Occult Hepatitis B in Patients Co-Infected With Hepatitis C and Human Immunodeficiency Viruses

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Abstract

Objectives: Diagnosis of the occult hepatitis B virus (HBV) infection in patients co-infected with human immunodeficiency virus (HIV) and hepatitis C virus (HCV) is important due to the fact that the HBV infection may have a clinical impact on liver disease in coinfected HIV/HCV patients. Isolated hepatitis B core antibody (HBcAb) positive HBV infection has been reported in HIV patients. The aim of this study was to determine the occult hepatitis B in patients co-infected with HCV-HIV.

Methods: In a cross-sectional study, hepatitis B surface antigen (HBsAg) and HBcAb tests were performed for all HIV-HCV co-infected patients, referred to the HIV Clinic of Hamadan. HBsAb was requested for HBsAg negative-HBcAb positive individuals and in the case of negative HBsAb, HBV-DNA PCR was performed. Finally the collected data was analyzed with SPSS.

Results: Of 103 HIV-HCV coinfected patients, both HBsAg and HBcAb were positive in 7 patients (6.8%), negative in 44 (42.7%) patients and 52 (50.5%) of all patients were HBsAg negative and HBcAb positive, which positivity of HBsAg had statistical correlation with positivity of HBcAb. In the last group HBsAb and HBV-DNA PCR were done, which resulted in the titer of antibody to be positive in 4 patients (7.7%) and the PCR to be negative in all (100%) patients.

Conclusions: The significant number of coinfected HIV-HCV patients only had HBcAb positive test without detectable HBV-DNA. Further studies for detection of HBV-DNA in both serum and liver biopsy specimens may help clarify the impact of HBV infection in coinfected HIV/HCV patients.

Keywords: HIV, Hepatitis B, Hepatitis C, Diagnosis

1. Background

Co-infection of the hepatitis B virus (HBV) and hepatitis C virus (HCV) is common in high-risk populations (1, 2). In the presence of co-infection, replication of two viruses is unusual. In this situation, the replication of HBV may be inhibited; however, the risk of the severity of liver disease and progression to hepatocellular carcinoma may increase. On the other hand, in patients co-infected with human immunodeficiency virus (HIV) and HBV, increased serum level of HBV DNA and histological changes are observed, while the levels of transaminases are not elevated. Antiretroviral therapy reactivates the course of inactive hepatitis B (3). Thus, it is recommended that all HIV patients should be screened for hepatitis B and C (4). If the hepatitis B surface antigen (HBsAg) is negative but the anti-hepatitis B core immunoglobulin G (IgG anti-HBc) is positive then hepatitis B has been reported in HIV patients (5, 6). Considering the above-mentioned points, it seems that HBsAg testing alone is not enough for the diagnosis of HBV infection in HCV/HIV coinfected patients. Other markers including HBcAb and HBV-DNA polymerase chain reaction (PCR) may need to be assessed for the diagnosis of hepatitis B in HCV-HIV coinfected patients.

2. Objectives

The aim of this study was to evaluate the occult hepatitis B in patients coinfected with HCV-HIV.

3. Methods

In a cross-sectional study, during November 2013 to September 2014, all patients with co-infection of HCV and...
HBV infection. HBsAg is considered as a marker of HBV infection. However, HBcAb positivity may indicate a recent or past HBV infection.

Isolated HBcAb seropositivity may be due to occult hepatitis B, false positive result and recovery from an old infection with very low titer of HBsAg. Accordingly, in individuals with isolated HBcAb, detection of HBV-DNA in blood or liver biopsy is needed for confirmation of occult HBV infection.

The prevalence of HBV infection in HIV-infected individuals varies in different populations. Previous studies have reported the prevalence of 12.6% in China, 7.7% in Nigeria, 6% in Kenya and 3.3% in Iran (5-8). A higher prevalence of occult HBV infection (35%) was reported by Piroth et al. (9).

The role of HBV infection in the progression of the liver disease in HIV/HCV coinfected patients has been evaluated in several studies with conflicting results (10,11). The frequency of HBV infection in those with coinfection of HIV/HCV has been reported from 1 to 35% in different studies (12,13). A limited study from Iran reported that three out of the 18 patients (16.7%) had HBV infection (14).

In the present study, 50.5% of 103 HIV/HCV coinfected individuals were isolated and HBcAb positive. None of them had any detectable HBV-DNA in their serum.

In a study of 837 HIV-positive patients by Gupta S et al. (15), HBV-DNA was assessed using a highly sensitive qualitative PCR. Occult HBV infection was seen in 20.7% anti-HBs positive patients. However, in the seronegative patients, none of them detected HBV-DNA.

Morsica G et al. reported a study of occult HBV infection in 175 HIV-positive patients using a highly sensitive PCR assay. Quantification was performed by real-time PCR. HBV-DNA was detected in plasma of 15% of patients (10).

In a study conducted by Fabris et al. (16), 52 HIV/HCV coinfected patients were evaluated by PCR for HBV infection. HBV-DNA was detected in 7 (13.4%) of the liver specimens and 3 of serum samples. Raffa et al. (17) reported a higher prevalence (41%) of HBV-DNA by PCR testing of liver biopsy specimens of the 101 HBsAg negative individuals with HIV/HCV coinfection. The discrepancies between our results and above-mentioned studies may be explained in part by the type of PCR technique and the specimen investigated (liver or serum). PCR testing for detection of HBV-DNA in liver tissue is considered as the ‘gold standard’ approach for occult HBV detection.

Considering the negative results of all PCR tests, in this study and most of similar studies, it seems that the most probable cause of isolated HBcAb is not occult hepatitis. In like manner, seropositivity of HBcAb, per se, does not affect the course of HIV/HCV coinfected patients.

5. Discussion

HBsAg is considered as a marker of HBV infection. However, HBcAb positivity may indicate a recent or past HBV infection.

Isolated HBcAb seropositivity may be due to occult hepatitis B, false positive result and recovery from an old infection with very low titer of HBsAg. Accordingly, in individuals with isolated HBcAb, detection of HBV-DNA in blood or liver biopsy is needed for confirmation of occult HBV infection.
and liver biopsy specimens are needed to clarify the clinical impact of HBV infection in coinfected HIV/HCV patients.

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Footnote

Conflict of Interest: None declared.

References