

ORIGINAL ARTICLE

**STUDY ON HEPATITIS B AND C VIRAL MARKERS IN PATIENTS REQUIRING
EMERGENCY SURGERIES IN RMMCH : A TWO -YEAR OBSERVATIONAL STUDY**

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ABSTRACT

Background: So far the prevalence of viral hepatitis infection in hospitalized patients has not been extensively studied. Therefore we conducted the two-year observational study to evaluate the prevalence of HBV and HCV infection in our hospital in patients requiring emergency surgeries, the largest hospital in our district. The aim of this study is to stress the importance of precautions among health care personnel. Determining the prevalence and associated risk factors is important to generate data that will help establish an intervention mechanism including vaccination package to HCWs, compliance with universal precautions, access to safer injection technologies and post-exposure management, as these in turn would help in improving safety of HCWs, quality of patient care and access to services. It is also of paramount importance to facilities in establishing surveillance system for registering, reporting and managing of occupational exposures. Besides providing immunity against HBV infection, vaccines indirectly also protect against hepatocarcinoma. Considering the risk of liver cirrhosis, hepatocellular carcinoma and transmission of HBV to patients, there is a need to focus efforts on mitigating transmission through improving the workplace environment and making use of the available vaccine to all health care workers who are susceptible to infection. And this shall follow after accurate determination of the magnitude of current rate of infection, successful piloting and screening. **Materials and methods:** Blood samples collected are analysed for hepatitis B and C viral markers using ICT kit (immunochromatographic test). The detailed information about each patient will be entered on a pre-designed questionnaire including age, sex, type of operation, HBV and HCV screening test results, and presence of risk factors like drug addiction, blood transfusion, family history of hepatitis, tattooing, viral vaccination, hospitalization, previous surgery, hemodialysis. **Results:** The total prevalence of HBsAg and anti-HCV in our hospital during the two-year study is 5% and 1% respectively. Overall the relative risks were higher in males than females for each hepatitis marker ($p < 0.001$). Out of 5 cases which is positive for HBsAg, 4 males and 1 female case reported. HBsAg prevalence was found in the age group of 41-60 and 20-40 years for males and females respectively. Anti-HCV is positive in 1 male case whose age is 65 during our two-year observational study. **Conclusion:** Out of 100 cases, totally 6 cases showed positivity for hepatitis viral markers. Thus prevalence rate of 6% for hepatitis viral markers present in our region. Thus medical and para medical personnel needs to follow universal precautionary measures while handling patients in emergency set up. Thus generating intervention mechanism including vaccination package to HCWs, compliance with universal precautions, access to safer injection technologies and post-exposure management, as these in turn would help in improving safety of HCWs, quality of patient care and access to services.

Keywords: Keywords : hepatitis , HBsAg, anti-HCV

1. INTRODUCTION

The World Health Organization (WHO) considers hepatitis B virus (HBV) to be second to tobacco among the carcinogens. Hepatitis B infection is caused by HBV which is a DNA virus belonging to a family called *Hepadnaviridae* which can cause acute or chronic infection ((Perz et al., 2006)). It is estimated

that 2 billion people worldwide have been affected of which 350 million people have chronic infection, and 10% of these are in sub-Saharan Africa and East Asia. These chronically infected patients may develop complications of liver cirrhosis and hepatocellular carcinoma ((Martin et al., 2001)). Diagnosis of HBV infection is confirmed by demonstrating specific antibodies and/or antigen in serum of patients. The most important laboratory test for diagnosis of HBV infection is HBsAg which is the first antigen to appear, and appears during the incubation period, the

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prodrome, as well as during acute disease(Krajden et al., 2005). It appears after infection and disappears after one to two months following jaundice. During convalescence it falls to undetectable levels and if it persists for more than 6 months then this indicates a carrier state and a risk for chronic hepatitis and hepatocellular carcinoma. Presence of HBsAg means that the patient is potentially infectious. This Anti-HBs also appears after HBV vaccination.

