

Preoperative Screening of HIV, HBV, HCV Essential for Surgical Team and Patients both - A Research Study in Department of Surgery, Tertiary Care Institute of North India, Rohilkhand Medical College and Hospital, Bareilly (U.P.) India

Manjul Mohan¹, Mohit Sharma², C.P. Pandey³, Ajay Mohan Agarwal⁴

ABSTRACT

Introduction: This study was designed to analyze magnitude of viral infections as global health problem, affecting millions worldwide. Universal preoperative blood born virus HIV, HBV, HCV testing has been described to be a risk –reduction strategy from a universal precaution point of view. Protective kits are for surgical team as universal precaution and post-exposure prophylaxis as further prevention is mandatory. Early detection of disease and its management is also beneficial for patients before onset of AIDS / cirrhosis liver/hepato-cellular carcinoma. The aim of this study was the calculation of seroprevalence of HIV/HCV/HBV for effective control programmes.

Material and Methods: The study was conducted in the postgraduate Department of Surgery in collaboration with department of Microbiology of Rohilkhand Medical College and Hospital and ART Centre District Hospital, Bareilly, Uttar Pradesh, India. This study is prospective study in duration of December 2017 to May 2018. All patients admitted in the department of surgery for elective/emergency surgeries or those managed conservatively were included in study. The Repeat visitors were excluded.

Result: Total 1577 patients admitted in department of surgery were tested for HBV, HCB and HIV. Hepatitis B (HBV) was common infection followed by HCV, But HIV and co-infections were also infrequently present. Common affected age group was 21-50 years with male:female ratio 2.3:1.

Conclusion: Screening for HIV, HBV and HCV as a part of routine pre-operative investigations is a mandatory in Tertiary care centers to assess their prevalence, and to plan better preventive strategies.

Keywords: HCV, HBV, HIV, Universal Precaution

INTRODUCTION

Infections with different types of microorganisms like bacteria, virus, fungi, and parasites are common in Indian scenario among those infections with Hepatitis B virus {HBV}, Hepatitis C virus {HCV} and Human Immunodeficiency Virus {HIV}, has emerged as a leading cause of morbidity. The fact that Hepatitis virus and the HIV share similar routes of transmission contributes to co-infection.^{1,2,3} Health care personal who have exposure to blood are at risk of infection with HCV. In co-infection, the presence of one virus impacts the natural history of the other virus. Serology-surveys are one of the primary methods which can be used to determine the prevalence of HBV, HCV

and HIV, and help in the creation of long term strategies to improve the public health. Proper selection of the quality screening tests, adequate control measures and effective biomedical waste inactivation procedures can ensure the reduction in the acquiring transfusion transmitted infections. The HBV infection is a global problem, with 66 per cent of all the world's population living in areas where there were high levels of infections. The annual incidence of HBV infection in surgeons is estimated 50 times greater than that in general population, and more than twice that of physicians. Other high-risk groups comprise recipients of blood transfusions, prostitutes, percutaneous drug abusers, infants of HBV carrier mothers, recipients of solid organ transplants and immunocompromised patients. Serological screening and vaccination of high-risk group is highly recommended. Since there is no specific treatment, prevention has been the major aim in managing viral hepatitis B. Hepatitis B vaccination is a part of universal immunization programme starts since birth. Routine pre-exposure vaccination should be considered for group of adults who are at increased risk of HBV infection includes health care team, blood and blood products recipients, immunocompromised persons, recipients of solid organ transplants. Hepatitis B immunoglobins (HBIG) is used for those acutely exposed to HBsAg-positive blood, especially surgical team and new born of carrier mother. The HBIG should be given within 6 hrs of exposure in HBsAg negative patients.⁴

Hepatitis C is a contagious liver disease with HCV. Every year 3-4 million people are infected with the hepatitis C

¹Assistant Professor, Department of General Surgery, ²Assistant Professor, Department of Microbiology, ³Professor, Department of General Surgery, Rohilkhand Medical College and Hospital, Bareilly (U.P.), ⁴Physician, Department of Medicine, Distt. Hospital, India

Corresponding author: Dr. Manjul Mohan, Assistant Professor, Department of General Surgery, Rohilkhand Medical College and Hospital, Bareilly (U.P)

How to cite this article: Manjul Mohan, Mohit Sharma, C.P. Pandey, Ajay Mohan Agarwal. Preoperative Screening of HIV, HBV, HCV essential for surgical team and patients both - a research study in department of surgery, Tertiary Care Institute of North India, Rohilkhand Medical College and Hospital, Bareilly (U.P.) India. International Journal of Contemporary Medical Research 2018;5(7):G1-G4.

