



Frequency of HBV and HCV among Patients Undergoing Elective Surgery in a Tertiary Care Referral Hospital in Duhok, Iraqi Kurdistan

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ABSTRACT

Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections possess occupational hazard to health care workers (HCWs) particularly surgeons, anesthetists, nurses and theater staff. Reliable epidemiological data on frequency of HBV and HCV in hospitals are important for designing national control programs. Therefore, the aim of this study was to determine the frequency of hepatitis B and C among patients undergoing elective surgical operations in a tertiary care referral hospital in Duhok. In a cross sectional study conducted on all patients who underwent elective surgery from May 2013 – May 2014. A medical history and physical examination were recorded for all patients in the case notes. All patients underwent screening for hepatitis B surface antigen and antibody for hepatitis C, and Anti- human immunodeficiency virus using Elisa technique. Out of 4851 patients, 94 (1.93%) were found to be positive for HBV or HCV. Eighty seven (1.79%) were positive for hepatitis B and 7 (0.14%) were positive for hepatitis C. Among 87 HBV positive patients, 54 were males and 33 were females. Among 7 HCV positive patients, 5 were males and 2 were females. The frequency of hepatitis B and C (combined) was more in age group ranging between 26–50 years, regardless of gender. In conclusion, HBV and HCV infections should be a concern in the health care services. The higher frequency of HBV and HCV infections in the patients presenting for elective surgery strengthen the need for routine pre-operative screening for all patients before surgical operative procedures. High risk HCWs should be vaccinated against HBV. Key words: Frequency, Hepatitis B, Hepatitis C, pre-operative screening.

BACKGROUND

Both hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are serious global health care problem because they may end with chronic hepatitis, cirrhosis, and hepatocellular carcinoma. Hepatitis B virus infection results in approximately 2 billion human infections and 400 million chronic infections worldwide [1]. Similarly, chronic HCV infections affect approximately 160 million individuals, i.e. 2.35% of the world population [2]. HBV and HCV can be contracted through direct contacts with blood and blood products and through sexual contact; however, sexual transmission appears to be rare in patients with HCV [3]. These infections have been shown to possess occupational hazard to health care workers (HCWs) particularly surgeons, anesthetists, nurses and theater staff [4]. Hence, proper implementation of standard precautions, use of personal protective equipment and safety devices can potentially prevent transmission of both infections [5]. Additional preventive measure is to perform pre-operative screening for both pathogens so that to detect risky patients and accordingly minimizing transmission through adherence to universal precautions [6]. There is high prevalence of HBV and HCV in hospitalized surgical patients, with median ratios of hospital samples to the general population of 1.9 for HBV and 3.4 for HCV. Hence, the risk that a HCW will become infected after an injury will be much higher [7], [8]. For this reason, routine pre-operative screening of blood-borne viruses i.e. HBV, HCV and human immunodeficiency virus (HIV) has recently become a common practice in

many health services [9], [10]. In Duhok, pre-operative screening for HBV, HCV and HIV has been adopted recently (May, 2013). The program was designed to limit spread of the infections through screening for hepatitis B surface antigen (HBsAg) and antibody for hepatitis C (Anti-HCV) in HBV and HCV infected patients, respectively [11]. Reliable epidemiological data on frequency of HBV and HCV in hospitals are important for designing national control programs. Therefore, the aim of this study was to determine the frequency of hepatitis B and C among patients undergoing elective surgical operations in a tertiary care referral hospital in Duhok.

PATIENTS AND METHODS

Setting

Duhok emergency and accident hospital is a specialized 166 bed public tertiary care referral hospital for surgical patients in term of orthopedics, neurosurgery and general surgery.

Study Design and Patients

It is a cross sectional study conducted on all patients who underwent elective surgery from May 2013 – May 2014. A medical history and physical examination were recorded for all patients in the case notes. All patients underwent screening for HBsAg, Anti-HCV, and Anti-HIV using Elisa technique. For patients found positive for HBV and/or HCV, standard precautions with full sterilization procedures were considered in the surgical operation theatre.

Statistical Analysis

The results obtained were analyzed by entering the data in a binary format as a Microsoft Excel spreadsheet.

RESULTS

Out of 4851 patients, there were 2530 (52.15%) males and 2321 (47.85%) females. Mean age was 35 years with most common age group between 26-50 (Table 1).

Table 1: Baseline characteristics of study population (n=4851)

Age group	Number
Upto 25 year	1703
26-50 year	2421
51-75 year	645
76-85 year	82

A total of 94 (1.93%) patients were found to be positive for HBV or HCV. Eighty seven (1.79%) were positive for hepatitis B and 7 (0.14%) were positive for hepatitis C. Among 87 HBV positive patients, 54 were males and 33 were females. Among 7 HCV positive patients, 5 were males and 2 were females (Table 2). Out of the positive cases for HBV and HCV, 75 had no knowledge or gave any history of jaundice/hepatitis. There was no case found with combined infection for HBV and HCV.

