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Spectrum of HBV, HCV and HIV virus serological markers, clinical characters and their correlation with risk factors in pregnant women benefited by Janani Sureksha Yojana among rural population of North India

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ABSTRACT

Vertical transmission is also mode of transmission of virus diseases. In pregnancy they may cause preterm delivery, abortion, ectopic pregnancies, hepatitis, cirrhosis and hepatocellular carcinoma. Janani Sureksha yojana is a scheme in which all pregnant women are benefited if they deliver in government medical facility .Antenatal screening for HBV,HCV and HIV should be done to diagnose viral infections . Present study was conducted in central laboratory of Rural Institute of Medical Science and Research Safai, Etawah (U.P) on pregnant women who attended the antenatal care under Janani Sureksha Yojna from 1January to31December 2014. The aim of study was to detect the frequency of HbsAg, HCV antibody, HIV antibody and their correlation with associated risk factors Out of 7867 women(2.07%)found positive for HbsAg, (0.43%),(0.13%)for HCV antibodies and HIV antibodies. Common age group was 21-30 years (68.48%). Among the clinical symptoms dominant symptom was fever(33.52%), .The associated risk factors were Obstetric and Gynaecology surgeries (46.15%) was prominent and found more among HbsAg sero positive females.
The frequency of HbsAg (2.07%) was more. Fever, body ache were common clinical features. Obstetretic and Gynecology surgery, blood transfusion, were major associated risk factors. So, screening for Hbs Ag, HCV antibody , HIV antibody should be mandatory for pregnant women during antenatal care specially in rural areas to reduce the mortality and morbidity of pregnant women and their new ones.

INTRODUCTION

The main infectious agents screened during the pregnancy are usually the TORCH group. But HBV,HCV and HIV which can be transmitted from infected mother to fetus both vertically and horizontally. However, these viral infections transmission risk increases among persons who are given un-sterilized therapeutic injections, sharing of infected needles among I.V drug abusers ,having unsafe sex, cosmetic alterations such as tattooing , body piercing done by infected needles, transfusion of contaminated blood, sharing of items infected. Maternal to fetal or infant vertical transmission may also occurs during pregnancy, childbirth.. The risk of transmission ranges from 10% in Ist trimester to as high as 90%in 3 rd trimester .It is specially high 90% from those mothers who are seropositive of HbsAg and HBe Ag[1] but transmission is 30% if the mother is HBe Ag negative[2]. In endemic regions such as Africa & south east Asia ,spread from an infected mother to neonates during birth is common (vertical).Theses infected neonate often lead to carrier state for life [3]. The major complications of HCV infection are maternal which predominantly involves hepatitis ,hepatic failure and hepatocellular carcinoma[4].Vertical transmission of HCV is uncommon and the risk of transmission of HCV from viremic HCV RNA positive mother to infants is 3.2%.[2] however, it causes complications when additive to either HBV or HIV, which is increasing now a days. There is increased incidence of post partum hemorrhage, hepatic coma and hemorrhagic manifestations. The effect of HIV on pregnancy are pre term delivery, fetal growth restriction, spontaneous abortion ,ectopic

pregnancies also seen. In viral hepatitis clinical symptoms are malaise, fatigue , nausea, loss of apatite ,wt loss , fever , headache, muscle and joint pain, diarrhea, jaundice whereas the typical clinical features in patient with HIV are fever, wt loss, diarrhea , generalized lymphadenopathy ,opportunistic infections[1].The possibility of vertical transmission of these viral infections highlight the importance of screening of HBV, HCV and HIV among pregnant women who attended our central lab for the antenatal care under Janani Sureksha Yojana. Janani Sureksha Yojana is central government scheme in which all pregnant women ,irrespective of age ,poverty status and number of birth are eligible for benefits under JSY if they deliver in government medical facility. It has benefits making it possible to refer these infected women for anti viral therapy at appropriate time so as to prevent further complications of these viral infections and her baby.

MATERIAL AND METHOD

This is a retrospective study conducted in central laboratory of Rural institute of medical science & research Saifai, Etawah (U.P) on pregnant women who attended tertiary care hospital benefitted by Janani Sureksha Yojna. The study was carried out from 1st January 2014 to 31 December 2014.All relevant clinical detail was collected using a well defined proforma.HBV screening was done by testing for HbsAg. It is an in-vitro immune chromatographic (rapid), one step assay designed for qualitative determination of HbsAg in human serum manufactured by SD bio standard diagnostic pvt ltd. The screening of HCV was done by SD Bioline HCV test kit .It is an immune chromatographic (rapid) test for the qualitative detection of antibodies specific to HCV,in human serum ,plasma or whole blood. HIV test was screened using Alere Trueline HIV- ½ is an immune chromatographic (rapid) test for the qualitative detection of antibodies of all isotypes specific to HIV-1, and HIV-2 simultaneously in human serum, plasma or whole blood.