Risk factors of HCV infection were homosexuals, positive family history, professional risk, major or minor surgical operation, i.v. drug abuse, tattooing, previous transfusion, hemodialysis, previous hospitalization for over 5 days.

Anti-HCV antibody is identified using immunochromatographic assay.

2.MATERIALS AND METHODS

Source of data :

Patients requiring emergency surgeries at Rajah Muthiah Medical College and Hospital of all age groups.

Inclusion and exclusion criteria

Study included all patients requiring emergency surgeries of all age groups

Study excluded patients with trauma history, patient not given consent for testing, patient already immunised for hepatitis B.

Thus 100 patients are considered for this study.

Blood samples collected are analysed for hepatitis B and C viral markers using ICT kit (immunochromatographic test)

3.RESULTS

Out of 100 cases selected for testing, 5 cases identified to be HBsAg positive and 1 case found to be anti-HCV positive. Out of 5 HBsAg positive cases, 4 were male of age group 41-60 years and 1 female of age 21-40 years. Anti-HCV found to be positive for 1 male case of age above 60 years. Both viral markers were not present in any of our case during our two-year observational study. Thus 5% prevalence of HBsAg positivity and 1 % prevalence of anti-HCV positivity were observed in our study in our hospital.

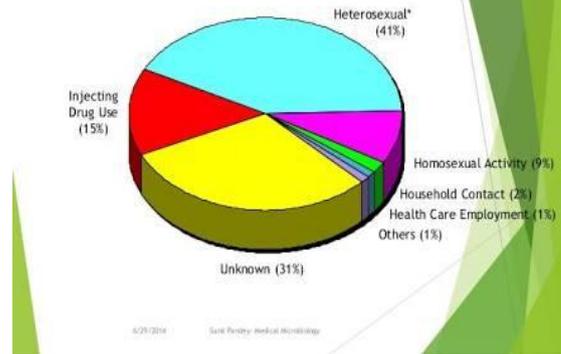
Table 1: prevalence distribution

Age	Male	female	HBsAg +	Anti-HCV+	Both markers
0-20 years	7	5	-	-	-
21-40 years	40	27	1 (female)	-	-
41-60 years	15	5	4(male)	-	-
>60	1	-	-	1(male)	-
total	63	37	5	1	-

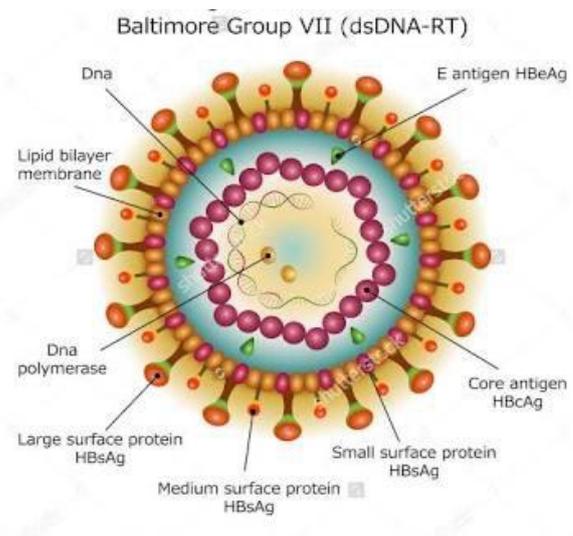
Table 2: Risk factor prevalence

S.n	Risk factors	No.of cases	Percentage
1.	Chronic alcohol consumption	44	88%
2.	Sexual promiscuity	8	16%
3.	Family history of hepatitis	0	0
4.	i.v. drug abuse	0	0
5.	Previous surgery	6	12%
6.	Blood transfusion	4	8%
7.	Tattooing	6	12%
8.	Previous hospitalization	12	24%
9.	Hemodialysis	0	0
10.	Professional risk	14	28%

