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Original Research Paper
Medical Microbiology
SERO SURVEY OF HIV, HBV AND HCV AMONG THE PATIENTS VISITING
TERTIARY CARE HOSPITAL.
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ABSTRACT Objective: The emergence of Human immunodeficiency virus(HIV), Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections has posed the greatest challenge to public health in modern era. Study was done retrospectively to find out burden of HIV, HBV and HCV in community. Similarly we tried to study other sociodemographic factors and correlates of HIV. Methodology: A retrospective study was done. Serum samples were processed and analysed in the department of microbiology, in tertiary care hospital since JAN 20 to JAN 22. The study included all OPD and IPD patients sample. Results: A total of 21600 samples were analysed retrospectively. Prior consent was taken. Of these, 13490 were males and 8110 were females. The seroprevalence of HIV was found to be 0.5%, HBsAg 0.70% and HCV was 0.25 among population visiting Tertiary Care Centre. Coinfection rate of hepatitis B and hepatitis C with HIV positive patients was found to be 5 (0.23%). Conclusions: Prevalence HIV, HBV and HCV seropositivity was found to be very low in this population around our tertiary care hospital. Sexually transmitted infection history was most relevant risk factors of co-infection among seropositive population. Coinfection rate of hepatitis C with HIV positive patients with high risk sexual behaviour.

KEYWORDS : HIV, HBV, HCV, Seropositivity, Coinfection

# INTRODUCTION

Our community is carrying a huge burden of HIV HBV and HCV. These three infection have common routes of transmission. Studies have given evidence of transmitting these infections mostly through use of seropositive blood and blood products.<sup>1</sup> India is crrying a huge load of hiv as this pandemic spreading fast. Around 20 million of population is affected with HCV infection leading to development of hepatocellular carcinoma and chronic liver disease in consecutive years. Lack of efficient screening of such infection will continuously keep on adding these diseases in community, overall increasing the burden.<sup>2,3</sup> HIV-positive patients were included so as to study the HIV-HCV-HBV coinfection. These blood born viruses still of significance epidemiologically.<sup>4,5</sup> Around 250 million people are infected with HBV contributing to disease pool.<sup>6</sup> To understand overall burden and dynamics of transmission of a disease in a community serosurvey of such blood born pathogen is very useful and for its control and prevention, the assessment and study of its prevalence is very important. The available data on the seroprevalence and distribution of these blood-borne pathogens is limited. The aim of the present study was to assess the seroprevalence of HBsAg and anti-HCV antibodies among different age groups in a tertiary care hospital and to identify the possible risk factors for acquiring these infections. Hepatitis B virus (HBV) and hepatitis C virus (HCV)and HIV infections are major public health problems. The largest epidemic facing mankind today is human immunodeficiency virus (HIV) infection.<sup>1</sup> Sub-Saharan Africa, the hardest hit region, is home to more than two-thirds (69%) of people living with HIV but only about 12% of the world's population.

## METHODS

The present study is carried out in the department of Microbiology, in tertiary care hospital since JAN 20 to JAN 21. The study included all OPD and IPD patients.

## Study design

-The present study is retrospective study. The present study was conducted at tertiary care hospital in dept of microbiology. Study period was about 1 year. Study was conducted with consent. Study was IEC approved. Selection of patients for the studyThe following criterias are used for selection of cases for the study.

Inclusion criteria - 18 years and above Exclusion criteria - Paediatric patient

## Questionnaires and Data Collected

Questionnaires based survey was done by a team of microbiologists with process of transference of HIV, HBV, HCV and regional habits. Follow up was taken retroactively by outlining seropositive patients with the help of councelling centre. These helped to assess socio-demographic characteristics, present and past health conditions and potential risk factors for exposure to HIV, HBV and HCV along with their immunization status of HbSAg. History of any needle stick injury was also taken as some of our patients comprised of health care workers. We have also included history of invasive medical procedures like blood transfusion, hemodialysis, surgical conditions, endoscopy, and dental procedures. Various community practices which are known to be harmful for transmitting these infections like needles or syringes, history of jaundice or diagnosis of HBV and/or HCV among family members, h/o receiving any treatment for sexually transmitted disease (STD), history of high risk sexual behavior.

