Iranian Heart Journal; 2019; 20 (2)

Original Article

Prevalence of Hepatitis C Virus Infection Among Patients With Cardiovascular Disorders in a University Hospital in Iran from March 2015 to September 2016

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ABSTRACT

Background: Hepatitis C virus (HCV) infection is prevalent and potentially fatal in patients with cirrhosis and hepatocellular carcinoma. The main routes of transmission are via sharing syringes, blood products, and sexual contact. We sought to determine the incidence of HCV infection among patients with cardiovascular diseases (CVDs) in an 18-month period.

Methods: During a period of 18 months, 39450 patients with CVDs underwent HCV Ab measurement via the ELISA technique. Hbs Ag was also checked among HCV-positive cases in Rajaie Cardiovascular, Medical, and Research Center in Tehran, Iran from 2015 to 2016.

Results: The patients were aged between 4 months and 97 years. In 72 out of the 39450 patients (0.18%), HCV Ab was positive and 2 out of the 72 patients (2.7%) were also positive for HBs Ag.

Conclusions: The prevalence of HCV infection in patients affected by CVDs in a single referral center in Iran may be lower than that in other groups. ***(Iranian Heart Journal 2019; 20(2): 28-31)***

KEYWORDS: HCV Ab, CVD, HCV infection

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Received: August 10, 2018 **Accepted:** November 20, 2018

Patients with cardiovascular diseases (CVDs) presenting to referral centers may also have comorbidities such as hepatitis C virus (HCV) infection and could, as such, spread their infection to healthcare workers and other patients. Thus, these patients' infectivity status should be checked through serological methods; for instance, the ELISA method is drawn upon to determine patients' HCV Ab levels. HCV infection is a global health problem with prevalence rates ranging from 0.1% to 12% in different countries.[1,2] According to the World Health Organization, up to 3% of the world's

population (ie, 170 million) has HCV infection. In other words, 2 million Iranian individuals are affected by this virus.

HCV infection is transmitted via such various routes as blood transfusion, sexual contact, and sharing needles. Indeed, contaminated needles and drug abuse are the major risk factors for HCV infection in Egypt and in Iran drug abuse is the main source of infection.[3]

Healthy blood donors are at different risk rates in various geographical regions. For instance, the prevalence of infection among these individuals is 0.01–0.02% in northern Europe and 1–1.5% in southern Europe, whereas this frequency is up to 6.5% in some parts of Africa. In addition, approximately 50–100% of intravenous drug abusers are affected by HCV the world over.[7, 8, 9]

Iran is located in the Middle East in a position akin to a bridge between the Indian Subcontinent, the Arabian Peninsula, Middle Asia, and Europe. There are many heterogeneous factors that constitute the etiologies of HCV infection in Iran and this scenario is liable to complication by mass immigration from Afghanistan and Iraq, frequent travels through Iran's western borders to Turkey, and illegal drug trafficking from Iran's eastern borders to Pakistan and Afghanistan, all of which have affected the epidemiology of HCV infection.

The groups at high risk for HCV infection include hemophiliacs, hemodialysis patients, infants born to mothers with HCV infection, and promiscuous individuals.[10]

METHODS

The information obtained regarding the patients' HCV infection status was retrieved through the hospital information system (HIS), and quality control and instrument calibration were performed before the analytical phase on a daily basis. This retrospective study was performed between 2015 and 2016 on 39450 patients with CVDs in Rajaie Cardiovascular, Medical, and Research Center, Tehran, Iran. From the entire study population, 5 mL of peripheral blood was obtained in a plain tube with an activator. The blood samples were used to determine, HCV Ab via the Enzyme-Linked Immunosorbent Assay (ELISA) method (Dia Pro Italy).

HCV antibodies were checked using the ELISA 192 Test Dia Pro System. All seropositive cases were checked using a secondary ELISA Kit (Dia Pro Italy), and HBs Ag was detected in these individuals as well. All the stages were performed according to the manufacturer's manual.

