Original Article

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FREQUENCY OF HEPATITIS B AND C IN SURGICAL PATIENTS

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ABSTRACT

Objectives: To determine frequency of hepatitis B and C in surgical patients

Study Design: Cross-sectional survey.

Duration: 1st April to 1st Nov 2009.

Setting: Combined Military Hospital, Lahore; tertiary care, 1000 bedded hospital.

Methods: All patients prepared and admitted for elective surgery were included in the study. Sampling technique was purposive non-probability. Testing of venous blood was done for HBsAg and Anti HCV antibody using 3rd generation ELISA for HCV and indirect ELISA for HBV in the preoperative period.

Results: A total of 850 patients undergoing surgery were studied. Mean age of the study population was 41.7±13.7 years. Out of the study population 481(56.5%) were male and 369 (43.5%) were females. Two hundred and eighty eight (33.9%) patients were from urban background and 562 (66.1%) were from rural areas. There were 79 (9.3%) patients found positive for HCV, 37(4.3%) for HBV and 12 (1.4%) patients were found to have both HBV and HCV infections.

Conclusion: There is very high frequency of Hepatitis B and C in surgical patients. We recommend mandatory screening of all patients undergoing elective surgery.

Keywords: Hepatitis B virus, Hepatitis C virus, Screening, Surgery.

INTRODUCTION

Hepatitis B and hepatitis C are serious health problem world wide. An estimated 170 million people are chronically infected with HCV[1] and nearly two billion with HBV; more than 350 million having life long infection[2]. Accidental exposure to blood borne pathogens such as HBV, HCV and Human Immunodeficiency Virus (HIV) by contaminated needle stick injury is very well known mode of disease transmission in health care providers[3,4]. The percentage of procedures with at least one blood contact of any type, ranges from 3% of procedures performed by invasive radiology personnel to 50% of procedures performed by surgeons[1].

All types of Hepatitis viruses are endemic in Pakistan. However the prevalence and pattern of various types of viral hepatitis in Pakistan is quite different from that in developed countries[5]. Though a large number of studies have been published, describing the prevalence of Hepatitis B and C in Pakistan, majority are based on screening of the "healthy" blood donors[5,6]. This group has specific demographic characteristics, reflecting an obvious selection bias. Very few have described the prevalence in patients undergoing surgery; latter includes patients from all age groups and gender and not the young healthy adults only, as in case of blood donors. This is the group which poses actual threat to surgeons and other health workers.

There are other reasons for carrying out this study. Majority of studies are based on population from Karachi and adjoining areas, (located in far south of Pakistan)[6]. Except for one study, published from USA, addressing overall prevalence of disease in the country, other studies describe prevalence in particular region[7]. Our study sample, though collected from one centre, consists of service personnel and their families from different regions of Pakistan. Thus our study population represents a broader cross-section of population.

PATIENTS AND METHODS

It was a cross sectional study carried out in Department of General and Laproscopic Surgery, Combined Military Hospital Lahore from 1st August to 1st Nov 2009. All patients

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between age 15 and 70 years prepared and admitted for elective surgical procedures were included in the study. Required sample size was calculated using WHO software [Confidence interval 95%, anticipated population proportion 10% with absolute precision of 5%]. Patients were explained about the study procedure and informed written consent was obtained. In addition to standard pre-operative investigations, 5ml of venous blood taken for HBsAg and anti HCV antibody using 3rd generation ELISA for HCV and indirect ELISA for HBV. Information was obtained from all the patients regarding previous history of any surgical procedures or use of any IV or intramuscular injection in the past. In addition the area of origin of the patient i.e. whether belonging to urban or rural area of the country and socioeconomic group was also noted. Patients were divided into low and high socioeconomic group based on the monthly salary, [High SE group = monthly salary > 15000] more or less than 15000 PKR . Blood was also obtained to determine HBV and HCV status. Descriptive statistics were used to summarize numeric and categoric data; mean, median and mode with standard deviation was used for numeric variables and frequencies were used to describe the latter. Data was analyzed using SPSS version 16 for windows.

RESULTS

A total of 850 patients were included in the study. Much larger sample size than the required size of 139, because of greater availability of patients. Four hundred and eighty one (56.5%) were male and 369 (43.3%) were females. Out of these 288 (33.9%) patients were from urban background and 562 (66.1%) were from rural areas (Table-1). A total of 79 (9.3%) patients were found positive for HCV, 37 (4.3%) for HBV and 12 (1.4%) for both HBV and HCV infections. Percentage distribution of different types of hepatitis and distribution according to gender, socio-economic status and residence in rural and urban area is shown in table-1.

