

Original article

Prevalence of Hepatitis B and C Infection Among Patients in Tripoli Central Hospital

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ARTICLE INFO

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Received: 14-07-2022 **Accepted:** 30-07-2022 **Published:** 03-08-2022

Keywords: Hepatitis B, Hepatitis C, Prevalence, Risk Factors.

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ABSTRACT

Background and aims. The prevalence of viral hepatitis has been observed in various regions in Africa, however the prevalence in Libya is not well documented. This study was aimed to illustrate the prevalence of hepatitis C and B viruses estimates in Libya and to investigate the common risk factors. **Methods.** The study determined the prevalence of HBV, HCV virus among patients in Tripoli Central Hospital and carried out to determine the risk factors among adult patients. **Results.** Overall, 259 patients with a confirmed diagnosis of hepatitis B or C were included in this study. Most cases were infected with HBV (63%) compared to HCV cases (37%). Prevalence was higher in males (HBV, (69.75%) compared to HCV (65.97%). Mean age of HBV was 40.2 and HCV 43.1. More than half of the cases were asymptomatic (55.21%). The modes of viral transmission for all patients were unknown cause by (41%) of patients. Following by dental transmission in (24%) patients. Whereas about (18%) patients were transmitted via blood transfusion and 35 (14%) of patients were transmitted by drug abuse 4 (2%). The results show that, the route of transmission by shaving and sexuality were close about (2%) and 4 (2%) transmission respectively. The lowest rate of transmission was through the contaminated needles 1(0.38%). **Conclusion.** This study indicates high prevalence of HBV infection comparing to HCV. Libya should implement national strategies and guidelines to limit the spreading and face the future consequences of viral hepatitis. Educating common people regarding mode of transmission will help to reduce Hepatitis B and C transmission.

Cite this article. Said A, Abuagela M, Elyounsi N, Dakhil A, Elansari A. Prevalence of hepatitis B and C Infection Among Patients in Tripoli Central Hospital. *Alq J Med App Sci.* 2022;5(2):406-410.

<https://doi.org/10.5281/zenodo.6954707>

INTRODUCTION

Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the most causes of severe liver disease, including the end-stage liver illnesses associated with liver cirrhosis and hepatocellular carcinoma [1-3]. Both HBV and HCV might cause acute or chronic hepatitis and can be fatal [4]. HCV is an RNA virus belonging to the flaviviruses family. The natural targets of the hepatitis C virus are hepatocytes and possibly B lymphocytes [4]. Viral hepatitis is mainly caused by one of the five known viruses (A, B, C, D, and E), using the liver as a major site of replication [3].

According to the World Health Organization (WHO), nearly 350 million people chronically infected with hepatitis B virus and 170 million people are chronically infected with hepatitis C virus globally [1-2]. The prevalence of HCV infection varies worldwide, with the largest proportion of reported infections in Egypt ranging from 6 to 28%, and in the United States 1.8% of the population is positive for HCV antibodies [5]. On the other hand, central and eastern Asia, sub-Saharan Africa, and the Pacific regions have the highest prevalence of HBV from 5% to >8% of adults. Approximately 0.3% have chronic infection with hepatitis B virus in the United States [6]. It has been reported that by WHO 80% of patients with HBV developing chronic hepatitis, about 20% of them have cirrhosis and then 5% developing liver cancer within the next 10 years [7]. Yearly, hepatitis C causes approximately 399,000 deaths worldwide, mostly due to cirrhosis and hepatocellular carcinoma (HCC). HCV infection has also been found to be involved in a variety of extra-hepatic diseases, affecting the kidneys, salivary glands, skin, eyes, thyroid, joints, nervous system, and immune system [8].

Globally, 71 million people are thought to be chronically infected with the hepatitis C virus (HCV) [9]. In the United States, the incidence of chronic HCV infection is estimated to be 2.7 to 5.2 million people, with the prevalence of cirrhosis owing to HCV infection increasing from 6.6 percent to 17.0 percent during the last two decades [10-12]. According to the Global Burden of Disease Study, the number of people dying from HCV infection grew drastically from 303,000 in 1990 to 704,000 in 2013. In the United States, HCV-related mortality has overtaken those caused by the human immunodeficiency virus by 2007 [13].

