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Hepatitis B, Hepatitis C and HIV seroprevalence among Syrian refugees: A cross-sectional study from a tertiary referral center in Turkey

Suriyeli mülteciler arasında Hepatit B, Hepatit C ve HIV seroprevalansı: Türkiye'deki bir üçüncü basamak merkezinden kesitsel bir çalışma

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Abstract

Aim: Hepatitis B (HBV), Hepatitis C (HCV) and Human Immunodeficiency Virus (HIV) cause serious health problems all over the world. Due to the recent conflicts and war in Syria, many immigrants have entered Turkey in a controlled and / or uncontrolled manner. In this study, we aimed to determine HBV, HCV, and HIV seroprevalence among Syrian migrants who were referred to our hospital.

Methods: This cross-sectional study was performed between 01/01/2015 - 14/05/2018 in Ankara Yuksek Ihtisas Training and Research Hospital. Serum samples from patients were evaluated for positivity of HBV surface antigen (HBsAg), antibodies against HBV surface antigen (anti-HBs), HCV antibody (anti-HCV) and anti-HIV with the Enzyme-Linked Immunosorbent Assay (ELISA) method.

Results: Among 244 patients included in the study, 154 were male (63.11%) and 90 were female (36.89%). Seroprevalences of HBV were 5.84% and 5.55%, respectively, the difference between which was statistically insignificant (P>0.05). Anti-HCV was positive in 6 (2.46%) patients. HCV seroprevalence rates were 1.29% in men, and 4.44% in women. None of these 244 patients had anti-HIV positivity.

Conclusion: In our study, we found that the seroprevalences of HBV and Anti-HIV in Syrian migrants were similar to domestic values, but that of anti-HCV was higher. Age-related incidence rates also differed. We believe that the knowledge of these data is important in terms of planning preventive and therapeutic measures for migrants.

Keywords: Hepatitis B, Hepatitis C, Human immunodeficiency virus, Syrian refugees

Öz

Amaç: Hepatit B (HBV), Hepatit C (HCV) ve İnsan İmmün Yetmezlik Virüsü (HIV) tüm dünyada ciddi sağlık sorunlarına neden olmaktadır. Suriye'deki son çatışmalar ve savaş nedeniyle, birçok göçmen kontrollü ve / veya kontrolsüz bir şekilde Türkiye'ye girmiştir. Bu çalışmada hastanemize başvuran Suriyeli göçmenlerde HBV, HCV ve HIV seroprevalansının belirlenmesi amaçlandı.

Yöntemler: Bu kesitsel çalışma 01.01.2015 - 14.05.2018 tarihleri arasında Ankara Yüksek İhtisas Eğitim ve Araştırma Hastanesi'nde yapıldı. Hastalardan alınan serum örnekleri ELISA (Enzim-Bağımlı İmmunosorbent Testi) yöntemiyle çalışılarak, HBV yüzey antijeni (HBsAg), anti-HBs, HCV antikoru (anti-HCV) ve anti-HIV titreleri araştırıldı.

Bulgular: Çalışmaya alınan 244 hastanın 154'u erkek (%63,11), 90'ı kadındı (%36,89). HBV seroprevalansı erkekler ve kadınlar arasında anlamlı farklılık göstermedi ve sırasıyla %5,84 ve %5,55 olarak bulundu (P>0,05). Anti-HCV pozitif bulunan hasta sayısı 6 (%2,46) 6 idi. HCV seroprevalansı erkeklerde %1,29, kadınlarda %4,44 olarak bulundu. Bu 244 hastanın hiçbirinde anti-HIV pozitifliği tespit edilmedi.

Sonuç: Çalışmamızda Suriyeli göçmenlerde HBV ve Anti-HIV seroprevalansının lokal verilere benzer olduğunu, ancak anti-HCV pozitifliğinin lokal verilere göre daha yüksek olduğu gözlenmiştir. Yaşa bağlı insidans oranları da farklı bulundu. Bu verilerin bilinmesinin, göçmenler için önleyici ve terapötik önlemlerin planlanması açısından önemli olduğuna inanıyoruz.

Anahtar kelimeler: Hepatit B, Hepatit C, İnsan immün yetmezlik virüsü, Suriyeli mülteciler

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Introduction

Migration is a real phenomenon of population dynamics driven by socioeconomic, political, and environmental factors [1]. Due to its geographical location, our country receives many immigrants every year. Especially in recent years due to the conflict and war environment in Syria, a large number of people from this country have migrated permanently or temporarily. These immigrants bring many infectious diseases, which endanger the health of both migrant and host populations [2]. HBV and HCV-induced infections can lead to the development of chronic liver diseases, cirrhosis, and hepatocellular carcinoma. HIV infection can also lead to the development of serious opportunistic diseases. It is important to know the current prevalence of these diseases to create proper health policies for these groups.