## Serology

Five ml venous blood sample was collected from all patients attending opd as well as ipd patients and transported to laboratory. The collected samples were centrifuged within 6 h of collection and after serum separation and tested for HIV, anti-HCV antibodies and Hepatitis B surface antigen were. Tests were performed using commercially available kits on the principle of chemiluminecescence microparticle immunoassay. HIV seroreactive samples with CMIA were confirmed with two different methods based on principles of ELFA and immnochromatography assay. Bordeline samples of HCV and HBV were confirmed with enzyme linked fluroscent assay.

## **Statistical Analysis**

All data were analyzed using statistics. Data is represented in

the form of frequency and percentage. OR and 95% CI was calculated for each risk factor. Chi-square test (Fisher exact test) was used to show the association between the variables. P value <0.05 was considered significant. Demographic Features of Seropositive patients were studied with the help of data from ictc counceller

## RESULTS

A total data of 21600 samples were studied including sociodemographic factors of seropositive patients tested for HIV, HBsAg and anti-HCV serology. Of these, 188 (59.6%) were males and 127 (40.4%) were females. Overall infection rate was 1.4% (n = 314) in the studied population.

Gender of Study Population-Out of 314 patients positive for either HIV, HBV and/or HCV infection, 188(59.6%) were males and 127 (40.4%) were females. Median range of these patients was18–80 years.

Occupational status-Illiteracy was higher in the patients with HBV, HCV infection and HIV patients.

Risk Factors-5 of the 314 (1.5 %)were found to be health care workers among HIV, HBV and/or HCV positive group as compared to 21286 of the 21600 HIV, HBV and/or HCV negative group (OR = 0.0312; 95% CI: 0.49-0.96, P = 0.6930).

### Familial History of Hepatitis

Among seropositive 70/314 (22.4%) volunteers gave family history of hepatitis in the past, whereas only 1192 /21593 (5.6%) patients from the HBV and/or HCV negative group gave this history (OR = 4.83; 95% CI:3.68–6.34, P = 0.0001).

History of Blood Transfusion in Past-In the HIV,HBV and/or HCV positive group, 80/314 (25.5%) volunteers had received blood transfusion while 2384(11.2%) pts had received blood transfusion among negative group.( OR = 2.71; 95% CI:2.09–3.50, P = < 0.0001).

Past History of Surgery-In the HIV, HBV and/or HCV positive group, 95/314 (30.2%) volunteers gave past history of surgery.

Previous Vaccination-All 314 from the HBV and/or HCV positive group were non-vaccinated for hepatitis B .

Other Risk Factors-One of the patients who were positive for HBsAg gave history of needle prick injury accounting to 0.31%, 4 (1.27%) patients have given history of treatment for any sexually transmitted disease and 12 (3.8 %) pts were on hemodialysis.

**Table 1** Demographic features and risk factors associated with seroprevalence of HIV, hepatitis B and anti-hepatitis C in hospital based population.

Risk factor	HIV/HBV/HCV		Odds	P Value
	POSITIVE	NEGATIVE	ratio	
	N=314	N=21286		
Health care			0.6930	0.0312
worker				
Yes	40 (12.6 %)	3704 (17.4%)		
no	274 (87.4%)	17582 (82.65%)		
Blood			2.7107	< 0.0001
transfudion				
Yes	80 (25.5%)	2384 (11.2%)		
no	234 (74.5%)	18902 (88.8%)		
Family h/o			4.83	< 0.0001
hepatitis				
Yes	70 (22.4%)	1192 (5.6%)		
no	244 (77.6%)	20093 (94.4%)		
h/o surgery	95 (30.2%)	8259 (38.8%)		
ves				

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95% CI was Fisher exact ne variables. emographic th the help of	Haemodialysis Yes	18 (5.7%)		NA	
	Needle prick injury Yes	1 (0.31%)		NA	
uding socio- sted for HIV, 59.6%) were nfection rate	Sexually transmitted infections Yes	8 (2.54%)		NA	
	Previous immunization of HBsAg Yes	2 (0.63%)		NĀ	
positive for were males wese patients	Gender Male female	187(59) 127 (40.4%)	13303 (62.5%) 7983 37.5 %)	0.88	0.2854
patients with	Educational status Educated Non educated	134(42.5%) 180 (57.5%	11749(55.2%) 9537(44.8%)	0.60	< 0.0001

Seroprevalence of HIV, HBV and HCV (Table 2) n=21600

	POSITIVE	NEGATIVE
HIV	108 ( 0.5%)	21496
HbsAg	151(0.70%)	21453
HCV	55 (0.55%)	21549

The seroprevalence of HIV was found to be 0.5 % (n=108), HBsAg accounted 0.7% (n =151) and anti-HCV antibodies were detected in 0.25%(n=55).

