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Seroprevalence of Hepatitis B, Hepatitis C and HIV Infection in Tertiary Care Teaching Hospital in Moradabad (U.P)

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Original Research Article

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Abstract: Hepatitis B, Hepatitis C and HIV infection are serious global health problem. Many risk behaviors as well as the routes of transmission for HBV and HCV infections are identical to those for HIV and other sexually transmitted diseases. Hepatitis C is ubiquitous disease. It affects around 200 million people worldwide. The HIV/AIDS epidemics are one of the largest Public Health Problem of 21st century. A total 250 samples were tested from antenatal cases for HBsAg, HCV and HIV. Out of total samples, 42 (16.8%) were reactive. In which 31 (12.4%) were reactive for HCV, 9 (3.6%) were reactive for HBsAg. & 2 (0.8%) were reactive for HIV. 1 sample was reactive for HIV- HCV coinfection in the ANC group and none of the sample was reactive for HIV-HBV & HBV-HCV coinfection. To study the incidence of viral markers i.e. Hepatitis B, Hepatitis C and HIV in ANC cases. Rapid card test were used for detection of HIV, HBV and HCV. All the rapid card tests for viral marker are based on Immunochromatographic method.250 blood samples were taken in our study. The study was conducted in serology section of microbiology department at Teerthanker Mahaveer Hospital & Research canter Moradabad (U.P.). A total 250 samples were tested from Antenatal cases for HBsAg, HCV and HIV. Out of total samples, 42 (16.8%) were reactive. In which 31 (12.4%) were reactive for HCV, 9 (3.6%) were reactive for HBsAg. & 2 (0.8%) were reactive for HIV. 1 sample was reactive for HIV- HCV coinfection in the ANC group and none of the sample was reactive for HIV-HBV & HBV-HCV coinfection. Prevalence of HI, HBsAg and HCV among ANC cases represents their prevalence among normal population. Such studies are needed to know the prevalence of such diseases in our society which can help us to form the guidelines for patient management.
Keywords: ANC, HBsAg, HCV, HIV.

INTRODUCTION

Hepatitis B virus (HBV) belongs to the family of Hepadnaviridea. HBV is a complex 42 nm double shelled particle and outer surface of virus contains Hepatitis B surface antigen and it enclose an icosahedral 27 nm nucleocapsid, which contain Hepatitis B core antigen (HBc Ag). Inside the core is genome present, a circular double stranded DNA and DNA polymerase. HBV has not been cultivated in the laboratory but limited production of the virus and its protein can be obtained from cell lines transfected with HBV DNA. HBV proteins have been cloned in yeast and bacteria [1].

Hepatitis B virus infects the liver, kidney and pancreas of man. HBV establishes chronic infections. Hepatitis is related to blood transfusion, Hepatitis B was previously called serum Hepatitis B[2].

Hepatitis C virus (HCV) is a blood borne virus was identified in '1989.' Hepatitis C virus is a small, enveloped, single-stranded, positive sense RNA, in the flaviviridae family [3].

Hepatitis C is major global public health problem affecting 3% of the world population, i.e., 180 million people globally [4].

Study of HCV is important because it predisposes to eventual development of liver fibrosis, as well as hepatocellular carcinoma [5].

The HIV/AIDS epidemics are one of the largest Public Health Problem of 21st century. Vaccine for HIV remains elusive [6].

HIV is spherical enveloped virus about 90-120 nm in size. HIV is a retrovirus, which is member of the Lentivirus genus, and exhibits many of the physicochemical features typical of the family. HIV in humans originated from cross-species infected by simian viruses in rural Africa, probably due to direct human contact with infected primate blood. The predominant causes of morbidity and mortality among patients with late –stage HIV infection are opportunistic infections i.e. severe infections induced by agents that rarely cause serious disease in immune-competent individuals. Opportunistic infections usually do not occur in HIV-infected patients until CD4 T-cell counts have dropped from the normal level of about 1000 cell/mL to less than 200 cells/mL [7].

MATERIALS AND METHODS

The study was conducted in serology section of microbiology department at Teerthanker Mahaveer Hospital & Research centre Moradabad (U.P.).

250 Blood samples collected among ANC group, from the obstetrics and gynaecology department of the hospital for the analysis purpose.

Sample was collected from February 2017 to January 2018 among ANC group. Using qualitative methods, including interviews with key informants, observations and focus group discussion, data were collected on social, economic and cultural factors that could help in understanding sexual behaviour patterns.

