Prevalence of Hepatitis B and C Viral Infection among Patients Attending to the Endoscopic Clinic at Al-Thowrah Hospital in Sana'a City, Yemen

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Abstract: Background: Hepatitis B and C are major public health problems worldwide. It is generally believed that hepatitis B (HBV) and C (HCV) viruses are highly prevalent in the Republic of Yemen.

Aim: to determine the prevalence of hepatitis B and C viral infection among patients attending the endoscopic clinic at Al-Thowrah hospital in Sana’a City, Yemen.

Methods: The descriptive cross-sectional study was carried out among patients attending to the endoscopic clinic at Al-Thowrah hospital in Sana’a city from January to December 2017. 1592 patients attending the endoscopic clinic at Al-Thowrah hospital were selected. The data were collected through a structured questionnaire were administered as a face to face interview. The questionnaire was included the following data: demographic data (age, sex, and marital status), and laboratory tests (HBsAg and HCV antibodies).

Results: Overall 95.1% of the patients had never been exposed to HBV or HCV infections while 3.4% had HBsAg and 1.5% had HCV infection. The prevalence of HBV and HCV infection among patients according to sex showed that in male 46.2% of the patients had HBsAg and 12.8% had HCV antibodies compared to 23.1% of the patients had HBsAg and 17.9% had HCV infection in females.

Conclusions: It is essential to promote awareness of these risks among everyone.

Keywords: Seroprevalence, HBV, HCV, HBsAg, Sana,a city, Yemen.

INTRODUCTION

Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the major causes of liver diseases worldwide [1]. The World Health Organization (WHO) estimates that up to two billion people in the world have been infected with HBV; about 350 million people live with chronic HBV infection, and about 600,000 people die from HBV-related liver disease and 3–4 million persons are newly infected each year [2,3]. The prevalence of HBV in the Mediterranean countries is intermediate to be, 3-5% [4,5]. The prevalence of chronic HBV infection varies geographically, from high (> 8 %), intermediate (2-7 %) to low (< 2 %) prevalence [6]. In Yemen, both HBV and HCV infections are present in the population. The endemicity of infection is considered high in Yemen, where the prevalence of positive HBsAg ranges from 8 % to 20 %, and up to 50 % of the populations generally have serological evidence of previous HBV infection [7]. In other studies, the prevalence of HBsAg in Yemen is 12.7 % –18.5 % [8]. However, the prevalence of antibodies to HCV is 1.7 % in healthy volunteers [9]. Most of the epidemiological studies were done in different cities in Yemen, the prevalence rates of HBsAg and HCV antibodies are 10.5 % and 2.3 % in Sana’a, 4.75 % and 0.6 % in Aden, 5.6 % and 0.8 % in Hajah, 26.3 % and 5.1 % in Soqotra respectively [10]. The main transmission routes of HBV are parenteral and perinatal. Sexual, household and occupational transmissions are also important [11,12]. HBV and HCV infection sources such as a razor, scissors, beauty treatments, tattooing, piercing, pedicure, manicure/chiropody and skin care may also be important risk factors in developed and undeveloped areas [13-18]. In particular, reuse or sharing of contaminated materials like razor blades can be considered important routes for the transmission of HBV and HCV infection. It has been reported that hepatitis B viruses can live for several days in dried blood on table surfaces, needles, syringes, scissor and razors [19]. General reduction of these exposures and assuring sterile practices and safety precautions are logical goals for intervention [19].

Aim of the Study

To determine the prevalence of hepatitis B and C viral infection among patients attending the endoscopic clinic at Al-Thowrah hospital in Sana’a City, Yemen.

MATERIALS AND METHODS

The study was conducted among patients attending to the endoscopic clinic at Al-Thowrah hospital in
Sana'a City, Yemen. The descriptive cross-sectional study was carried out from January to December 2017. The target population was all patients attending the endoscopic clinic at Al-Thowrah hospital Sana'a city, Yemen. 16092 were admitted to this study. The data were collected through a structured questionnaire were administered as a face to face interview. The questionnaire was included the following data: demographic data (age, sex, and marital status), and laboratory tests (HBsAg and HCV antibodies).

Five ml of blood sample were drawn from each participant through venipuncture using a sterile syringe. Serum was separated, labeled within two hours of collection and stored upright at -20°C. HBV infection was measured using enzyme-linked immunoassay (ELISA) (Elecsys-Hitachi High-Technology Corporation, 2010, Tokyo, Japan.). HBsAg that was positive test was analyzed for IgM-Anti-HBc. Antibodies to HCV were tested using a third-generation ELISA (Elecsys). Samples that were positive in the ELISA test were analyzed for HCV-RNA by reverse transcription and a nested polymerase chain reaction (PCR). Patients with a positive test for at least one serological marker for HBV and a positive HCV-RNA test for HCV infection were considered seropositive. Standard techniques were applied according to the manufacturer’s guidelines.