RESULTS

Out of the screened pregnant women 163 (2.07%)was found positive for Hbs Ag, 34 (0.43%)was found positive for HCV antibodies and 11 (0.13%)for HIV antibodies.

Co infection of HbsAg and HIV antibody was found in (0.01%) .Similarly co infection of HCV antibody and HIV antibody was found in(0.02%). The most common age group for blood borne viral pathology was21-30 years(68.48%). The common clinical finding were fever (33.52%) .The associated major risk factors were Obstetric and Gynecology surgery (50.84%).

History of these associated risk factors was found more in relation with HbsAg positive pregnant women in comparison with others viral pathogens

Table 1. : Age distribution of pregnant women tested for HbsAg, HCV antibodies & HIV antibodies

Age	Total Pregnant women tested	HbsAg positive Pregnant women	HCV antibodies positive pregnant women	HIV antibodies positive pregnant women	Total tests positive pregnant women
10- 20	825(10.48%)	6 (3.68%)	1 (2.94%)	00	7 (3.36%)
21-30	5388 (68.48%)	126 (77.30%)	24(70.58%)	9 (81.81%)	159(76.44%)
31-40	1624 (20.64%)	30 (18.40%)	9 (26.47%)	2(18.18%)	41(19.71%)
41-50	30 (0.38%)	01(.61%)	00	00	01 (.48%)
Total	7867	163 (2.07%)	34 (0.43%)	11 (0.13%)	208(2.64%)

Table 2. : Clinical findings of pregnant women positive for HbsAg, HCV antibodies & HIV antibodies

Clinical findings	Hbs Ag positive pregnant women	HCV antibodies positive pregnant women	HIV antibodies positive pregnant women	Total
Fever	139 (79.42%)	30 (17.14%)	6(3.42%)	175 (33.52%)
Body ache	115 (77.70%)	28 (18.91%)	5(3.37%)	148 (28.35%)
Jaundice	102 (94.4%)	5 (4.6%)	1 (0.64%)	108(20.6%)
Wt loss	25 (73.52%)	3(8.82%)	6 (17.64%)	34 (6.51%)
Pruritis	22 (73.33%)	6 (20%)	2 (6.66%)	30 (5.74%)
Lymphadenopathy	10 (62.5%)	2 (12.5%)	4 (25%)	16 (3.06%)
Diarrhea	5 (55.55%)	1(11.11%)	3 (33.33%)	9 (1.72%)
Opportunistic infections	0	0	2 (100%)	2 (0.38%)
Total				522

Table 3. : Associated risk factors among pregnant women for HbsAg , HCV antibodies & HIV antibodies.

Associated risk factors	H Bs Ag positive pregnant women	HCV positive pregnant women	HIV positive pregnant women	Total
H/O Obstrectic & Gynecology surgeries	26 (86.66%)	3(10.00%)	1(3.33%)	30(46.15%)
H/O Blood Transfusion	11(84.61%)	1(7.69%)	1(7.69%)	13(20%)
H/O Nose , Ear piercing & Tattooing	8(80%)	2(20%)	00	10(15.38%)
Husband Living away	4(66.66%)	1(16.66%)	1(16.66%)	6(9.23%)
H/O Hepatitis	3(75%)	1(25%)	00	4(6.15%)
H/O Dental exposure	1(100%)	00	00	1(1.53%)
Multiple injection	1(100%)	00	00	1(1.53%)
Total	54(83.07%)	8(12.03%)	3(4.61%)	65

Obstetric and Gynecology surgeries(86.66%), blood transfusion (84.61%) and other was found more associated with HbsAg infection.

DISCUSSION

Viral hepatitis B, C and HIV are the major concern throughout the globe. Hepatitis B virus is a DNA virus of the family hepadna viridae and causative agent of hepatitis B infection. The virus is transmitted by parental route, sexual contact, vertical transmission and through breast milk. If mother is positive for HBV infection then transmission of HBV to infant risk increases from10% in1st trimester to as high as 90% in 3rd trimester of pregnancy . Approximately 10% of the infected patients will become chronic carriers of HBV. They are at high risk of developing chronic active hepatitis ,cirrhosis and hepatocellular carcinoma whereas in infected neonates causes chronic carriers . Approximately 25% of carrier neonates will die from cirrhosis or hepatic carcinoma between late childhood to early adulthood All screening tests among pregnant women Hbs Ag, HCV antibodies and HIV antibodies were done under Janani Sureksha Yojna, launched on 12 April 2005 by prime minister of India .Aim is to reduce neonatal and maternal deaths happening in country by promoting institutional delivery of babies. Janani Sureksha Yojna is an Indian government scheme proposed by government of India.JSY literally means maternal protection scheme.JSY provide cash incentive to all women on birthing in health institution, cash incentive is intend to reduce financial burden to accessing institutional care for delivery .All pregnant women ,irrespective of age, poverty status and number of birth are eligible for benefits under JSY if they deliver in government medical facility [5]The frequency of HbsAg in present study was (2.07%) which was much lower and comparable with 4.60% in study done by Taseer I.U.Haque [6] ,6% in study done by Oluboyo [7]and 3.2% in study done by YUcela [8]. The prevelance of hepatitis B infections among pregnant women varies in different parts of world and from one population to another even in country .Due to geographic patterns of diseases and similar patterns of transmission ,notably through I.V drug abuse , blood transfusion and sexual activity, there are growing cases of co infection of HIV with hepatitis virus specially Hepatitis B and C virus[9].It is therefore common to observe co infection involving HIV and HBV ,HIV and HCV or even all three viruses in one patient alone[10,11].The effects of these hepatitis viruses on HIV disease progression remained controversial ,studies have revealed that the viruses may actually increases rate of progression to AIDS and AIDS related death , impair immune reconstitution ,elevate risk of hepato toxicity from HAART therapy and over all level of CD4 count ,all symptoms which have been observed to account for a reduced rate of survival for co infection patients than for those with HIV mono infection. While HIV infection may lead to more aggressive HBV or HCV infection and rapid progression to cirrhosis and end stage liver disease[12,13].In present co infection of HbsAg and HIV was found in one pregnant women (0.01%) which was much lower than study done by Ajayi BB[14].