Specimen

- 5 ml blood sample was collected by venous puncture method from all ANC group, for the testing of HIV antibody, HBsAg and HCV antibody.
- HIV TRI-DOT, HEPACARD, and HCV TRI-DOT test was performed on serum or plasma only immediately after collection.
- If not tested immediately, specimen was refrigerated at 2 to 8 °C up to 3 days following collection.
- If testing was not possible within 3 days, specimen was stored frozen at -20°C.

Appliance

- Collection vial
- Syringes-5ml
- Needles
- Tourniquet
- Gauze-sponges- for application on the site from which the needle is withdrawn.

Venepuncture procedure

- The venipuncture procedure is complex, requiring both knowledge and skill to perform. Essential steps have taken for successful collection procedures are:-
- ANC group were identified for blood collection.
- Label the tube with the patient's.
- Suitable site for venipuncture were selected. Although median cubital and cephalic vein on the dorsum of the arm or dorsal hand veins are also acceptable for venipuncture.
- Tourniquet was tied on the patient about 3-4' above the venipuncture site.
- Patient was advised to form a fist so veins are more prominent.
- After finding the vein, clean the venipuncture site with 70% isopropyl alcohol using circular motion and allow the area to dry.
- Use thumb to draw skin tight about 1-2" below the venipuncture site. Steadily needle was inserted, through the skin into the lumen of vein. Trauma and excessive probing was avoided.
- 5ml of blood was drowning in syringe and then the tourniquet was removed.
- After opening the patient's hand, place dry gauge over the venipuncture site and slowly remove the needle.
- The sample was collected in the plain vial.

Serum separation

Serum was separated from blood sample by centrifuging the collected blood sample at 3000 rpm for 3 min.

Serological diagnosis

- The collected serum was tested for HIV antibodies using standard recommended procedure, rapid card test as HIV TRI-DOT.
- HBsAg was determined by rapid card, HEPACARD (biomed industries, India ®). The entire test was performed in accordance with the manufacturer's instructions with adequate control.
- The serum was tested for HCV antibodies using standard recommended procedure, rapid card test as HCV TRI-DOT.

RESULTS AND DISCUSSION

The study was carried in TMMC&RC, tertiary care teaching hospital, Moradabad, UP. The blood samples 250 collected among ANC group from obstetrics and gynaecology department of the hospital for the analysis purpose.

Sample was collected from February 2017 to January 2018 among ANC group.

Table-1: Prevalence of infections in antenatal women

Infections	Reactive	Non-reactive	Total Sample
HBsAg	9	208	250
HCV	31		
HIV	2		

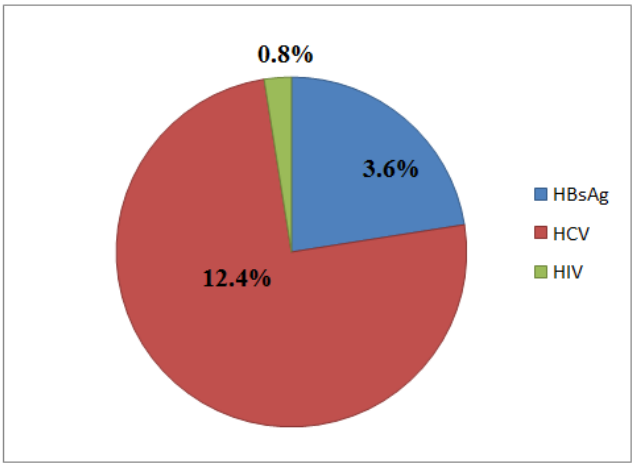

Fig-1: Prevalence of infections in antenatal women

Table-1& figure -1 shows Out of total 250 samples, 42(16.8%) were reactive. In which 31 (12.4%) were reactive for HCV, 9 (3.6%) were reactive for HBsAg. & 2 (0.8%) were reactive for HIV.

Table-2: Coinfections in the antenatal women

Co-infections	Reactive	Non-reactive	Total Samples
HIV-HBV	0	249	250
HIV-HCV	1		
HBV-HCV	0		

Table-2 Shows that 1 sample was reactive for HIV- HVC coinfection in the ANC group and none of the sample was reactive for HIV-HBV & HBV-HCV coinfection.

Figure-2 & 3-shows that 3.6% sample were reactive for HBsAg and 96.4% samples were non-reactive. Figure 4 & 5:- shows that 12.4% sample were reactive for HCV and 87.6% samples were non-reactive.

