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SEROPREVALENCE OF HEPATITIS B IN PATIENTS ADMITTED IN SURGICAL UNITS IN A TEACHING HOSPITAL OF SEMI URBAN SETUP.

General Surgery

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ABSTRACT

BACKGROUND: This was a prospective observational study carried over a period of one years(1st. Jan 2019 to 31st. Dec 2019).The aim of this study was screening of Hepatitis B infection in patients admitted to undergo selective/emergency surgery in order to provide both preventive and treatment services and to reduce the transmission to the attending healthcare workers.

PATIENTS AND METHODS: The patients dated for elective surgery were taken up for this study. These patients were screened for HBsAg using a commercial rapid screening test kit of lateral flow immunochromatographic method.

RESULTS: In our Study we have found that the prevalence of HBV infection was 1.23%. The male female ratio was 1.3:1. Males are more infected than females. Patients in 20-39 years age group showed highest positivity (1.99%) and least (1.00%) in ≥ 60 years.

CONCLUSION: For all surgical procedures, routine pre-operative screening has been recommended for HBV. We therefore recommend screening for hepatitis B infection for all patients who are undergoing surgical procedures to reduce the risk of infection to the surgical team so sas to reduce the prevalence rate in a developing country like India.

KEYWORDS

Hepatitis B Virus, HBsAg, Screening, Surgical team, Prevalence.

INTRODUCTION:

HBV,HCV and HIV are three important viral infections which share common modes of transmission through contaminated blood and body fluids.[1]Transmission may also occurs by inoculation during surgical or dental procedure.[2] Viral hepatitis is now recognized as a major public health issue globally that requires an urgent response. WHO estimates that, in 2015, 257 million people were living with chronic hepatitis B infection, and 71 million with chronic hepatitis C infection. The hepatitis B epidemic affects parts of Africa and the Western Pacific most severely, while the hepatitis C epidemic is more evenly distributed worldwide. An estimated 67% of people who inject drugs have been infected with the hepatitis C virus. The Eastern Mediterranean and European regions have the highest reported prevalence of hepatitis C infection. Among the 36.7 million people living with HIV in 2015, an estimated 2.7 million had chronic hepatitis B infection and 2.3 million had been infected with hepatitis C.

Chronic infection from the viruses can severely damage the liver, leading to cirrhosis and hepatocellular carcinoma. The burden of liver cancer is particularly heavy in the developing world. In sub-Saharan Africa, for example, liver cancer is the most common cancer among men and the third most common cancer in women.[4] Health care workers are at an increased risk to develop infection through needle prick injury or direct transfer of the virus through broken skin.[5,6] A significant number of surgical and haemodialysis patients are sero-positive either for HBV, HCV or both.[7,8] In developed countries and in certain developing countries including India, pre-operative screening for HBV or HCV infection has become a standard laboratory investigation prior to elective/ emergency surgical procedure to adopt precautionary measures to curb the further transmission of this lethal infection.[9,10]

Many studies were there on HBsAg prevalence in general public and blood donars. Very few studies were in the literature about the prevalence of HBsAg in surgical patients. Hence, in this present study, our aim is to find out the frequency of HBsAg in the patients who were admitted for the surgical procedures. It is important that during and after surgery we need to safeguard health care workers performing the surgical procedures, who can be infected through exposure to infected patients to prevent further dissemination of the infection.[11]

PATIENTS AND METHODS

This study was conducted in department of Surgery with the help of department of Microbiology in a teaching hospital situated in a semi urban area of Visakhapatnam, Andhra Pradesh, India after permission from institutional ethical committee. This study includes all patients admitted for elective and emergency surgery. This is a prospective study conducted during one year period from January 2019 to December 2019.