Table 2: Hepatitis B and C positive patients (n=94).

	Number (%)	Male	Female
HBV	87 (1.79)	54 (1.11)	33 (0.68)
HCV	7 (0.14)	5 (0.10)	2 (0.04)

The frequency of hepatitis B and C (combined) was more in age group ranging between 26–50 years, regardless of gender. The frequency of hepatitis B among age groups upto 25, 26-50, 51–75 and 76-85 was 35.63% (31/87) 49.43% (43/87) 13.79% (12/87), and 1.15% (1/87), respectively. The frequency of hepatitis C among age groups upto 25, 26-50, 51–75 and 76-85 was 28.57% (2), 57.14% (4), 14.29% (1) and 0.0% (0), respectively (Figure).

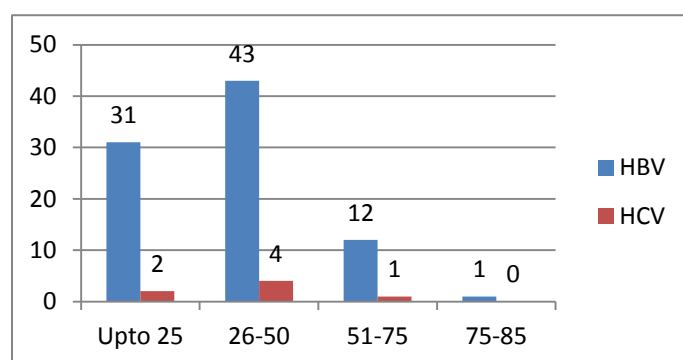


Figure: Prevalence of HBV and HCV infections in different age groups

DISCUSSION

The two most potentially dangerous hepatotropic viruses are the HBV and HCV infections. Such infections continue to be a worrying issue in the World Health Organization-Eastern Mediterranean Region (WHO-EMR), where the prevalence rate of HBV ranges from 2-4% [12], while the prevalence of HCV ranges from 1% to more than 20% [13]. However, Iraq has a low prevalence of HBV and HCV, which is estimated to be 1.6% and 0.4%, respectively [14]. In this study, the frequency of HBV infection was 1.79%, while the frequency of HCV was 0.14%. Although

the present study does not reflect the exact prevalence of HBV and HCV infections in Duhok, it might reflect, in part, the current situation of these viruses in Duhok province. In a nationwide survey study conducted in Iraq from 2005-2006, similar frequency pattern was reported. In the present study, the rate of HBV and HCV infections were lower compared to figures from Turkey [15] and Pakistan [16], whereas the rate was higher than those countries in the north-western part of Europe [17].

In the current study the prevalence of HBV infection was slightly higher than general population [14], which could be explained by the fact that frequency of HBV infection is higher in hospitalized patient. Generally speaking, the frequency of HBsAg and anti-HCV in patients presenting for surgery is high [15]. Recently, the rate of HBV and HCV is further exacerbated in our hospital by flooding of Syrian and Iraqis into the Kurdistan region fleeing from the violence. Routine pre-operative screening for HBV and HCV is therefore crucial for detection of such deadly viruses particularly in detecting unknown cases and hence management of such patients before onset of end stage liver diseases. Furthermore, it would be important to alert HCWs in using extra-care with such patients.

In our study, both HBV and HCV infections were more prevalent in males than females. In support of our finding, other researchers demonstrated similar results [18], [19]. The higher frequency of these infections in males could be attributed to that men are more likely to have risk factors for exposure to these viruses such as high risk jobs

and multiple sexual partners. In this study, both hepatitis B and C were highly prevalent in the age group between 26–50 years followed by age group upto 25 years. Our finding was in favor to other studies, which means the infections are more involving people who are in active part of life [20]. Our results showed that the frequency of HBV infection was higher than HCV, which was in concordance with other studies [18], [19], [21]. The prevalence rate of HCV in the study was lower than observations of other Iraqi researchers [14], [19]. The very low endemicity of HCV in our study could be explained by that the patients included in this study were negative for history of multiple blood transfusions diseases such as hemophilia and thalassemia. In Iraq, the prevalence of HCV infection is estimated to be 0.5% in blood donors [22].

The study has few limitations. polymerase chain reaction for HBV-DNA and HCV-RNA were not performed for the patient included in the study. This may affect results in our study as it would allow early diagnosis of these infections particularly in case of occult hepatitis and furthermore, in cases before HBsAg or anti-HCV antibodies were detectable in blood.

In conclusion, HBV and HCV infection should be a concern in the health care services. The higher frequency of HBV and HCV infections in the patients presenting for elective surgery strengthen the need for routine pre-operative screening for all patients before surgical operative procedures. All HCWs especially surgeons, anesthetists, nurses and theater staff should be vaccinated against HBV.

Further prospective studies with larger sample size are warranted to confirm the results.