Materials and methods

This retrospective study was conducted on 244 Syrian immigrant patients who were referred to Ankara Yuksek İhtisas Training and Research Hospital between 01/01/2015-14/05/2018. The approval for the study was obtained from the local Institutional Ethics Committee. Serum samples from patients were evaluated for positivity of HBV surface antigen (HBsAg), antibodies against HBV surface antigen (anti-HBs), HCV antibody (anti-HCV) and anti-HIV using the ELISA method, which is a popular format of analytic biochemistry assay that uses a solid-phase enzyme immunoassay to detect the presence of a substance, usually an antigen, in a liquid or wet sample.

Statistical analysis

SPSS statistical software v.25 was used for statistical analysis. Mann-Whitney U test was used to compare dependent variables according to gender. Kruskal-Wallis test was used to compare dependent variables according to age groups. *P*-value <0.05 was considered statistically significant.

Results

Hepatitis markers and anti-HIV results of 244 Syrian patients were evaluated, of which 154 were male (63.11%) and 90 were female (36.89%). The mean age of all patients and the age range were 32.6 years (23.249) and 1-94 years, respectively. 78 patients were aged below 15 years (31.97%), 65 were aged between 16-40 years (26.64%), 31 were aged between 41-50 years (12.70%), and 70 were aged above 51 years (28.69%). Anti-Hbs positivity was found in 71 (29.10%) patients. A total of 14 patients, 9 males and 5 females, had HBsAg positivity (5.74%). Seroprevalences of HBV were 5.84% and 5.55%, respectively, the difference between which was statistically insignificant (p=0.952). The mean ages of males and females with HBsAg positivity were 43 (1-63) and 34 (11-55) years, respectively. Anti-HCV was positive in 4 female and 2 male patients (2.46%). HCV seroprevalence was 1.29% in males, and 4.44% in females (*P*=0.123). The mean ages of females and males with anti-HCV positivity were 32 (1-48) and 62 (53 and 71) years, respectively. None of these 244 patients had anti-HIV positivity (Table 1, Table 2).

Table 1: Distribution of HBV, HCV and HIV sero-prevalence according to gender

Serology	Males (n) (%)	Females (n) (%)	*P*-value	Total (n) (%)
Anti-Hbs (+)	50 (32.4%)	21 (23.3%)	0.106	71 (29.1%)
HBsAg (+)	9 (5.8%)	5 (5.5%)	0.952	14 (5.7%)
Anti-HCV (+)	2 (1.2%)	4 (4.4%)	0.123	6 (2.4%)

Table 2: Age distribution of cases possessing HBsAg, anti-Hbs, anti- HCV positivity

Age	Anti-Hbs(+)	HBsAg (+)	Anti-HCV(+)
0-15	32 (41%)	3 (3.8%)	1 (1.2%)
16-40	7 (10.7%)	3 (4.6%)	1 (1.5%)
41-50	4 (12.9%)	1 (3.2%)	2 (6.4%)
>50	28 (40%)	7 (10%)	2 (2.8%)
P-value	<0.001	0.338	0.432

Discussion

In the recent years, millions of people in the world have migrated in the hope of finding better living conditions in developed countries by abandoning their own homeland due to wars, socioeconomic, political and environmental reasons. According to recent statistics, 244 million international immigrants have been reported worldwide [1]. Due to the growing war in the region in recent years, Turkey has opened its doors to many refugees. According to the data provided by General Directorate of Migration, there are 3.567.658 Syrian Refugees living under temporary protection in Turkey as of 2018. About 20% of these refugees are reportedly younger than 5 years and 53% are under 18 years of age. High mobility, poor living conditions, barriers to access to health care, potential public health risks for the new immigrant population and the host population are among the most important public health concerns [2]. The management of health problems of such a large population is also of great importance and therefore, health professionals should be aware of problems with screening, diagnosis and treatment of non-endemic infections [3].

According to the World Health Organization, the global prevalence of viral hepatitis may be as high as 500 million and the annual mortality rate, as much as 1.3 million [4]. The available evidence suggests that the prevalence of HBV and HCV in migrants reflects the countries of origin [1]. This large migration from the areas where viral hepatitis prevalence is high is a major burden on the health systems of host countries. Because of the lack of universal standards for screening, protection and treatment of viral hepatitis, the burden of chronic liver disease and hepatocellular carcinoma is increasing among the immigrant population [2].