The most common risk factors are associated with the hepatitis B virus are individuals who have shared injections with others, dialysis, during surgery, dental treatment, after needle stick injuries, after a procedure such as tattooing, in the dental units, blood transfusion, close contact with an infected person as well as drug-abusing. Prenatal transmission is responsible for 10-30% and sexual transmission is more common especially in low-endemic areas and it is considered to be a sexually transmitted disease (STD) [14-15].

The overall prevalence of HBV varies between 2.5% and 3.5% in the European Mediterranean nations [16-17]. In contrast, HBV endemicity is generally rather high in North Africa. The intermediate group includes Tunisia, Algeria, and Morocco, where the infection rate now is around 7% [18]. However, Egypt, Sudan, Chad, and Niger—all which border Libya—are included in the list of nations with the highest endemicity [19-20]. Given the lower prevalence rate of HBV that we found (2.1%), Libya falls within the category of low-intermediate endemicity (2-7% category). The improved socioeconomic circumstances and early initiatives of the National Prevention Program of Infectious Diseases in Libya may be to blame for this decreased prevalence. The current study aimed to document the prevalence of hepatitis B and C virus among patients in Tripoli Central Hospital.

METHODS

Study design and data collection

A hospital-based retrospective cross-sectional study was conducted from March 2019 to January 2020 at Tripoli central Hospital. A total of 259 patients with a confirmed diagnosis of hepatitis B or C were included in this study. The study determined the prevalence of HBV, HCV virus among patients in Tripoli central Hospital.

Data was collected using prepared questionnaire. The questionnaire was divided into three sections, each section Contained various quires. The first section included questions related to the patient's demographic information (age, gender, education, residence, and occupation). The second section contained quires focused on the transmission of Hepatitis B and C (drug abuse, shaving, blood transfusion, dental, sexual transmission, needle stick, unknown cause). The third section contained questions about symptoms of the disease. (Fever, vomiting, diarrhea, pale stool, weakness, fatigue, weight loss, and dehydration, loss of appetite). The questionnaire was distributed to all patients in both English and Arabic languages, and 15 minutes were given to answer the questionnaire.

Statistical analysis

Data were entered and analyzed by Microsoft Excel software version 2010. Variables are expressed as mean standard deviation, while frequency and percentage of the remaining variables were used unless otherwise stated.

Ethical clearance

The study was ethically cleared and approved by the ethical review committee of the Tripoli central hospital with a supporting letter from the Medical Technology Research Team at the University of Tripoli/ Faculty of Medical Technology. Data were collected after getting approval from the hospital medical director and written informed consent from each study participant. Participation in the interview was fully voluntary based. Data confidentiality was kept through avoiding personal identifiers and anonymity of personal data records.

RESULTS

Out of 259 patients infected with HBV, HCV, about 177 (68.33%) were males and 82 (31.66%) were females, and most cases were between the age of (31 and 50) with an average 41.4 years of all patients. (Table.1). Approximately, two-thirds, 113 (69.75%) of 162 males were infected by HBV and about 64 (65.97%) of 97 males were infected by HCV. In comparison, about one third, 49 (30.24%) females were infected with HBV out of 162 cases and 33.02 (34%) were infected with HCV.

This indicates that the number of male cases was higher than females (68.33% and 31.66% respectively), also most cases were infected with HBV (63%) compared to HCV cases (37%). The mean (\pm SD) of the age in this study was 41.4. Parity and gestational age were significantly different between the HBV and HCV. HBV was 40.2 and HCV was 43.1.

Table 1. Patients' demographics

| Participants' characteristics | | Total (n=259) | HBV (n=162) | HCV (n=97) |
|-------------------------------|-------------------|---------------|-------------|------------|
| Gender | Male | 177(68.33%) | 113(69.75%) | 64(65.97%) |
| | Female | 82(31.66%) | 49(30.24%) | 33(34.02%) |
| Mean age | Years (\pm SD) | 41.4 | 40.2 | 43.1 |
| Symptoms | Asymptomatic | 143(55.21%) | 93(57.40%) | 50(51.54%) |
| | Symptomatic | 116(44.78%) | 69(42.59%) | 47(48.45%) |
| Transmission route | Unknown | 106(40.92%) | 67(41.35%) | 39(40.21%) |
| | Drug abuse | 35(13.51%) | 26(16.04%) | 9(9.27%) |
| | Dental | 61(23.55%) | 38(23.45%) | 23(23.71%) |
| | Blood transfusion | 47(18.14%) | 24(14.81%) | 23(23.71%) |
| | Shaving | 4(1.54%) | 3(1.85%) | 1(1.03%) |
| | Sexual | 5(1.93%) | 4(2.46%) | 1(1.03%) |
| | Needle stick | 1(0.38%) | 0 | 1(1.03%) |

More than half of the cases were asymptomatic 143 patients (55.21%). About 93(57%) were infected with HBV and 50(51%) were infected by HCV. In contrast, the total symptomatic cases were 116 patients (44.78%). Nearly half 47(48%) were infected with HCV and about 69 (43%) were infected with HBV.