Table-3: Age wise seroprevalence of HBsAg

		Age					
Infection	R/N-R	17-21	22-26	27-31	32-36	>36	Total
HBsAg	Reactive	1	5	2	1	0	9
	Non-reactive	23	110	76	25	7	241
	Total	24	115	78	26	7	250

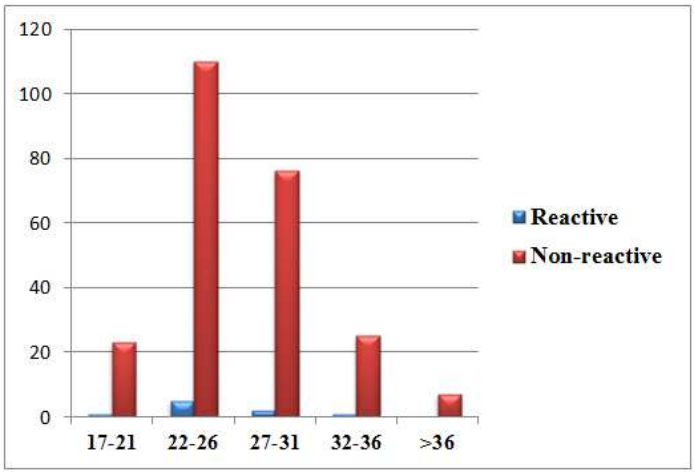

Fig-2: Age wise seroprevalence of HBsAg

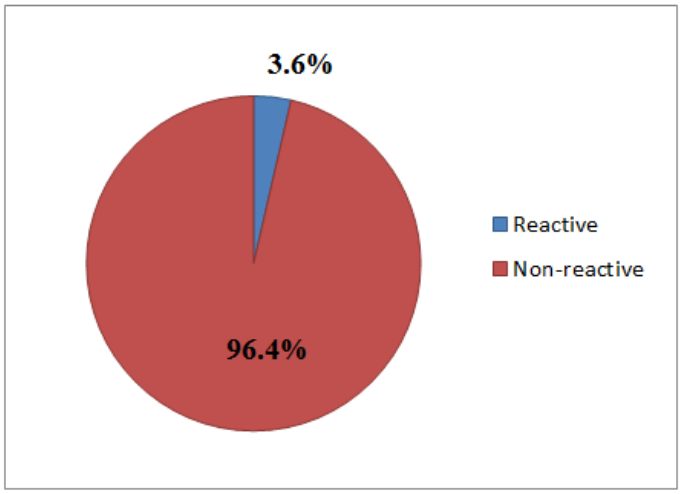

Fig-3: Total % of HBsAg Reactive & Non-reactive in ANC group

Table-4:-Age wise seroprevalence of HCV

		Age					
Infection	R/N-R	17-21	22-26	27-31	32-36	>36	Total
HCV	Reactive	4	19	5	2	1	31
	Non-reactive	20	96	73	24	6	219
	Total	24	115	78	26	7	250

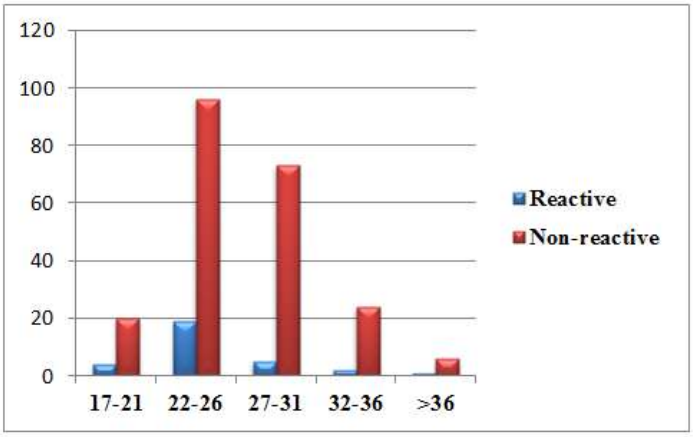

Fig-4: Age wise seroprevalence of HCV

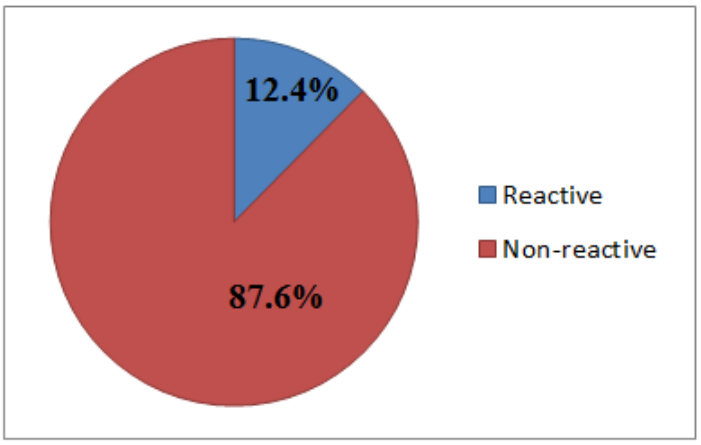

Fig-5: Total % of HCV Reactive & Non-reactive in ANC group

Table-5: Age wise seroprevalence of HIV

		Age					
Infection	R/N-R	17-21	22-26	27-31	32-36	>36	Total
HIV	Reactive	1	1	0	0	0	2
	Non-reactive	23	114	78	26	7	248
	Total	24	115	78	26	7	250