DOI: <http://dx.doi.org/10.21276/ijcmr.2018.5.7.22>

virus. About 130-150 people are chronically infected and are at risk of developing liver cirrhosis and/ liver cancer. More than 700,000 people die from hepatitis C-related liver diseases. High risk group for screening is similar to HBV. Hepatitis C does not always require treatment as the immune response in some people will clear the infection, some carrier of chronic infection do not develop liver damage. Till now hepatitis C treatment was based on therapy with interferon and ribavirin injection for 48 weeks (costly and risky). Recently new drugs DAA (direct antiviral agents) are much more effective, safer, shorter (12 weeks) and with high cure rate. There is no vaccine against HCV, so prevention is mandatory.⁵

AIDS, the acquired immune-deficiency syndrome is a fatal illness caused by a retrovirus known as human immune-deficiency virus (HIV) which makes victim's body vulnerable to host of life-threatening opportunistic infections for life long. According to the estimates for the year 2015, 2.1 million people were living with HIV in India, with estimated 86,300 new HIV infections. The HIV prevalence in adults (15-49years) was .26 per cent (.30% in men and .22% in women). Andhra Pradesh and Telangana, Bihar, Gujarat and Uttar Pradesh account for 47% of total new infections among adults. The AIDS related deaths started to show declining trends with rapid expansion of access to ART in the country. During 2015, of 2.1 million estimated cases, 1.4 million (67%) were diagnosed as having HIV and of these 747,175(50%) were on ART treatment.⁶ Post-exposure prophylaxis (PEP) for HIV consists of a comprehensive set of services to prevent infection developing in an exposed person, including: first aid care; counseling and risk assessment; HIV testing and counseling; and, depending on the risk assessment, the short term (28 days) provision of antiretroviral drugs, support and follow-up.⁷

Aim - The aim of this study was the calculation of seroprevalence of HIV/HCV/HBV for effective control programmes.

MATERIAL AND METHODS

This study was conducted in the post graduate department of Surgery, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, after permission from institutional

ethical committee. This study includes all patients admitted for emergency and elective surgery and for conservative treatment. This is prospective type of study conducted during 6 months period since December 2017 to may 2018.

Serology

Screening for HIV, HBV and HCV as a part of routine pre-operative investigations are mandatory in Tertiary care centers to assess their prevalence and to plan better preventive strategies.

- To prevent transmission to surgical team.
- Universal precaution by using enhanced personal protective equipments (PPE).
- Post-Exposure prophylaxis (PEP).
- Patients counseling about disease and further management.

For serological tests serum was collected and tested by using standard recommended procedure. HBsAg was determined by using a rapid card method Hepacard, antibodies to HCV by HCV Tridot, and antibodies to HIV Tridot. Patient's testing reactive were further rechecked by Enzyme linked immunosorbent (ELISA). Patients having sero-positivity for, HBV and HCV are referred to physician for counseling and further management in lieu of vaccination/ interferons ribavirin. For HIV and AIDS patients were referred to ART centre District Hospital, Bareilly, for confirmation, counseling/PEP/ART.

STATISTICAL ANALYSIS

Results were obtained by using SPSS software for statistical analysis using descriptive statistics.

RESULTS

Table no 1 and 2 shows that out of 1577 patients, a total of 70 (4.43%) were sero-positive for HBV, HCV and HIV. Hepatitis B surface antigen was tested positive in 33 cases (2.09%) among which 24 were males and 09 were females. Hepatitis C virus was positive in 28 (1.77%) of which 19 were males and 09 were females. HIV sero-positivity was found in 4 (0.25%) patients, showing male preponderance 3 out of 4, female 1 out of 4. Co-infections were present in 5 (0.317%) patients. 38 out of 70 (54.2%) positive patients were in young, sexually active, working age group 21-50 yrs. Most common

Infections	Males n =944	Females n=633	Total n=1577	%
HBV	24	09	33	2.09
HCV	19	09	28	1.77
HIV	03	01	04	.253
CO-Infections	03	02	05	.317
Total	49	21	70	4.43

Table-1:

H	HBV n=34	HCV n= 28	HIV n= 4	Co-Infections n= 5	Total	%
< 20 years	02	03	01	01	07	10%
21-50 years	18	15	03	02	38	54.3%
>50 years	13	10	01	01	25	35.7%
Total	34	28	04	05	70	

Table-2:

infection was Hepatitis B(HBV) 34/70(48.5%), followed by HCV 28/70(40%).