The data entry, editing, and analyses were done using of SPSS. Descriptive statistics of demographic variables and other characteristics of the participants were computed. Means and SD were calculated for quantitative variables and proportions for categorical variables. Study participants were informed about the procedure and purpose of the study in simple, clear language and that they were free to refuse participation.

The informed consent form was obtained from study participants. During the investigation, disposable syringes were used for with drawing a blood sample to ensure avoiding blood transmitted infection. The confidentiality of collected data and for the results of investigations was assured the patients were informed about their HBV/HCV test results.

RESULTS

A total of 1592 patients were admitted to the study. The age ranges of patients were from 15 to 60 year, with mean age 28.2±8.3 years and 55.2% male and 44.8% female. Nearly two-third 70.3% was married.

Serological Tests

The serological tests were completed for 1592 patients. Overall 95.1% of the patients (1514/1592) had never been exposed to HBV or HCV infections while 4.9% (78/1592) of patients were HBsAg and HCV antibodies positive cases (3.4% HBsAg vs 1.5% HCV antibodies) Figure 1.

The prevalence of HBV and HCV infection markers among patients according to sex showed that in male 46.2% of the patients had HBsAg and 12.8% had HCV antibodies compared to 23.1% of the patients had HBsAg and 17.9% had HCV infection in the female Table 1.

![Serological tests](image)

**Figure 1:** Prevalence of HBV and HCV infection markers among patients (N=1592).

**Table 1:** Prevalence of HBV and HCV Infection Markers among Patients According to Sex (N=78)

<table>
<thead>
<tr>
<th>Positive cases</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>HBsAg</td>
<td>36</td>
<td>46.2</td>
<td>18</td>
</tr>
<tr>
<td>HCV anti-bodies</td>
<td>10</td>
<td>12.8</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>58.9</td>
<td>32</td>
</tr>
</tbody>
</table>

DISCUSSION

The main sources of spread of hepatitis B and C are the non-implementation of international standards regarding blood transfusion, reuse of needles for ear and nose piercing, reuse of needles for injections, injecting drug users, shaving from barbers, tattooing, and use of unsterilized dental and surgical instruments.
Recently the rates of HBV infection in the country have been increasing, attributed to a lack of proper health facilities, low socioeconomic status and low public health awareness about the transmission of communicable diseases [20].

A significant proportion of those exposed to HBV become chronically infected and are at considerable risk of liver cancer, chronic active hepatitis, and cirrhosis. These infected people may not be aware of their HBV status and are not clinically ill but are a source of infection to others. Messages about hepatitis need to be incorporated in media campaigns, in addition to regulation of practices. In addition, routine screening and immunization are mandatory in the high-risk groups [21].

This survey was conducted to determine the prevalence of HBV and HCV infections and practices among patients. The prevalence of HBV and HCV infections among general population varies from country to country based on environmental factors and host characteristics [22]. Therefore, this study may fill a gap regarding thus information in Yemen.

Prevalence of HBV and HCV may be different in different regions and various groups of the same community. In the present study, the prevalence of HBsAg was detected in 3.4%. This rate is similar than reported among the general population in Aden 4.7 % but lower than that reported in Sana’a 10.5%, in Hajjah 5.6% and in Soqotra 26.3 % and higher than in Mukala 2.7 % and in Ibb 1.81 % [23-25]. The prevalence of HBsAg was 7.4% [26] in the general population and (9.9%) [27] in healthcare workers in Yemen.

In our study, the prevalence of HCV was detected in 1.5%, however, the prevalence of HCV was only 1.7% [26] and 3.5% [27] in general population and health workers in Yemen. In similar studies conducted among the general population in the different geographic region in Yemen found that HCV was 2.37 % in Sana’a, 0.6% in Aden, 0.8 % in Hajjah, 5.1 % in Soqotra and 1.99 % in Ibb city [23-25]. According to WHO, Yemen has an intermediate level, which is 2 % - 7 % of HBV and 2.5 % - 4.9 % of HCV

The percentages of HBV and HCV infections among males were higher than in females (58.9% vs 41%), this may be the cause of males number in taken samples was higher. These people had a variable history of exposure to HBV and HCV risk factors such as major/dental surgery or blood transfusion. This increase could indicate an accumulated risk of infection over time. In addition, the results indicated that the horizontal spread of hepatitis B virus may be of a greater importance than vertical transmission. Inadequate information on the prevalence and risk determinants of viral hepatitis among the different population groups in Yemen are responsible for morbidity and mortality of HBV and HCV.

CONCLUSION

Infection with HBV and HCV is intermediate level among patients attending to the endoscopic clinic at Al-Thowrah hospital in Sana’a City, Yemen.

RECOMMENDATION

Educate the community about the health risks of HBV and HCV and strategies for minimizing the risk of transmission can help reduce transmission of HBV and HCV. Nevertheless, further studies are needed to investigate their prevalence of HBV and HCV among the community.

CONFLICT INTEREST

None.

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REFERENCES