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REFERENCES

1. Hepatitis B Foundation. Statistics. Hepatitis B Foundation. Web site: <http://www.hepb.org/hepb/statistics.htm>. Published 2003-2008. Accessed July 8, 2013.
2. EASL Clinical Practice Guidelines: management of hepatitis C virus infection. *J Hepatol* 2014, 60(2): 392–420.
3. Terrault NA. Sexual activity as a risk factor for hepatitis C. *Hepatology* 2002; 36(5 Suppl 1): S99-S105.
4. Puro V, Lo Presti E, D'Ascanio I, Zaniratti S, Benedetto A, Ippolito G. The seroprevalence of HIV, HBV and HCV infections in patients coming to the departments of general surgery of a public hospital. *Minerva Chir* 1993; 48(7): 349-54.
5. Puro V, De Carli G, Cicalini S, Soldani F, Balslev U, Begovac J, et al. European recommendations for the management of healthcare workers occupationally exposed to hepatitis B virus and hepatitis C virus. *Euro Surveill* 2005; 10(10): 260-4.
6. Haider MZ, Ahmed N, Yasrab M, Malik AM, Javed M. Screening for Hepatitis B and C: A pre-requisite for all invasive procedures. *Professional Med J.* 2006; 13(3): 460-3.
7. Prüss-Ustün A, Rapiti E, Hutin Y. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. *Am J Ind Med.* 2005; 48(6): 482-90.
8. Rapiti E, Prüss-Üstün A, Hutin Y. Sharps injuries: assessing the burden of disease from sharps injuries to health-care workers at national and local levels. Geneva, World Health Organization, 2005. (WHO Environmental Burden of Disease Series, No. 11).
9. McGowan DR, Norris JM, Smith MD, Lad M. Routine testing for HIV in patients undergoing elective surgery. *Lancet* 2012; 380(9846):e5.
10. Mantha S, Roizen MF, Madduri J, Rajender Y, Shanti Naidu K, Gayatri K. Usefulness of routine preoperative testing: A prospective single-observer study. *J Clin Anesth* 2005;17(1): 51-7.
11. Gunson RN, Shouval D, Roggendorf M, Zaaier H, Nicholas H, Holzmann H, et al., Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections in health care workers (HCWs): guidelines for prevention of transmission of HBV and HCV from HCW to patients. *J Clin Virol* 2003; 27(3): 213-30.
12. Ott JJ, Stevens GA, Groeger J, Wiersma ST. Global epidemiology of hepatitis B virus infection: new estimates of age-

- specific HBsAg seroprevalence and endemicity. *Vaccine*, 2012, 30(12): 2212–9.
13. WHO Regional Office for the Eastern Mediterranean. The growing threats of hepatitis B and hepatitis C in the Eastern Mediterranean Region: a call for action. Presented at the Fifty-sixth session of the WHO Regional Committee for the Eastern Mediterranean. Fez, Morocco, 5–8 October 2009 [Document no: EM/RC/56/3]. Available at: http://applications.emro.who.int/docs/EM_RC56_3_en.pdf (accessed on 13 June 2014).
14. World Hepatitis Alliance Viral Hepatitis: Global Policy. London 2010. Available at: <http://www.worldhepatitisalliance.org/en/home.html>.
15. Günal Ö, Barut H.Ş, Tetikçok R, Çeltek N.Y, Etikan I. Seroprevalences of hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) in preoperative patients admitted to a hospital in Northern Anatolia. *Afr. J. Microbiol* 2011; 5(31): 5669-73.
16. Hammed A. Frequency of hepatitis B & C in elective eye surgery. *RMJ* 2013; 38(1): 15-7.
17. Hahné SJ, Veldhuijzen IK, Wiessing L, Lim TA, Salminen M, Laar Mv. Infection with hepatitis B and C virus in Europe: a systematic review of prevalence and cost-effectiveness of screening. *BMC Infect Dis* 2013;13:181.
18. Ahmad I, Khan SB, Rehman HU, Khan MH, Anwar S. Frequency of Hepatitis B and Hepatitis C among cataract patients. *Gomal Journal of Medical Sciences* 2006; 4(2):61-4.
19. Tarky AM, Akram W, Al-Naaimi AS and Omer AR. Epidemiology of viral hepatitis B and C in Iraq: a national survey 2005-2006. *Zanco J. Med. Sci* 2013; 17(1): 370-80.
20. Rahman MT, Sultana R, Chowdhury SR. Seropositivity and pattern of viral hepatitis in clinically suspected cases of hepatitis in Dhaka city. *Bangladesh Med Res Counc Bull* 2007; 33(3): 103-6.
21. Arora DR, Sehgal R, Gupta N, Yadav A, Mishra N, Siwach SB. Prevalence of parenterally transmitted hepatitis viruses in clinically diagnosed cases of hepatitis. *Indian j Med Microbiology*. 2005; 23(1):44-7.
22. World Health Organization fact sheets, Hepatitis C, World Health Organization, Geneva (2000), Available at: <http://www.who.int/mediacentre/factsheets/fs164/en/> (accessed on 13 June 2014).