DISCUSSION

According to World Health Organization (WHO), India has prevalence for Hepatitis B 2-7% comparable in our study 2.09%. Seroprevalence of Hepatitis C has variable distribution in different regions of India. Pondicherry had prevalence rate 4.8%, Jodhpur 2.46%, followed by Cuttack⁸ 1.57%. In our study HCV has seroprevalence 1.77%.

Presently India is a home for 2.27 million HIV positive cases [UN AIDS 2010]. Andhra Pradesh is among the high prevalence state next to Manipur. Annual report 2010-11). Our study has shown low prevalence .253%. Analysis of our results showed that age and sex most affecting factors of prevalence rates of HIV/HBV/HCV [Table 1 and 2]. Age groups of 21-50 years with male : female ratio -2.3:1 had higher prevalence due to higher sexual activity, environmental exposure, and behavioral factors.⁹

Universal Screening of HBV, HCV, and HIV with positive patients and Surgical team since admission to follow-up require planned management strategies. Patients with their family should be properly counseled about disease, treatment, prevention, cost enhancement and compromised outcome. If there is no emergency, patients should be properly treated with ART(HIV), INTERFERON/DAA(HCV), and vaccination of HBV. In emergency cases Surgical team should use personal protective equipments (PPE). If accidentally anyone gets

exposure through needle stick injury or cut with sharp object (NSI), Blood/body fluid exposure (BBF), unfixed tissue and organs, recapping needles one should not ignore it and cautiously treated as following: -

First Aid: SKIN-immediately wash the wound with water and donot use scrub or antiseptics.

- After splash of blood/body fluid –thorough wash
- Eye-irrigate eye with water or normal saline.

Eligibility for post –exposure prophylaxis

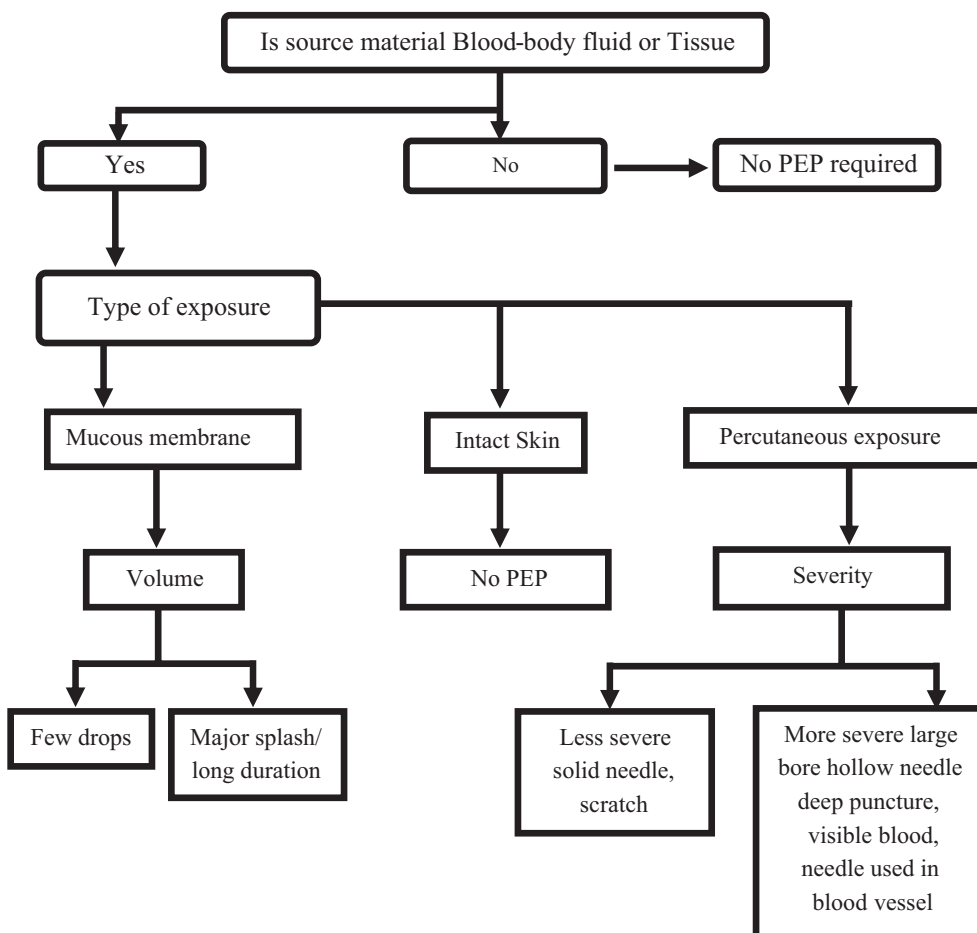
HBV: Hepatitis B Immunoglobulins (HBIG)- The HBIG should be given as soon as possible after an accidental inoculation (ideally within 6 hours and not later than 48 hrs.). At the same time the victim's blood is drawn for HBsAg testing. If test is negative vaccination should be started immediately and full course given (1 ml of adult formulation 0, 1 month and 6 month). If the test is positive for surface antibody, no further action is needed. Administer hepatitis B vaccine booster dose in previously vaccinated person.