DISCUSSION

Despite improved methods of preventing exposure, occupational exposure continues to

Table-1: Distribution of different types hepatitis according to gender, socioeconomic status and residence in rural or urban area N=850 (total number of positive cases=115)

	Distribution according to gender		
	Male	Female	Total
Hepatitis B	18	18	36
Hepatitis C	27	40	67
Hep B & C	3	9	12
Distribution according to socioeconomic status			
	Lower	Upper	Total
Hepatitis B	31	5	36
Hepatitis C	59	8	67
Hep B & C	8	4	12
Distribution according to rural urban area			
	Rural	Urban	Total
Hepatitis B	10	26	36
Hepatitis C	31	36	67
Hep B & C	4	8	12

Table-2: Reported prevalence of different types of hepatitis

	Our Study (%)	Khan *et al* 2000[6] (%)	Niaz *et al* 2002[17] (%)	Masood *et al* 2005[8] (%)	Jafari *et al* 2006[16] (%)	Aziz *et al* 2006[5] (%)	Ali *et al* 2009[7] (%)
Hep B	4.3	19	4.1	84	1.8	8.4	2.4
Hep C	9.3	44	-	86.3	1.6	1.1	2.1
Both	1.4	-	-	-	.11	-	-

occur and prevention and treatment of infections with hepatitis C virus (HCV) and Hepatitis B virus (HBV) remain a major challenge. So far transmission of at least 20 different pathogens by needle sticks and sharps injuries has been reported[9]. Asymptomatic patients suffering from HBV and HCV tend to pose a great risk of spreading infection to general population as well as to health care providers[9].

It is a well known fact that health care workers are at higher risk of contracting hepatitis infection from the patients. Different studies have quoted different figures for rate of infection among health care workers. According to one study, carried out at Glasgow (UK), on needle stick injury infection rate for HCV transmission from an HCV infected patient to an uninfected surgeon was 0.001–0.032% per annum (0.035–1.12% risk over a 35 year professional career)[10]. Alter *et al.* pointed needle stick injuries as the most common cause of HCV infection[11] Sodeyama *et al.*[12] reported 2% whereas Kiyosawa et al.[13] reported 4% infection rates of HCV after such accidental injuries. The average volume of blood inoculated during a needle stick injury with a 22-gauge needle is approximately 1 µl, a quantity sufficient to contain up to 100 infectious doses of HBV[9].

Physicians and dentists and other health care workers in specialties that involve frequent blood or needle stick exposure (e.g., obstetrician - gynecologists, surgeons, pathologists, operation room and accident and emergency staff) have a significantly elevated risk of HBV and HCV infections compared to specialists with less-frequent blood or needle stick exposure (e.g., pediatricians and psychiatrists)[9].

In developed countries incidence of HBV infection among health care workers (HCWs) has decreased substantially since the early 1980s[9]. The absolute decline in the number of HBV infections among HCWs is attributed to the implementation of standard precautions in health care settings, including the increasing use of barrier precautions and personal protective devices and increasing levels of hepatitis B vaccination coverage[9,14].

In 1988 the Centre of Disease Control published their update on universal precautions to help protect both HCWs and patients from infection with blood borne pathogens in the health care setting[5]. Standard precautions apply to blood; all body fluids, secretions, and excretions (except sweat); non intact skin and mucous membranes. The core elements of standard precautions comprise (i) the use of barrier precautions (e.g., gloves, gowns, and facial protection) to prevent mucocutaneous contact, (ii) minimal manual manipulation of sharp instruments and devices and disposal of these items in puncture-resistant containers[6]. More so all spills of blood and blood-contaminated body fluids in operating rooms should be promptly cleaned and decontaminated with an appropriate disinfectant[15].

The education of health care workers about prevention of needle stick injury, and use of universal precautions has been shown to decrease the needle stick injuries by 60% among health care workers at a teaching hospital in California[15].

True figures for prevalence of Hep B and C in Pakistan are not available[7]. The figures collected from different source vary extensively, ranging from figures of 1.1% for Hep B[5] and 1.6% Hep C[16] to as high as 84% and 86% respectively[8]. A US based study which has calculated weighted average of prevalence in Pakistan, has shown an average prevalence of 2.4% and 2.1% respectively[7]. Other figures from different studies are shown in table-2.

Our study shows frequency of 4.3% and 9.3% for Hepatitis B and C respectively and nearly 1.4% showed seropositivity for both Hep B and C. Our results are close to study carried out in Muzaffarabad; however the above study was carried out on health care workers and describes prevalence of Hep B only[17].

Regarding risk of transmission of infection to health care workers (and subsequently the need for routine prophylaxis)

in our population, it is difficult to draw any logical conclusion, because there is wide variation in the figures quoted in different studies (Table-2). However, we strongly recommend the need for routine screening of all patients undergoing routine surgery. This is because of several reasons. First in some studies an alarmingly high prevalence of disease has been mentioned, particularly in the rural communities. Our own studies has shown a higher prevalence in rural area (Table-1). It is a known fact that greater is the prevalence, greater the risk of transmission to health workers[3].

