

# Hepatitis B/C virus co-infection in Iran: A seroepidemiological study

İran'da B ve C Hepatiti Ko-enfeksiyonu: Serolojik - epidemiyolojik bir çalışma

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**Background/aims:** As hepatitis B and C virus have the same transmission routes, dual infection may occur. The aim of this study was to determine the seroprevalence of HCV in HBsAg-positive subjects. **Methods:** 139 HBsAg-positive subjects were enrolled in the study. Serum samples were tested using ELISA method for anti-HCV antibodies. Chi-square and Fisher's exact tests were used to compare the proportions. **Results:** There were 68 (48.9%) males and 71 (51.1%) females. The mean age was 41.89±11.30 years. One case was excluded because of inadequate blood sampling. Anti-HCV antibody was positive in 17 (12.3%) of the 138 remaining subjects. Seropositivity of HCV was similar between female and male patients (p=0.69). **Conclusion:** The seroprevalence of co-infection with hepatitis B virus and hepatitis C virus in our study was higher than such reports from some countries (Italy), but was in line with world-wide prevalence (>10%).

**Key words:** Hepatitis B, hepatitis C, Iran

## INTRODUCTION

Approximately 350 million people are infected with hepatitis B virus (HBV) worldwide (1). More than 3% of Iranian populations are infected with HBV (2). The seroprevalence of hepatitis C virus (HCV) in Iranian blood donors was reported as 0.59% (3). As HBV and HCV have the same transmission routes, dual infection may occur (4). Patients co-infected with both HBV and HCV may have more severe liver disease and high mortality rate (10%) (4). Therefore, it is very important to identify whether a patient with HBV infection is co-infected with HCV.

**Amaç:** B ve C hepatitlerinin bulaş yolları aynı olduğu için ikili enfeksiyonlar ortaya çıkabilmektedir. Bu araştırmanın amacı, HBsAg pozitif hastalarda HCV seropozitifliğinin araştırılmasıdır. **Yöntem:** 139 HBsAg pozitif hasta çalışmaya alındı. Bu hastaların serum örnekleri anti-HCV pozitifliği açısından ELISA yöntemi ile incelendi. Oranların karşılaştırılması için Chi-kare ve Fisher'in doğrulama testleri kullanıldı. **Bulgular:** 68 (%48,9) erkek ve 71 (%51,1) kadın hasta mevcuttu. Ortalama yaş 41,89±11,30 yılıdır. Bir hasta yetersiz miktarda alınan kan örneği nedeniyle çalışma dışı bırakıldı. Geriye kalan 138 hastanın 17'sinde (%12,3) anti-HCV pozitifliği tespit edildi. Kadın ve erkek hastalardaki seropozitiflik sıklığı benzer bulundu. (p= 0,69) **Sonuç:** B ve C hepatitlerin birlikte enfekte hasta prevalansı benzer prevalans sonuçları veren ülkelerinkinden (İtalya) yüksektir ancak dünya genelindeki prevalansa (>%10) benzerdir.

**Anahtar kelimeler:** B hepatiti, C hepatiti, İran

The present study was conducted to determine the seroprevalence of HCV in HBsAg-positive cases in Iran.

## MATERIALS AND METHODS

During a population-based single stage cluster sampling in Golestan province of Iran (2004-2005), 164 (8.9%) of 1850 cases were positive for HBsAg. One hundred and thirty-nine of these positive cases participated in the study. Anti-HCV antibody was detected using ELISA kit, DRG, Germany. Data were analyzed by SPSS v12.

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Proportions were compared by chi-square and Fisher's exact tests.

## RESULTS

Study participants included 68 (48.9%) males and 71 (51.1%) females. The mean age was  $41.89 \pm 11.30$  years. Demographic characteristics of the subjects are summarized in Table 1. All of the participants were inactive carriers for HBV. One case was excluded because of inadequate blood sampling. Anti-HCV antibody was positive in 17 (12.3%) of the 138 remaining subjects. Ten females (14.1%) and 7 males (10.4%) were positive

**Table 1.** Demographic characteristics of HBsAg-positive cases in Golestan, Iran

| Variables          |         | Number of cases (%) |
|--------------------|---------|---------------------|
| Sex                | Male    | 68 (48.9)           |
|                    | Female  | 71 (51.1)           |
| Age groups         | 25-34   | 44 (31.7)           |
|                    | 35-44   | 32 (23.0)           |
|                    | 45-54   | 40 (28.8)           |
|                    | 55-65   | 23 (16.5)           |
| Marital status     | Married | 119 (85.6)          |
|                    | Single  | 20 (14.4)           |
| Place of residence | Rural   | 52 (38.10)          |
|                    | Urban   | 86 (61.9)           |

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for anti-HCV antibody ( $P = 0,69$ ; Chi-Sq:0,153, CC: 0,033). The prevalence of HCV seropositivity was higher in the rural versus urban population, but the difference was not statistically significant. Seroprevalence of hepatitis C virus did not significantly differ between age groups.

## DISCUSSION

12.3% of the participants in the present study were anti-HCV antibody-positive. HCV seropositivity among HBsAg-positive cases was reported as 2.7% by Barros et al. (5). Seroprevalence of HCV in the same population from Taiwan was 8% (6). In contrast with these studies, de Miguel et al. (7) from Spain had detected anti-HCV antibody in 16% of HBV-infected subjects (higher prevalence rate than ours).

In conformity with the previous reports, our results suggest that HCV is found in more than 10% of HBV-infected patients worldwide (4). In the present study, the seropositivity of HCV in females and males are similar, but Barros et al. (5) had reported a higher prevalence rate in males

In conclusion, co-infection with HBV and HCV is common, especially in this area with its relatively high prevalence of hepatitis B.