA* 1965; 192: 195-198.
- [5] Cahill, K.M. Hepatitis in pregnancy. *Surg Gynaecol Obst*. 1962; 114: 545-552
- [6] Kamat, S.K. Prognosis of infection hepatitis in pregnant women. In *Hepatitis*, Vakil, B.J. Shah S.G (Eds), Adoni Publishers, Bombay, 1975, Pg: 50-53
- [7] Khuroo MS. Aetiology and prognostic factors in acute liver failure in India. *J Viral Hepat* 2003; 10: 224-31
- [8] de Silva HJ, Jayawardene J et al. Viral Hepatitis complicating pregnancy- a five year hospital based retrospective study. *Ceylon Med J*; 38(1): 15-7 : Mar 1993
- [9] Sharda Patra, Ashish Kumar, Maternal & Fetal Outcomes in Pregnant women with Acute Hepatitis E virus infection. *Ann Intern Med* :: 147: 28-33: 2007

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- [10] Khuroo MS, Teli MR, et al "Incidence and severity of viral hepatitis in pregnancy." Am J Med 70: 252-255, 1981.
- [11] Beniwal M, Kumar A, Kar P et al. Prevalence and severity of acute viral hepatitis and fulminant hepatitis during pregnancy: a prospective study from north India. Indian Journal of Medical Microbiology. 2003; 21:184-185
- [12] Lahiri BC: Jaundice in pregnancy. J Obstet Gynaecol. India 26: 363-67, 1976
- [13] Rachana Bhosale, Shilpa Patil et al. bhj. Org journal April 2006; 283-85
- [14] Hepatitis. K. Park, Preventive & Social Medicine, 19th Edition (2007) Page 177
- [15] Bryan JP, Reyes Let al "Epidemiology of acute hepatitis in the Stann Creek District of Belize, Central America" Am J Trop Med Hyg: 65(4):318-24, Oct 2001.
- [16] Shwartz E, Jenks NP et al. Hepatitis virus infection in travelers
- [17] Clin Infect Dis 1999; 29: 1312-4 Sarin SK, Kumar M et al. A textbook of Liver Diseases. 5th Edition, Philadelphia, Saunders Elsevier: 693-723:2006.
- [18] Khuroo MS and Kamili S. "Etiology, clinical course and outcome of sporadic acute viral hepatitis in pregnancy." J Viral Hepat 10:61-69, 2003.
- [19] Khan MA, "Obstetric outcome and vertical transmission in pregnant patients with viral hepatitis", Thesis submitted to Sheri Kashmir Institute of Medical Sciences University, 1996.