Hepatitis C virus is an RNA virus of the flaviviridae family and appears to have humans and chimpanzees are the only species susceptible to its infection [15].It is recognized as major cause of Non A, Non B hepatitis .Vertical transmission occurs in 3 to 6 % of fetuses .The major complications are maternal and is responsible for fulminant hepatitis , hepatic failure. The frequency of HCV antibodies in this study was (0.43%) which was comparable with study done by [6,7] reported low prevalence which may be due to low prevalence of HCV antibodies among these rural inhabitants .The risk of peri natal transmission is much lower with hepatitis C (6% of birth to infected mothers) than with Hepatitis B (20-60%) of birth to infected mothers[16]. Increased risk of HCV transmission is associated with parallel HIV infection in at least 15%[17].Co infection of HCV and HIV was found among 2(0.02%) pregnant women of 21-30 years age group whereas Ajayi BB[14] found (0.2%)which was much higher.

Acquired immunodeficiency syndrome (AIDS) is caused by HIV (Human immune deficiency virus) which is a group of retrovirus HIV-1 and HIV-2.Exact timing of HIV transmission from mother to fetus or infant not known with certainty but some infected in uterus ,late gestation or during delivery or via breast milk in lactating mothers. However, mostly occurs during child birth. Preterm delivery , fetal growth restriction, spontaneous abortion and ectopic pregnancies are also reported more often . Acquiring HIV during pregnancy is higher and may be due to hormonal influence or pregnancy related immune suppression. Sero positivity of HIV was 0.13% much lower than study done by [8].

The majority of the positive cases 159 (76.44%) were in the

age group of 21-30 years[Table -1] which was consistent with study done by Taseer [6] .

In viral hepatitis clinical symptoms are malaise, fatigue , nausea, loss of apitite ,wt loss , fever , headache, muscle and joint pain, diarrhea, jaundice in hepatitis B 10% patients may present with serum sickness like syndrome .This consist of fever, rash and arthraglia attributing to circulating immune complex. Icteric hepatitis is absent in about half the cases of HBV and in the majority of cases of HCV whereas the typical clinical features in patient with HIV are fever, wt loss, diarrhea , generalized lymphadenopathy, opportunistic infections[1] . [Table 2]

Obstetric and gynaecological surgeries were major associated risk factor (46.15%). History of Obstrectic and Gynecology surgeries were found more in HbsAg sero positive women (86.66%), followed by HCV (10%) and HIV sero positivity (3.33%) [Table 3].Explanation is most of the surgeries was done by untrained dais under unhygienic conditions.

Who received transfusion of HIV infected whole blood or components accounts for 1% of patients[1].Similarly Hepatitis B and C also spread via contaminated blood transfusion. Sero positivity among blood donars was (2.63%)for HbsAg, HCV antibodies (0.34%) and HIV antibodies(0.19%)in saifai, Etawah(U.P)[18].History of blood transfusion was found in (20.00%)among sero posivity pregnant women. Maximum correlation was associated with HbsAg seropositivity (84.61%) followed with HCV antibody (7.69%) and HIV antibody(7.69%) sero positivity. Reason for transmission is improper screening of blood donars and positivity in window period.

The other remaining risk factors were nose, ear piercing and tattooing, hepatitis, dental procedure and multiple injections also seen.

CONCLUSION

All the risk mothers and babies can only be identified through screening mothers during pregnancy .Clinical features and detail history are additive in diagnosis of viral diseases. Prevention of these blood born viral infection in the pregnant women is a key element to reduce and eliminate .Frequent free health camps should be conducted specially for rural population. Free screening ,immunization and prophylaxis, health education should be provided to all pregnant women so as to reduce morbidity and mortality due to these viral pathogens among pregnant women though Janani Sureksha Yojana is highly beneficial scheme to pregnant women specially in rural population among poor it should be enhanced .

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