Short Communication

Detection of hepatitis B virus (HBV)-DNA levels among seropositive HBsAg patients in Basrah province, Iraq

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Hepatitis B is an indolent disease that seldom causes symptoms until complications of cirrhosis and liver cancer occur. The level of circulating HBV has recently been shown to be the strongest predictor of the development of cirrhosis and hepatocellular carcinoma. The aim of the present study was to determine hepatitis B virus (HBV)-DNA concentration as a guide for disease development and the natural history of the disease, and also to design antiviral therapy regimens in seropositive HBsAg patients in Basrah province. 38 seropositive HBsAg patients were used in this research. Quantitative serum HBV-DNA assay was carried out using the RT-PCR technique and the mean ages of the patients were 43 ± 12 years. The number of patients with undetectable HBV-DNA (least than 200 copies/ml) was 9/38 (23.69%). HBV-DNA above 10⁵ copies/ml (46163359 ± 47377134) was observed in 17/38 (44.73%) of the patients (p<0.05), while HBV-DNA less than 10⁵ copies/ml (22252 ± 21016) was observed in 12/38 (31.58%) of the patients. It was concluded that HBV DNA viral load was higher in HBeAg negative or positive chronic hepatitis patients than in those with inactive HBsAg carrier.

Key words: Hepatitis B virus, seropositive HBsAg patients, hepatitis B virus (HBV)-DNA.

INTRODUCTION

Hepatitis B virus (HBV) is one of the major diseases of mankind and is a serious global public health problem. Of the two billion people who have been infected with the HBV, more than 350 million have chronic infections where 500,000 to 1.2 million deaths per year are caused by chronic hepatitis, cirrhosis and hepatocellular carcinoma (Issa et al., 2012). Furthermore, hepatitis B is an indolent disease that seldom causes symptoms until complications of cirrhosis and liver cancer occur. However, hepatitis B infection is associated with an excess mortality, mainly from hepatocellular carcinoma (HCC) and cirrhosis and its complications (Brooks et al., 2007). The level of circulating HBV has recently been shown to be the strongest predictor of the development of cirrhosis and HCC (Chen et al., 2006). The National Institutes of Health (NIH) workshop on management of hepatitis B recommended that anti-viral treatment be considered in patients with HBeAg positive or HBeAg negative chronic hepatitis and HBV DNA 10⁵ copies/ml (Lok et al., 2001).

According to National Institute of Health, HBV-DNA above 10⁷/ml in serum of chronically HBV infected persons is the basic condition for the diagnosis of chronic hepatitis B (Lok and McMahon, 2001). The level of 20,000 IU/ml (around 10⁵ copies/ml) has been arbitrarily selected as the level below which there is a relatively low likelihood of hepatic damage, although this can still occur (Lok et al., 2001). The fundamental characterization of HBsAg patients in Basrah province is still poorly understood, therefore, our objective was to determine HBV-DNA concentration as a guide for disease development and the natural history of the disease. Another aim of this paper was to design antiviral therapy regimens in seropositive HBsAg patients in Basrah province.

MATERIALS AND METHODS

Patients with chronic hepatitis B infection, diagnosed on the basis of a positive HBsAg longer than six months were used for this study. None of the patients were treated with antiviral drugs such as
interferon-α and nucleoside analogues. The study included 38 seropositive HBsAg patients, nine women (23.69%) (aged 25 to 70 years) and 29 men (76.31%) (aged 23 to 75 years) who were attending a local private laboratory for clinical analysis in Basrah province. HBV-DNA concentration was measured by real time-PCR technique (Device Smart Cycler, USA) according to Sacace Biotechnology kit (Awatif et al., 2012). All the chemicals used in this research were of analytical grade.

**Statistical analysis**

The values of serum viral titers were presented as mean ± standard deviation (SD). The statistical significance of difference in mean of variables between more than two groups was assessed by analysis of variance (ANOVA) test for any significant differences (associated probability < 0.05). All statistics were carried out using the Statistical Package for the Social Sciences (SPSS) software, version 7.5.

**RESULTS**

The mean ages of the patients were found to be 43 ± 12 years. However, HBV-DNA was not detected (least than 200 copies/ml) in 9/38 (23.69%) of patients. Likewise, the reduction of HBV (22252 ± 21016) viraemia (least than 10⁵ copies/ml) was discovered in 12/38 (31.58%) of the patients, according to these data, these patients can be considered as inactive HBsAg carriers (Table 1). The number of persons (p<0.05) with HBV-DNA above 10⁵ copies/ml (46163359 ± 47377134) were observed in 17/38 (44.73%), according to these data, these patients can be considered as HBeAg negative or with positive chronic hepatitis. Furthermore, these patients needed antiviral therapy (Table 1).

**DISCUSSION**

The significance of hepatitis B virus serum titers has been examined in several clinical situations. In our study, HBV DNA viral load was higher in HBeAg negative chronic hepatitis or HBeAg positive chronic hepatitis patients than in those with inactive HBsAg carrier.

Table 1. HBV-DNA levels among studied groups.

<table>
<thead>
<tr>
<th>Studied group</th>
<th>Number</th>
<th>Percentage</th>
<th>HBV-DNA level (mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive HBsAg carrier</td>
<td>9</td>
<td>23.69</td>
<td>Undetectable (least than 200 copies/ml)</td>
</tr>
<tr>
<td>Inactive HBsAg carrier</td>
<td>12</td>
<td>31.58</td>
<td>22252 ± 21016 (least than 10⁵ copies/ml)</td>
</tr>
<tr>
<td>HBeAg negative or positive chronic hepatitis</td>
<td>17</td>
<td>44.73</td>
<td>46163359 ± 47377134 (above 10⁵ copies/ml)</td>
</tr>
</tbody>
</table>

Conclusions

In conclusion, this is the first study that shows HBV DNA viral load higher in HBeAg negative or positive chronic hepatitis patients than in those with inactive HBsAg
carrier. In addition, high HBV-DNA viral load may suggest the development of chronic hepatitis, and can be considered as a good prognostic guide for antiviral therapy. Finally, further studies are necessary under different laboratories to improve and strengthen these results and to increase our knowledge on these very interesting effects as a potential marker for hepatitis patients.

REFERENCES


