



The Prevalence of Hepatitis B and C Virus in Healthy Women in Zakho City, Kurdistan Region of Iraq: A Brief Report

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Abstract

Background: Infections with hepatitis B virus (HBV) and hepatitis C virus (HCV) are major global public health problems. Infection with such viruses is commonly associated with liver cirrhosis and hepatocellular carcinoma.

Objectives: The aim of this study was to determine the prevalence rate of HBV and HCV in women in Zakho City, Kurdistan Region of Iraq.

Methods: A cross sectional study was performed in Zakho City, Iraq between January 2019 and October 2019. A total of 2223 females aged between 18 to 52 years old were included in this study. ELISA test was used to determine HBsAg, HBe IgG, and HCV antibodies positivity. HCV positive samples were then confirmed by Xpert HCV quantification assay.

Results: Among the studied subjects, 12/2223 (0.54%) samples were positive for HBs Ag. All these 12 patients showed also positivity for HBe IgG. Only 1/2223 (0.045%) sample was positive for HCV antibodies. The result of HCV-RT-PCR confirmed the positivity for this patient.

Conclusions: The low prevalence rate of HBV and HCV infection among women in Zakho City was less than that reported in other studies. Population-based study is needed to estimate the prevalence of infection.

Keywords: Viral Hepatitis, HBV, HCV, ELISA, RT-PCR, Zakho

1. Background

Viral hepatitis, particularly HBV and HCV, is a global health issue (1, 2). Nowadays, more than 300 million patients are infected with HBV and around 100 million patients are infected with HCV. Chronic infection with HBV and HCV is associated with deleterious consequences such as liver cirrhosis and hepatocellular carcinoma (1, 2). The death toll of chronic hepatitis is around 500,000 live, annually (1, 2). The prevalence of HBV is ranging from around 1% in developed countries to around 10% Southeast Asia (3). Besides, the prevalence of HCV is ranging from as high as 10% in Egypt to around 1% in industrialized world (1, 2). The World Health Organization (WHO) targets the elimination of viral hepatitis as a public health problem. This can be achieved by the reductions of new transmissions of viral hepatitis and the reduction of mortality from the infection (4). To achieve this in individual country, the epidemiology of the infection should be studied to determine the size of

problem. In Kurdistan Region of Iraq, the prevalence of HBV and HCV has been studied previously (5-8). Careful examination of those papers reveals that recruited samples were male predominant.

2. Objectives

The aim of this project was to study the prevalence of HBV and HCV in women in Kurdistan Region of Iraq.

3. Methods

3.1. Study Design

A cross sectional study was conducted in Zakho City between January 2019 and October 2019 recruiting female volunteers. The sample were collected through a campaign conducted by mobile teams of medical students. The

mobile team established a center in the city center of Zakho City for sample collection. Besides, samples were collected from women who visited premarital screening centers in Shabania Hospital, Zakho City. The inclusion criteria included female aged 18 years old or older who are apparently healthy and agreed to participate in the study. Five milliliter blood was collected from each subject using 5 cc syringe and needle. Then, the samples were centrifuged at 1500 rpm for 5 min.

3.2. HBV and HCV ELISA

Commercial ELISA kit (DIA.PRO diagnostic Bioprobes ELISA kit, Italy) was used to test HBsAg, HBe IgG, and HCV antibodies positivity. The assay was performed following manufacturer's instruction. In short, micro-well plate was coated with specific monoclonal antibodies. The serum of each patient was then added and incubated with the secondary conjugated monoclonal antibody. Finally, ELISA reader was utilized to measure the optical density.

3.3. Confirmation of HCV

HCV viral load was tested utilizing Xpert HCV quantification assay (Cepheid, Sunnyvale, California, the USA). For short, 1 mL of the sample was loaded into the machine cartridge. Amplification range of the Xpert HCV assay is 10 IU/mL to 108 IU/mL.

3.4. Ethics

The study was approved by the Scientific and Ethics Committee, College of Medicine, University of Zakho, Kurdistan Region, Iraq. Written informed consent was obtained from all participants.

4. Results

4.1. HBV Positivity

During the study period, 2223 women met the inclusion criteria and were recruited in the study. The average age of participants was 18 to 52 years old. Among the recruited sample, 12/2223 (0.54%) were positive for HBsAg. Then, to confirm the chronicity of the infection, HBe IgG was tested. All the patients showed positive HBe IgG result.

4.2. HCV Positivity

Among the recruited sample, 1/2223 (0.045%) sample was positive for HCV antibodies. To confirm HCV positivity, HCV-RTPCR was performed and the patient was positive.

5. Discussion

Infection with HBV and HCV is associated with liver cirrhosis and hepatocellular carcinoma (9). The WHO has set an ambitious plan to eliminate the infection by 2030. According to the WHO, this can be achieved by 60% reduction in infection related mortality and 90% reduction in transmission globally (4). No population-based study has been conducted in Iraq and almost all prevalence studies in Iraq recruited a specific group such as blood donors and renal dialysis patients. Careful examination of those projects revealed that the majority of recruited samples were male (5, 6, 8, 10). We believed that there was a need for screening women to explore the prevalence of HBV and HCV in our society. In a previous study conducted in our region recruiting blood donors, the prevalence of HBsAg and HCV antibodies were 0.78% and 0.2%, respectively (6). In another study recruiting 566 candidates for police recruitment, HBsAg and HCV antibody were 7.2% and 0%, respectively (7). In this study, the prevalence of HBsAg positivity was 0.54% which was lower than that previously reported (6, 7). Besides, HCV positivity was 0.045% which was comparable to previous studies in Iraq. The prevalence of HBV infection have been studied in other regions in Iraq (11, 12). In studies from the Middle Region of Iraq recruiting samples from Babylon and Najaf, the prevalence of HBV positivity was found to be around 0.7% (5, 8). In another study from Karbala City, the prevalence was found to be as high as 3.5% (5, 8). In another study from Southern region of Iraq, the prevalence of HBV was found to be 2.1% while HCV positivity was 0.1% (13). The differences in HBV prevalence rates among different regions of Iraq may attribute to the variation in the application of vaccine program. HBV vaccine was introduced as a part of expanded program of vaccination in late 1990s and was first introduced in the north. The vaccination program was then interrupted after the war in 2003 particularly in southern and middle regions, while the program continued without interruption in the North. To confirm the prevalence of HBV and HCV in Iraq, it is recommended that a population-based study should be conducted investigating the prevalence of the infection and related risk factors. This should be used as baseline information to implement a plan for HBV elimination. The low prevalence of HCV, the approval of new powerful medications for the treatment of the infection and the high success rate of direct acting anti-viral treatment may help elimination of the virus in our society (14, 15).

To conclude, the prevalence of HBV and HCV seems to be lower in female in the region. A population-based study recruiting large sample size is needed to determine the prevalence of the infection.

Footnotes

Authors' Contribution: We confirm that the manuscript has been contributed, reviewed and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

Conflict of Interests: We wish to confirm that there are no known conflicts of interest associated with this publication.

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