The Prevalence of Hepatitis C Virus among Hemodialysis Patients in Yemen

Najla M. Baghza

Department of Microbiology, Faculty of Medicine and Health Sciences, Dhamar University, Dhamar, Yemen.

Baghza2006@yahoo.com

ISSN (Online): 2232-1179
ISSN (Print): 2314-8101 © 2012 Design for Scientific Renaissance All rights reserved

ABSTRACT

Hepatitis C virus infection is highly prevalent among hemodialysis patients and is the most common cause of liver disease. Hepatitis viral infection is a major health problem in Yemen. Yemen consider as a high endemic area according to world health organization classification. The prevalence of Hepatitis C Virus infection among hemodialysis patients was determined. Also, the association between the prevalence of hepatitis C and age, sex, duration of dialysis was included in this study.

Two hundred of hemodialysis patients were included in this study. They are visiting some of hemodialysis units in some of the public hospitals in Sana’a City. An anti-HCV antibody was determined by (Enzyme immunoassays (EIAs) method to detect the presence of antibodies in serum directed against HCV.

The overall prevalence of positive hepatitis C antibody among hemodialysis patients was 45 (22.5%). The association between the HCV antibody positivity and gender, age were not statistically significant, while was statistically significant with duration of dialysis ($P < 0.03$).

Keywords: Virus C, Hemodialysis Patients, Yemen

1. Introduction

Hepatitis C virus (HCV) is an infectious liver disease of humans. It can cause both acute and chronic hepatitis infection (Chen and Morgan, 2006). The infection is often asymptomatic especially in its early stages but once established, it can progress to advanced liver diseases such as liver fibrosis and their complications such as liver failure and liver cancer (Villano et al., 1999).
Hepatitis C represents a major worldwide public health problem (Trinks et al., 2012). About 200 million people of the world’s population are infected with HCV (Anwar et al., 2013). It is infects 3-4 million more people per year (Ryan and Ray, 2004). The prevalence of anti HCV antibody varies in different world countries with high reported rates in Egypt (Castillo et al., 2006). Some studies showed variety prevalence of HCV, the highest prevalence of hepatitis C virus in Africa, 5.3%, whereas the lowest prevalence is in Europe, 1.03% (Guo et al., 2009). The highest prevalence of HCV between countries in whole the world is in Egypt 6-28% (El Guneid et al., 1993). The prevalence of asymptomatic HCV is much lower in Yemen (1.56%) comparing with other Arabic countries (Haidar, 2002).

Dialysis defined as a process for removing waste and excess water from the blood, and is used primarily as an artificial replacement for lost kidney function in people with renal failure. There are two types of dialysis, hemodialysis and peritoneal dialysis. Hemodialysis, in an artificial kidney (hemodialyzer) is used to remove waste from the blood. To get the blood into the artificial kidney, the doctor needs to make an access (entrance) into the blood vessels. While peritoneal dialysis, in this type of dialysis, the blood is cleaned inside the body no need to make an entrance into blood vessels, abdominal area (called the peritoneal cavity) is slowly filled with dialysate through the catheter (Pendse et al., 2008).

Hepatitis C virus (HCV) remains common in patients undergoing regular hemodialysis, and is an important cause of liver disease in this population both during dialysis and after renal transplantation. The natural history of HCV in hemodialysis dialysis population is not completely understood though recent data show that HCV infection has a detrimental role on survival of chronic hemodialysis dialysis patients (Fabrizi et al., 2007). Stehman-Breen et al. (1998) concluded that HCV infection increased the risk for death among dialysis patients infected with HCV compared with those not infected.

Hepatitis viral infection is a major health problem in Yemen. Yemen consider as a high endemic area according to world health organization classification (Bajubair et al., 2008). Though several studies from Yemen have provided an estimate of the prevalence of this viral infection, but there is no study which reflect the prevalence this disease among hemodialysis patients. Also, hepatitis C unlike hepatitis A and B, there is currently no vaccine to prevent hepatitis C infection (Yu and Chiang, 2010). So this study was carrying out to determine the prevalence of hepatitis C virus among hemodialysis patients.