HCV: No vaccine or PEP, so prevention is must, if victim will have clinical disease, therapy based on Interferon/ Ribavirin/and DAA (direct antiviral agents) to be given.

HIV: The HIV seroconversion rate after an AEB (accidental exposure to blood) for percutaneous exposure is 0.3%

PEP -Schedule

Basic regimen (Three drugs regimen): Tenofovir 300 mg + Lamovudine 300 mg + Efavirenz 600 mg once daily for



28 days.

Testing and Counseling: The high-risk cases are tested for HIV as per the following schedule to monitor seroconversion:

1. Base-line HIV test- at time of exposure.
2. Repeat HIV test –at six weeks following exposure
 - At twelve weeks
 - At 6months following exposure

Spouse of patients should also be screened for HIV, HBV and HCV. Positive cases should be referred to NACO/ AIDS counseling centre for further management and ART.^{10,11}

CONCLUSION

HBV infection was more prevalent followed by HCV, Co-infections and HIV. Most affected age group was 21-50years, in both sexes. 07/70(10%) of affected age group was less than 20 years. HBV preventable by vaccination and should be given as per universal immunization programme. Awareness campaign, vaccination of family members of sero positive patients may be a preventive measure. For all health care personals should be immunized against HBV. For HCV and HIV no vaccine is available yet so only preventive measures required. For population knowledge there should be active governmental, educational, and media campaign about safe sex, blood and blood products from registered blood bank, usage of disposable consumables in medical treatment, proper bio-medical waste management. For HIV apart from preventive measures, early diagnosis, ART therapy, counseling, spouse screening may be helpful in prevention of disease progression to AIDS. Post-Exposure prophylaxis as per recommendation will be preventive for surgeons, anesthetists, assistants, nursing staff and all team in health care system.

REFERENCES

1. Polsky B, KimAY, Chung RT. Human immunodeficiency virus and hepatitis B and C co-infection; pathogenic interactions, natural history and therapy. *AIDS Clin Rev*, 2000-2001; 263-306.
2. Chung RT, Hepatitis C and B viruses: the new opportunities in HIV infection. *Top HIV Med*. 2006;14: 78-83.
3. Alter MJ, Epidemiology of viral hepatitis and co-infections. *J Hepatol* 2006; 44: s6-9.
4. WHO (2016), Fact Sheet Hepatitis B, No. 204, June 2016.
5. WHO (2016), Fact Sheet Hepatitis C, No. 164, July 2016.
6. WHO (2015), Country Fact Sheet, HIV/AIDS in India, Dec. 2015.
7. WHO (2016), Consolidated Guidelines on the use of Antiretroviral Drugs for Treating and Preventing HIV infection, Recommendation for a Public Health Approach, 2nd Edition, 2016.
8. Bhattacharya S, Badrinath S, Hamide A, Sujatha S, Seroprevalence of hepatitis C virus in a hospital based general population in South India. *Indian J Med Microbiol*. 2003; 21:43-5.
9. Okonko IO, Anugeje KC and Adeniji FO. Syphilis and HIV HCV and HBsAg co-infections among sexually

active adults. *Nature and Science* 2012; 10: 66-74.

10. Centre for Disease Control and Prevention (2012), *Epidemiology and Prevention of Vaccine, Preventable Diseases*, 12thed., May 2012.
11. National AIDS Control Organization. *Antiretroviral Therapy Guidelines for HIV –infected Adults and Adolescents Including Post- exposure Prophylaxis*.
12. Ahmed, R., Bhattacharya, S. Universal screening versus universal precautions for HIV, HBV, HCV in India. *Indian J. Med. Microbiol.*, 2013;31: pp219-25.
13. NafeesM., Ishtiaq Ahmed, Z.U. Latif and Irshad UL Haq. Pre-operative Screening for HBV and HCV Infections; A Preventive Measure! Where are We Today. *Biomedica*, 2008;24, /Bio-19. Doc (WC): pp 108-112.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 26-06-2018; **Accepted:** 27-07-2018; **Published:** 08-08-2018