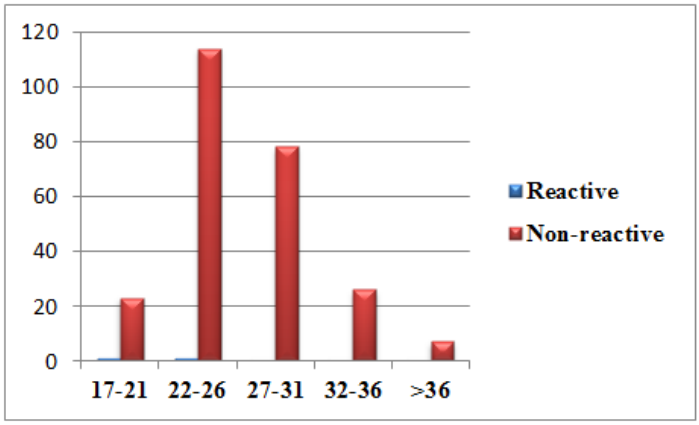

Fig-6: Age wise seroprevalence of HIV

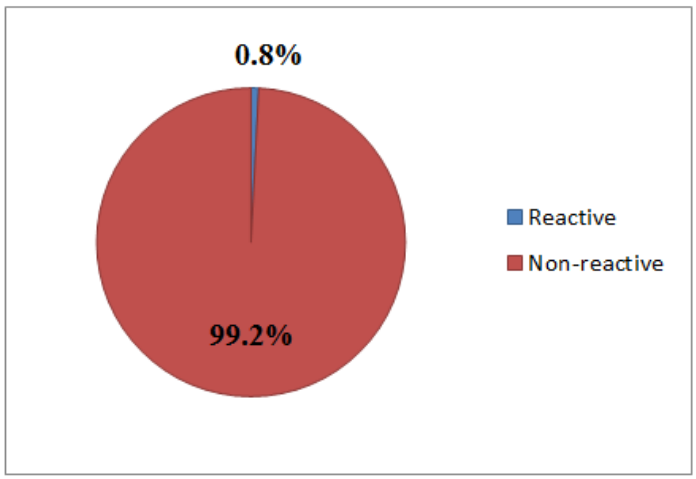

Fig-7: Total % of HIV Reactive & Non-reactive in ANC group

Figure 6 & 7:- shows that 0.8% sample was reactive for HIV and 99.2% samples were non-reactive.

The prevalence of HBV, HCV and HIV/AIDS varies from country to country and there is wide variation in the prevalence in different regions of our country. In our study 250 sample were tested and analyzed for HBsAg, HCV and HIV in ANC group. Among 250 ANC group, 31 samples were reactive for HCV, 9 were reactive for HBsAg and 2 were reactive for HIV. 1 sample was reactive for co-infection HIV-HCV, none reactive for co-infection HIV-HBV and HBV-HCV. The HIV-HCV co-infection was commoner than HIV-HBV co-infection in our study. This study highlights the high prevalence of HCV infection among pregnant women attending ANC in TMMC & RC, Tertiary care teaching hospital, Moradabad, U.P.

In our study the overall prevalence rates for various infections were HBsAg 3.6%, HCV 12.4% and HIV 0.8%, in comparison to lower than the prevalence rate of HCV 0.19% & HIV was 0.39% while the seropositivity of HBsAg approximately 3.03% recorded by Khokhar neeta *et al*. [8].

In our study the frequency of HBsAg 3.6% among ANC group. This finding is in agreement with studies carried out by Seid mohammed *et al*. [9] & Khokhar neeta *et al*. [8].

In our study the prevalence of HCV infection 7.6% was higher among pregnant women aged 22-26 year, due to lack of vaccines available and recently there are no effective management strategies to reduce transmission, including caesarean section and the avoidance of breastfeeding. Fetal electrode application and fetal scalp blood sampling should be avoided HCV infection.

In some states of India, Andhra Pradesh lies in six most high prevalence states for HIV and next Manipur. HIV is responsible for about 40 million chronic infections while Hepatitis C infection 130 million and Hepatitis B infection 370 million chronic infections respectively.

CONCLUSION

Prevalence of HIV, HBsAg and HCV among ANC cases represents their prevalence among normal population. Such studies are needed to know the prevalence of such diseases in our society which can help us to form the guidelines for patient management.

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