The modes of viral transmission for all patients were unknown cause by 106 (41%) of patients. Following by dental transmission in 61(24%) patients. Whereas about 47 (18%) patients were transmitted via blood transfusion and 35 (14%) of patients were transmitted by drug abuse 4 (2%). The route of transmission by shaving and sexuality were close about (2%) and 4 (2%) transmission respectively. The lowest rate of transmission was through the contaminated needles 1(0.38%).

DISCUSSION

HBV, HCV infections are among the most prevalent infectious diseases around the world and are associated with a wide range of clinical presentations ranging from an acute or chronic hepatitis infection that may be clinically symptomatic or asymptomatic to may lead to chronic hepatitis and liver cirrhosis. The prevalence of hepatitis infection different worldwide varies depending on many factors such as host factors, environmental and behavioral [20-21].

The result of this study showed that the prevalence of HBV compared to HCV was significantly higher (63 % and 37% respectively). Moreover, the prevalence of HBV in African and Western Pacific regions was reported to be 8% and 5%, respectively [22]. While, another study conducted in China, showed that the prevalence of HBV infection in the general Chinese population was classified as higher average prevalence (7%), about 90% of the HBV- infection population was in adult's patients over the age of 20 years [23]. 2015 saw a thorough analysis of the situation of chronic HBV infection globally from 1965 to 2013 by Schweitzer A [24]. In 2017, Zhang WL [25] presented data on the prevalence of HBsAg positivity in China's general population from 2007 to 2016. All these variation in the incidence of infection result from the differences in the relative distribution and their association with risk factors, different mode of transmission, and to the clinical evaluation of the infection [26].

According to a study conducted in Egypt, the prevalence of hepatitis C ranged between 0.8 and 6.8 per 1000 persons yearly. In general, the prevalence of HCV during blood transfusion was about 55%, as well as hemodialysis patients between (50-90%), and the people at high risk between (10-85%) [27]. Also, another study was conducted in Saudi Arabia out of 300 patients, 128 patients were infected by HBV, HCV via injection drug users (43%) [28]. Which differs in the current study, the patients contracted hepatitis during blood transfusion around (18%), as well as patients who injected drug users with about (14%).

Several studies showed that there are many risk factors associated with HBV and HCV infection which include intravenous drug use, unprotected sexual intercourse with multiple partners, and viral exposure during medical procedures such as dialysis and surgery, accidental exposure such as needle stick injuries, and vertical transmission from the mother to child [29]. In contrast, in the current study, similar risk factors associated with the development of t of HBV and HCV infection were found, out of 259 cases 106 (41%) of patients infected through an unknown cause 61 (23%) patients with dental transmission, 35 (14%) patients with drug abuse (14%), and 47 (18%) patients with blood transfusion. However, treating chronic infection with HBV antiviral drugs reduces the risk of developing liver disease and developing hepatocellular carcinoma (HCC).

For the treatment of HCV, HBV many of the drugs used as therapy include interferon-alpha provides excellent viral suppression with a low risk of antiviral resistance. Prolonged treatment with oral antiviral medication is usually required and relapse is common if treatment is discontinued [30]. Moreover, liver transplantation is the only treatment available for patients with end-stage liver disease and for patients with hepatocellular carcinoma [31].

More recently, pegylated interferon alpha is used in the treatment of acute hepatitis C virus infections [32]. Another previous study reported that use Pegylated interferon alpha induces result in high rates of sustained virological response of 85% and prevents chronic conditions [33]. It has long been recognized that sustained virologic response (SVR) rates are lower 10% to 15% in patients with coinfection with HIV than in patients with HCV mono-infection [34].

CONCLUSION

The widespread occurrence of hepatitis B and C suggests that the whole population is constantly at risk for infection. Effective community-based health education initiatives must be launched immediately to raise public understanding of viral hepatitis transmission routes and methods of prevention. Public health awareness and stringent health governance can also be used to avoid hospital-associated infections of HBsAg and HCC and to be aware of the transmission routes.

Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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