### Coinfection of HCV and HBV with HIV (Table 3)

Coupled infection i.e. HBV and HCV infection amidst HIV seroreactive was seen in 11.11%(n = 12) showing significant association with HIV.

	HIV POSITIVE	HIV NEGATIVE	OR(95%	P value
	N=108	N=21496	CI)	
HBV pos	9	142	13.67	< 0.0001
HBV neg	99	21354		
HCV pos	3	52	11.78	< 0.0001
HCV neg	105	21444		

## DISCUSSION

HIV commit a common route of infection with HBV and HCV. It is therefore not unanticipated to bargain that some patients with HIV are contacted with HBV and/or HCV. The global rate of HBsAg reactivity has been proclaimed to range between 2 and 4.7%<sup>(5)</sup>. The seropoaitivity of HBsAg of 0.7% was esteemed in our tertiary care hospital community. A contemporary research supervised by Sood and Nalwankar<sup>2</sup> from Jaipur displayed that the seropositivity of HBsAg to be 0.87%. There is a immense deviation in HBsAg predominance in divergent terrestrial locality in India. Topmost prevalence was documented in community of Andamans and Arunachal Pradesh. In our study prevalence was found to be 0.7. It has been estimated that global prevalence of HCV infection is around 2%.<sup>8.9</sup> It is observed that In India, the seropositivity of HCV differ in the middle of hospital established community with1.57% proclaimed from Cuttack (Orissa),10 4.8% from Pondicherry<sup>11</sup> and 1.7% from Jaipur (Rajasthan)<sup>12</sup>.

There are many sociodemographic factors which affect prevalence of HIV, HBV and HCV infection in India. It has been noticed that social and behavioural factors accounting to low prevalence of similar conditions in developed countries. Persons who have admitted many blood transfusions, records of hepatitis between house members, dialysis patients, people who indulge with exalted risky sexual etiquette were noticed at surpassing risk of inheriting HIV, hepatitis B and hepatitis C infection in the study population. The altitudinous pervasiveness of HBV and HIV are seen among multiplex

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blood transfused people regardless of all preventive measures were taken. This way of transference elite the account of possible risk determinants in spite of all precautions. Screening with molecular techniques can be implemented at tertiary care institute to find positive cases who are in window period.<sup>13</sup>

Unsafe injection practices followed in rural India is also one of very important amidst mode of transference of these viruses in our country as our rural people are still dependent on quacks and untrained paramedical staff for their treatment. Most of rural people are psychologically dependent on injections for their pain relief leading to use of unsterile syringes, needles and minor surgical instruments. These faulty practices make them prone for such infection. (14). Around 75 % of injections received by people in rural populations are not sterile or reused one.<sup>15</sup>. As the study is hospital based cant extrapolate results to the state.

Consequently preponderance of HCV was found to be low in this study. Sexual transmission of HCV is comparatively observed on lower side, due to fact that they are exposed to same community risk factor as patient. It is thus not astonishing to detect that some patients with HIV are coinfected with HBV and/or HCV as they divide communal route of transference.. HIV seems to have significant ascendancy on the inherent account of HBV illness. HBV transference in tribe is well documented and HBV is far extra transferable as contrast to HCV or HIV (17-21) Chowdhury et al, ")reported 2.96% occurrence of Hepatitis B in household members of symptomless transferors from West Bengal. Seropositivity was comparatively low among this population as compared to patients visiting STI clinic. Serological reactivity was detected for HIV-1/2 (2.4%), HBV (2.9%), HCV (1.0%) in study done by T Hussain et al which is comparable with our study.<sup>(20)</sup>

### CONCLUSION

HIV and HCV coinfection is not studied in detail. HIV positive patients may die before their lung is dubious. Constant suevey would provide better understanding of these infections in this topographical region which inturns helps to evaluate the crash of prophylactic measures in the community at risk. The conclusion accentuate the demand for anticipation and regulation of HBV infection in India by ameliorating facilities of blood and blood products screening before transfusion, enforcing comprehensive hepatitis B immunization and building public consciousness about the scatter and avoidance of these infections. Intimate transmission of both HBV and HCV also seems to be substantial and is of public health importance in view of heterosexual transference of HIV in India. Hence it may be of prime importance to consolidate HIV and HBV/HCV concern into the National AIDS Program guidelines and initiate arbitration and approach for treating patients with HIV and HBV/HCV association.

Acknowledgements-

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