Second, Hepatitis is a preventable disease; in addition to universal precautions specified, extra measures can be taken when accidental exposure occurs. In case of accidental needle stick injury in HBV patients, post exposure prophylaxis with hepatitis B vaccine and hepatitis B Immunoglobulin is highly effective in preventing infection[15]. Several studies have suggested that early therapy with alpha interferon in patients with HCV infection, may be effective in preventing progression from acute to chronic disease[15,18]. Therefore it is very important to know the status of patient regarding presence or absence of Hepatitis B and C. The bewildering variation in the rate of prevalence quoted in different studies from Pakistan also dictates the need for a large nation based study, for evaluation of true prevalence and risk of transmission.

CONCLUSION

We conclude that there in very high prevalence rate of HBV and HCV infection in our surgical patients.

RECOMMENDATIONS

In view of high prevalence of hepatitis, we recommend routine screening of all patients undergoing elective surgery. Extra precautions should be taken in handling these patients and in case of accidental exposure, early medical help should be sought.

REFERENCES

1. Hepatitis- B Fact Sheet No. 204. Geneva, World Health Organisation.2008 ; Accessed on 10th July , 2010 , Available from: http\www.who.int/entity/mediacentre/factsheets/en/,
2. Hepatitis- C Fact Sheet No. 204. Geneva, World Health Organization , 2008 Accessed on 10th July , 2010 , Available from: http\www.who.int/entity/mediacentre/factsheets/en/,
3. Hu JD, Kane MA, Heymann DL. Transmission of HIV, Hepatitis B virus and other blood borne pathogens in health care settings: a review of risk factors and guidelines for prevention. Bull WHO 1991;69:623-30
4. Klein RS, Freeman K, Taylor P, Stevens CE. Occupational risk for hepatitis C virus infection among New York City dentists. Lancet 1991; 338: 1539-42
5. Aziz MS. Prevalence of anti-hepatitis C antibodies and hepatitis B surface antigen in healthy blood donors in Baltistan. Pak Armed Forces Med J 2006;56(2)189-91
6. Khan AJ. Unsafe injections and the transmission of hepatitis B and C in a Periurban community in Pakistan. Bull World Health Organ. 2000;78:956–63.
7. Ali SA, Donahue RM, Qureshi H, Vermund SH. Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. Int J Infect Dis. 2009; 13(1):9-19. Epub 2008 Oct 2.
8. Masood Z, Jawaid M , Khan RA , Shafiq ur Rehman: Screening for hepatitis B & C: A routine preoperative investigation? Pak J Med Sci ; 2005 ; 21: 455-9.
9. Hansen, ME, Miller GL, Redman H, McIntire DD. Needle-stick injuries and blood contacts during invasive radiologic procedures: frequency and risk factors. Am. J. Roentgenol. 1993; 160:1119-23.
10. Thorburn D. Risk of hepatitis C virus transmission from patients to surgeons: model based on an unlinked anonymous study of hepatitis C virus prevalence in hospital patients in Glasgow. Gut 2003; 52:1333-8.
11. Alter MJ. Risk factors for non-A, non-B hepatitis in United States and association with hepatitis C virus infection. J Am Med Assoc. 1990;264(17): 2231-5.
12. Sodeyama T, Kiyosawa K, Urushihara A et al. Detection of hepatitis C virus markers and hepatitis C virus genomic-RNA after needle stick injuries. Arch Intern Med 1993; 153: 1565-72.
13. Kiyosawa K, Sodeyama T, Tanaka E et al. Hepatitis C in hospital employee with needlestick injuries. Ann Intern Med 1991; 115: 367-69
14. Quebbeman EJ, Telford GL, Hubbard S, Wadsworth K, Hardman B, Goodman H et al. Risk of blood contamination and injury to operating room personnel. Ann. Surg. 1991;214:614-20
15. Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infections Control Practices Advisory Committee (HICPAC). Centers for Disease Control and Prevention. Immunization of health-care workers: Morbid. Mortal. Weekly Rep. 1997; 46(RR-18):23.
16. Jafri W, Jafri N, Yakoob J, Islam M, Tirmizi SF, Jafar T et al. Hepatitis B and C: prevalence and risk factors associated with seropositivity among children in Karachi, Pakistan. BMC Infect Dis. 2006 23;6:101-05.
17. Niaz S, Ahmed M , Asghar H; Prevalence of Hepatitis 'B' Among hospital personnel in Combined Military Hospital (CMH) Muzaffarabad. Int. J Agr Biol.2002:2; 226-31
18. Meri K, Maria E, Joanna M, Stelosis S, Nikolas T, Pandelis ED et al. Prevalence of Hepatitis B and C markers in high risk hospitalized patients in Crete. A 5-year observational study. BMC Public Health, Greece 2001: 1-17.