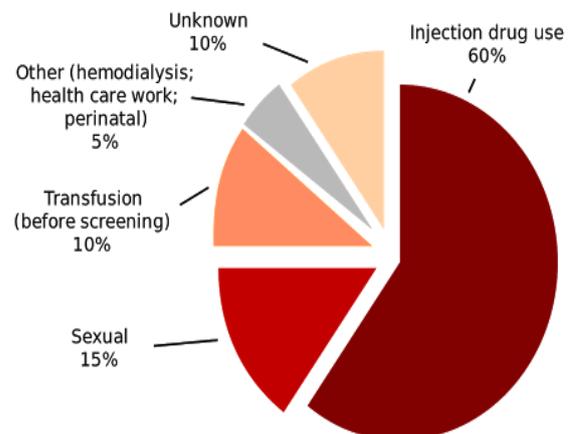
Modes of Transmission



Mode of Transmission of Hepatitis B



Structure of Hepatitis B



Mode of Transmission of Hepatitis C

Table 3: risk factor in positive cases

	alcohol	Sexual promiscuity	i.v drug abuse	Previous surgery	Blood transfusion	tattooing	hospitalization	hemodialysis	Professional risk
Male HBsAg	+	+	-	-	-	+	+	-	+
Female HBsAg	-	-	-	+	-	-	+	-	-
Anti-HCV	+	-	-	-	+	-	+	-	-

4.DISCUSSION

The World Health Organization estimates that about 3 million healthcare workers face occupational exposure to blood borne viruses each year in which about 2 million to hepatitis B viral infections, 900,000 to hepatitis C virus, and 300,000 to human immunodeficiency virus, of which 90 % of the infections that result from these exposures are in low income countries.

Recognizing this threat, the United States Centers for Disease Control and Prevention proposed a series of procedures including standard precautions, advise health care workers to practice regular personal hygiene, use protective barriers such as gloves and gown as required and proper disposal of sharps and other clinical wastes for preventing occupational exposures and for handling potentially infectious materials (Beltrami et al., 2000).

Compliance to safety, infections prevention and universal precaution were assessed by consistent use of glove as a tool kit to capture the data and only 49.8% used glove consistently; with higher 71.4% consistent use of glove reported from doctors and the least 40.0% reported from medical laboratory professionals. This suggests the low rate of compliance found in our study, and indicates yet there is a problem in compliance to universal precaution. The possible reasons for high prevalence of these needle stick and sharp injuries include lack of specific programme measures to address occupational challenges, lack of safer sharp devices, lack of information and failing to adherence to standard precautions. National Institute of Occupational Safety and Health, United States identifies needle stick injuries; over use of injections and unnecessary sharps, lack of disposable supplies, safer needle devices, sharps disposal containers, lack of access to and failure to use sharps container immediately after use, poorly trained staff, needle recapping, passing instruments from hand to hand as seen in operating room, and lack of awareness and trainings on safety and infection preventions are possible predisposing factors for viral infections. This is in agreement with findings from this study in which more than 74.8 % of healthcare workers were not trained on infection prevention and safety precautions.

5.CONCLUSION

The prevalence of current hepatitis B virus infection and life time exposure to hepatitis B virus infection among health care workers was high. Exposure to potentially infectious body fluids was also high and yet only a small proportion of healthcare workers are vaccinated against hepatitis B virus infection (Hadler et al., 1985). Most of the HBV infected healthcare workers in the present study had undergraduate level of education. This fact is enough to put a rigorous emphasis on proper continuous medical education and

training on infection prevention and safety precautions which is most likely to serve as an effective tool in controlling exposure to injuries. Besides the doctors, nurses and medical laboratory professionals; cleaners, porters and general service providers were at a comparably high or more risk of HBV infection as they interact with patients and clinical wastes.

Based on our results, the following recommendations are forwarded accordingly:

- Efficient intervention strategies to protect healthcare workers from occupational exposures to needle stick and sharp injuries, and blood and body fluids should be identified, implemented and monitored.
- Assurance of compliance with universal precautions, access to safer injection technologies, post-exposure management and continuing medical education on infection prevention and safety precautions are also valid recommendations.
- Facilities should also establish surveillance system for registering, reporting and managing of occupational exposures.
- High risk adult groups of subpopulations, healthcare workers need to be vaccinated (Shagufta and Shams, 2010).

6.REFERENCES

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