Serology:

Screening for HBV as a part of routine pre- operative investigations are mandatory in Tertiary care centers to assess their prevalence and to plan better preventive strategies like to prevent transmission to surgical team, for taking universal precaution and for any Post-Exposure Prophylaxis(PEP) if needed For serological test, serum was collected aseptically and tested for Hepatitis B surface antigen (HBsAg) by using standard recommended procedure as per the instructions of the manufacturer's of the commercial kit in the Central laboratory, Microbiology wing of the teaching hospital . HBsAg was determined by using a commercial rapid lateral flow immunochromatographic kit. Any pink lines in the test and control area were taken as positive (Reactive) (Dia. 1) and only pink line in the control is Negatine (Non-Reactive) (Dia. 2) in a prescribed time and if no pink line in control or very faint pink line in the test area were discarded.

Diagram 1

Test **POSITIVE** (Reactive) showing both lines of Test (T) & Control

Diagram 2

Test **NEGATIVE** (Non-Reactive) showing line of Control only

Statastical Analysis: Results were obtained by using SPSS V25

software for statistical analysis using descriptive statistics. Sample Size

$$n \geq \frac{Z^2_{1-\alpha/2}(1-p)}{e^2 p}$$

Type-I error rate (Alpha) = 0.05

$Z_{1-\frac{\alpha}{2}} = 1.96$

Estimated proportions (p) = 0.048[14]

Relative estimation error (e) = 0.2
Minimum sample size needed = 1872
In the present study, a total 3176 samples were taken.

RESULTS

Table 1: Distribution of Hepatitis B reactive cases in different age groups.

Age Group	Age in Years	Patients Screened	HBsAg Reactive
1	≤ 19	192	3 (1.56%)
2	20-39	503	10 (1.99%)
3	40-59	976	11 (1.13%)
4	≥ 60	1505	15 (1.00%)
Total			**39 (1.23%)**

Table 1 shows that out of 3176 patients, a total of 39 were sero-positive for HBV with a prevalence rate of 1.23%. Age wise distribution showed 20-39 years with highest positivity (1.99%) and least (1.00%) in ≥ 60 years.

Table 2: Sex wise distribution of HBV reactive patients.

Sex	Total Patients Screened		Total No. of HBsAg Reactive Cases	
	Number	Percent	Number	Percent
Male	1832	57.69	25	0.79
Female	1344	42.31	14	0.44
Total	3176	100.00	39	1.23
Chi-square value = 0.43; P=0.51				

Table 2 shows that out of 3176 patients, a total of 1832 were male (57.69%) and 1344 were female (42.31%). The male female ratio was 1.3:1. The male prevalence was 0.79% and female 0.44%. Male are more infected than female.

DISCUSSION

There is a serious dearth of data regarding the true prevalence of HBV in India. HBsAg positivity has been reported to range between 2% and 8% in most studies [11,12,13] The most widely quoted figure of carrier rate in India is 4.7% with an estimated carrier population of 56.5 million[12]. Many of these studies are based on data from blood banks and may not truly reflect the national prevalence.

According to World Health Organization (WHO), India has prevalence of Hepatitis B 2-7% comparable in our study which is low at 1.23%. Seroprevalence of Hepatitis B has variable distribution in different regions of India. Pondicherry had prevalence rate 4.8%, Jodhpur2.46%, followed by Cuttack 1.57%, UP 2.09% [14] where as a study[15] in Pakistan showed a prevalence rate of 1.35% and in Newyork 1.4%[16]

The male female ratio is 1.3:1 Similar findings were observed in a study by Manjul Mohan et al.[14] The prevalence is more in males(0.79%) than females (0.44%). Similar findings were observed by other studies[15]

CONCLUSION

For all surgical procedures, routine pre-operative screening has been recommended for HBV. The main idea behind the screening for hepatitis is not only for infection prevention but also case detection of this important blood borne infection. Early identification of patients with chronic hepatitis B infection enables them to receive the necessary care and treatment to prevent or delay progression of liver disease. Hepatitis B is an important occupational hazard for health care workers. All the health care workers and persons at risk should receive Hepatitis B vaccine which is very safe and effective and the antibody titer needs to be monitored so that booster dose is given when antibody titer falls below 10 IU/ml. We therefore recommend screening for hepatitis B infection for all patients who are undergoing surgical procedures to reduce the risk of infection to the surgical team so as to reduce the prevalence rate in a developing country like India.

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