RESULTS

The prevalence of HCV Ab among the patients was 1.8 per thousand (0.18%). Sixteen of the 39450 (0.04%) patients were female. The range of the patients' age was between 4 months and 97 years. The distribution of the patients' age and sex is shown in Figure 1. There were 72 seropositive cases; all these 72 HCV-positive patients were checked for co-infection of HBV Ag with the aid of the ELISA method. Two of these 72 patients also had HBs Ag in their sera. Accordingly, the prevalence of co-infection of HCV and HBV was 2/39450 among the patients. In the age range of 40–60 years, most of the cases were male (23 males vs 6 females) (Fig. 1), presumably because they were more likely to have been exposed to risk factors.

DISCUSSION

HCV infection is a cause of death and morbidity. Here, we report the HCV Ab results of 39450 patients with CVDs referring to Rajaie Cardiovascular, Medical, and Research Center, Tehran, Iran.

The overall prevalence of HCV Ab was 0.18% among our patients. A wide range of prevalence rates has been reported for HCV Ab in various regions of the world.

HCV affects 1% in the United Kingdom, while this prevalence is between 0.42% and 0.84% in Germany.[11,12] Our study showed a low frequency of HCV infection in comparison to that in other populations. Other research groups have published similar prevalence rates for HCV infection in Iran. For example, Ahmadi et al[13] studied 1654 cases using ELISA testing for HCV Ab and reported that the overall prevalence of HCV seropositivity was 0.42%. A systematic review of the published reports on the prevalence of HCV infection in Iranian populations showed that the frequency of HCV infection was 0.16%, varying from 0 in Khuzestan to 1.3% in Guilan.[14]

The HCV prevalence varies in different populations of Iran. In the present study, we focused on patients with CVDs referring to a tertiary referral center. This is the first study on a large number of patients suffering from CVDs in Iran. They are many factors that could affect the prevalence of HCV in Iran. The prevalence of HCV may have been decreased by a nationwide blood safety program in recent years, and traditional customs may have also contributed to the reduction in the frequency of HCV infection.

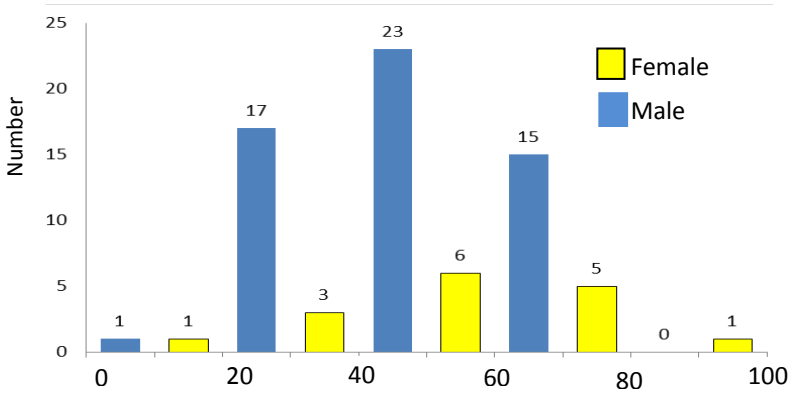

Figure 1. Age and sex distribution of HCV Ab positivity in patients referring to Rajaie Cardiovascular, Medical, and Research Center

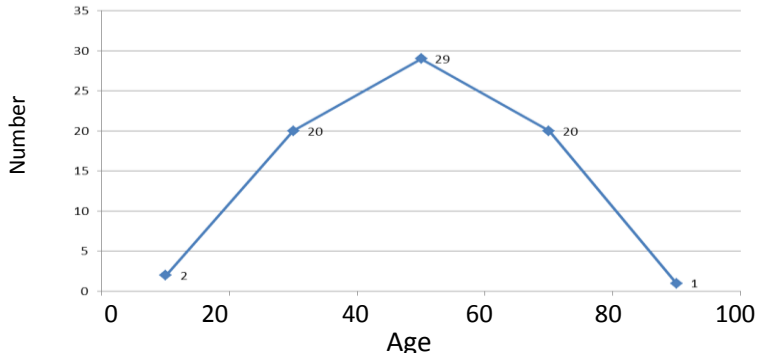

Figure 2. Age distribution of HCV Ab positivity in patients referring to Rajaie Cardiovascular, Medical, and Research Center

Acknowledgments

We herewith thank all the staff of Central and Cardiogenetic Research Laboratories, Rajaie Cardiovascular, Medical, and Research Center.

Conflict of Interest

None.

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