2. Patients and Methods

Two hundred of hemodialysis patients were included in this study. They are visiting some of hemodialysis units in some of the public hospitals in Sana a City, Yemen, from February 2010 to December 2010. The blood specimens were collected randomly in EDTA vacutainers. Questionnaire was filled for each patient including age, sex and duration of dialysis.

3. The diagnosis of hepatitis C

Ten milliliter of venous blood was taken as sample from the brachial vein and the sera were collected. Anti-HCV antibodies were determined by Enzyme immunoassays (EIAs) method to detect the presence of antibodies in serum directed against HCV. Because of technical
difficulties in detecting HCV RNA, tests for antibody to HCV (anti-HCV) are the mainstay of clinical diagnosis of HCV infection. These tests are commonly used for initial detection of hepatitis C (Swellam *et al.*, 2011; European Association for the Study of the Liver, 2014).

4. Data analysis

Data was analyzed with *SPSS V.18* statistical test to evaluate the results and the statistically significant was at \( P < 0.05 \).

5. Results

This study was conducted on 200 hemodialysis patients attending some of dialysis units in some of the public hospitals in Sana `a City. It included 92 (46\%) females and 108 (54\%) males.

The overall prevalence of positive hepatitis C antibody among hemodialysis patients was 45 (22.5\%) using ELISA method, which included 18 female (40 \%) and 27 male (60 \%), table (1).

The association between the HCV antibody positivity, gender and age were not statistically significant \( P (< 0.05, < 0.06) \) respectively. Overall the association between the HCV antibody positivity and duration of dialysis was statistically significant \( (P < 0.03) \).

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Anti-HCV antibody</th>
<th>Seropositive (N=45)</th>
<th>Seronegative (N= 155)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>15-30</td>
<td>2</td>
<td>4.4</td>
<td>1</td>
</tr>
<tr>
<td>31-45</td>
<td>6</td>
<td>13.3</td>
<td>2</td>
</tr>
<tr>
<td>46-65</td>
<td>7</td>
<td>15.5</td>
<td>7</td>
</tr>
<tr>
<td>&lt; 65</td>
<td>12</td>
<td>26.6</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>60</td>
<td>18</td>
</tr>
</tbody>
</table>

6. Discussion

Results showed that the prevalence of positive hepatitis C antibody among hemodialysis patients was 45 (22.5\%) and the association between the HCV antibody positivity and duration of dialysis was statistically significant \( (P < 0.03) \).

Hepatitis C virus is a bloodborne virus and the most common modes of infection are through unsafe injection practices; inadequate sterilization of medical equipment such as dialysis machine. The prevalence of anti-HCV among hemodialysis patients suggesting that dialysis patients may be at higher risk of acquiring HCV infection. Patients treated in hemodialysis units with a high prevalence of HCV infection are at increased risk of acquiring infection (Jadoul *et al.*, 1993).
The risk of acquiring HCV infection on dialysis units has been estimated at 10% per year. Since a longer time on dialysis could increase the risk of acquiring HCV infection from blood transfusions, the question arises whether the interval since beginning dialysis is indeed an independent risk factor (Hardy et al., 1992). Tokars et al. (1994) noted that among the 27,086 patients from dialysis centers participating in the National Surveillance of Dialysis Associated Diseases in the United States conducted by the Center for Disease Control and Prevention (CDC), the prevalence of anti-HCV by ELISA2 was 8.1%, with a range of 0 to 51% among centers with 40 patients. In Saudi Arabia, the prevalence of anti-HCV among dialysis units ranged from 15.4 to 94.7% (Huraib et al., 1995).

Data on burden of HCV infection in Yemen come primarily from studies on HCV Ab seroprevalence (Gacche and Al-Mohani, 2012). Yemen is the second largest heavily populated and the poorest country in Arabian Peninsula. The prevalence of HCV in Yemenis was found to be 1.7% among healthy volunteers though it reached 2.7% among blood donors. Such prevalence reached up to 60% in haemodialysis patients (Daw and Dau, 2012).

7. Conclusion
Hepatitis C represents a major worldwide public health problem and it is a major health problem in Yemen. Hepatitis C virus (HCV) remains common in patients undergoing regular hemodialysis, and is an important cause of liver disease.

Acknowledgment
I would to thank all the dialysis patients who participated to success this work.

References