



The Prevalence of Hepatitis C Virus Infection in Pregnant Women in Duhok City, Kurdistan Region of Iraq: A Brief Report

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Abstract

Background: Hepatitis C virus (HCV) is a public health issue, worldwide. HCV infection during pregnancy is associated with vertical transmission.

Objectives: The current study aimed at investigating the prevalence of HCV in pregnant women.

Methods: The current cross sectional study was conducted in Duhok, Kurdistan region of Iraq from January 2016 to December 2018. In the study, pregnant women were tested for HCV antibodies (HCV-Ab) positivity. The infection then was confirmed by HCV-real time polymerase chain reaction (RT-PCR).

Results: During the study, 37,200 pregnant women were recruited; 15 (0.04%) subjects were positive for HCV-Ab. To confirm the infection, HCV-RT PCR was performed for subjects with positive results and only three cases were confirmed using this method; giving a prevalence of 3/37,200 (0.001%).

Conclusions: HCV prevalence in pregnant women was low in Duhok city. Continuous screening is required to control infection and prevent vertical transmission.

Keywords: HCV, Pregnancy, Prevalence, Iraq, Duhok, Kurdistan

1. Background

Infection with hepatitis C virus (HCV) is a public health problem (1). The World Health Organization estimates that there are more than 150 million people infected with HCV worldwide (1). HCV can be transmitted by blood and blood products transfusion, contaminated needles and device, and vertically from mothers to newborn babies (1).

The exact mode of transmission during pregnancy is not fully understood. The infection can be transmitted during pregnancy and delivery, though the majority of infections occur perinatally. HCV infection was previously studied in Iraq (2, 3). The highest prevalence of HCV infection was observed in patients with thalassemia (4, 5). On the other hand, the association of hepatitis B virus (HBV) infection with pregnancy outcomes and the vertical transmission of HBV were studied in the under study region. The vertical transmission rate of HBV was nil in the city (6, 7). No study has been conducted in Duhok to investigate the prevalence of HCV in pregnant women.

2. Objectives

The current study aimed at investigating the prevalence of HCV in pregnant women in Duhok city, Kurdistan region of Iraq.

3. Methods

3.1. Study Design

The current cross sectional study was conducted in Duhok City to investigate the prevalence of HCV in pregnant women. The study was conducted from January 2016 to December 2018. All pregnant women visiting maternal hospital in the city were included in the study.

3.2. ELISA for HCV Antibodies

A 5-mL peripheral blood sample was obtained from each patient and kept in a tube containing EDTA. After three minutes of centrifugation, the plasma was collected and either tested immediately for the anti-HCV antibodies or stored at -20°C until testing.

3.3. RNA Extraction and HCV Viral Load

HCV-RNA extraction was performed by QIAamp RNA extraction kit (Qiagen) according to the manufacturer's protocol for automatic extraction in QIAcube extractor (Qiagen). HCV viral load was measured using real-time quantitative polymerase chain reaction (qRT-PCR) (Artus Qiagen, Hamburg, Germany). An aliquot of 20 μ L of the extracted HCV-RNA was used in a total reaction volume of 50 μ L. RNA amplification was performed utilizing the Rotor-Gene Q device (Qiagen). Then, data analysis was conducted using Rotor-Gene software according to the manufacturer's instructions.

3.4. Ethics

The research proposal and the consent were approved by the Ethics Committee of Duhok Department of Health, Kurdistan region of Iraq. Written informed consent was obtained from the hospital staff and the community students to use their samples for research purposes.

4. Results

4.1. Patients

During the study, 37200 pregnant women with the mean age of 27.5 ± 11 years were tested for HCV-Ab by the enzyme-linked immunosorbent assay (ELISA) technique. Amongst the study subjects, 384 (1%) delivered dead babies; 11,904 (32%) women underwent cesarean section including 4762 emergency and 7142 planned cases; 22,320 (60%) women were from Duhok District, 9301 (25%) from Summail, 408 (11%) from Amedia, 1118 (3%) from Aqre, and 370 (1%) from Zakho.

4.2. HCV Positivity

During the study period, 15 (0.04%) subjects were positive for HCV-Ab. To confirm their infection, HCV-RT PCR was performed, of which only three subjects were positive, giving a prevalence of 0.001%. The HCV-RT PCR was repeated twice for all patients with HCV-Ab positive.

5. Discussion

HCV infection is a public health problem (1). Such an infection is associated with deleterious consequences such as liver cirrhosis and hepatocellular carcinoma (1). The vertical transmission of HCV infection during pregnancy is still an important mode of transmission; therefore, it is important to screen pregnant women for HCV. In 2018, a meta-analysis was conducted in Iran investigating the prevalence of HCV in different populations; six studies were included (8). The prevalence of HCV infection in pregnant

women in Iran ranged 0.0% to 0.8%, with a median of 0.3% (8). In another study conducted in Turkey, the prevalence of HCV-Ab positivity in pregnant women was 0.1% (9). In the current study, the prevalence was 0.001%; much lower than the rates reported in the neighboring countries. This difference might be due the use of ELISA technique to measure anti-HCV antibodies in those studies. Such a test cannot discriminate between old resolved infections and the current ones. HCV-RT PCR is the only test that confirms the current infection.

In conclusion, it seems that the HCV infection prevalence is low in Kurdistan region. Continuous screening is crucial to control the infection and halt vertical transmission.

Footnotes

Conflict of Interests: The authors declared no conflict of interests.

Ethical Approval: Research proposal and consent was reviewed and approved by the Ethics Committee of Duhok Department of Health.

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Patient Consent: Written informed consent was obtained from all subjects.

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