Although the majority of Middle Eastern countries have shown that HBV infection, which is a serious public health problem in the region, is moderately or highly endemic, the situation of the Syrian Republic remains unclear [5]. In 1991, HBV vaccine was included in the vaccination program in Syria. In a study conducted on 3168 randomly selected individuals by the Syrian Ministry of Health in 2004, the rate of HCV seroprevalence was 2.1% and hepatitis B surface antigen (HBsAg) was reported as 5.6%. However, there was a significant regional variation in prevalence: The seroprevalence of HBV and HCV in the northern region of the country was reportedly 10.14% and 10.5%, respectively, and the seroprevalence of HBV in the north-eastern region was 10.6% [5,6]. Since 2011, when the conflict began, vaccination rates have fallen significantly [7]. A meta-analysis done by Chemaitelly et al. [8] focused on HCV seroprevalence among the Syrian population and reported a high rate in hemodialysis patients ranging from 48.8% to 75%. They also reported the HCV seroprevalence in drug users and

hemophiliacs, respectively, were %21 and %20.5. The prevalence of HCV in the general population ranged between 0.3% and 0.9% among blood donors. Yazaji et al. [9] reported that anti-HCV positivity was 11.32% in a study of 159 multi-transfusion patients in Syria. In a study conducted by Muselmani and his colleagues [10]. in Syria between 3896 donors, HBsAg was found positive in 66 subjects and anti-Hbc was positive in 63 donorsIn their study in Syria, Antaki et al. [11] stated that the rate of chronic hepatitis B was between 5% and 7%.

Referring to the studies reported from Turkey, HBsAg positivity is between 1.01% - 3.96%, anti-HCV positivity is between 0.4% and 1.57% and it was observed that there are differences between regions (Table 3). In a systematic review of the studies conducted between 1999 and 2009 in our country, it was reported that HBsAg positivity was 4.6% and about 3.3 million people were infected with chronic HBV. The lowest prevalence was in the 0-14 age group (2.8%) and the highest prevalence was in the 25-34 age group (6.3%) [12]. Again, in a study published in our country in 2012, it was reported that the prevalence of anti-HCV was between 0.5% and 1% in participants [13]. In our study, HBsAg was found positive in 5.74% of the Syrian patients who were referred to our hospital, similar to other local data. The highest prevalence was found in the group aged 50 years and older (10%) followed by the group aged between 0-15 (3.85%). Anti HCV (+) was found to be 2.46% in this study. Syria has low prevalence with very low HIV levels. A total of 762 HIV / AIDS cases have been reported between 1987 and 2011 [14]. In our study, we did not find any anti-HIV positivity in any of our patients. In their study among 300 Syrian migrants, Inci and et al reported comparable results: Rates of HBsAg, Anti-HCV (+) and anti-HBs positivity were 3%, 2.3% and 26.6%, respectively. None of the patients had anti-HIV positivity [15].

Hussein et al. [16] conducted a study in Duhok, a region of Southern Iraq, which contains a large number of Syrian refugees, and determined HBsAg positivity as 3.86% among 880 refugees. This rate was 4.43% for men and 3.37% for women. They also reported that they did not encounter any HCV positivity. Kose et al. [17] conducted a study among 171 Syrian children aged between 0-18 years, in which the positivity rates of HBsAg, anti-Hbs, anti-HCV and anti-HIV were 4.2%, 52.8%, 1.8% and 2.2%, respectively. Angeletti et al. [18] studied 48 Syrian refugees in Italy to report that none of the 30 immigrants whose serum samples were obtained were positive for HBV, HCV, or HIV infections. Only 9 cases were positive for anti-Hbs. In another study from Italy conducted among 1212 migrants with low-income groups, HBsAg positivity was reported as 9.6%, anti-HCV positivity as 3.7% and anti-HIV positivity as 1.7% [19].

Table 3: HBV, HCV and HIV prevalence in different cities of Turkey

Study	Year	City	Anti-Hbs (%)	HbsAg (%)	Anti-HCV (%)	Anti-HIV (%)
İnci et al. [20]	2013	Artvin	35.6	3.96	0.85	0.05
Öner et al. [21]	2011	Mersin	-	2.2	0.4	0.2
Denk et al. [22]	2016	Elazig	-	3.71	1.57	0.03
Köse et al. [23]	2015	Izmir	-	1.01	0.51	0.04
Pehlivanoğlu et al. [24]	2011	Istanbul	-	3.27	0.65	-
Çoban et al. [25]	2013	Ankara	43.9	2.54	0.55	-

Limitations

This study has some limitations. First, we were able to research Hepatitis B, Hepatitis C and HIV seroprevalence among Syrian refugees in a single center. Second, the number of patients in study groups is small. Further large-scale, multicenter studies are needed.

Conclusion

The mass migration waves in recent years compel countries to prepare more comprehensive programs in terms of migration health and communicable diseases. It is important for policy makers and health professionals to create comprehensive, evidence-based, and standardized health programs for immigrants to protect both the immigrant health and the health of the host population. Developing appropriate guidance on hepatitis and HIV is a priority.

Although the number of cases in our age group was low, we found differences in the prevalence of HBV and HCV among age groups. We think that it is important to know these local data in order to create appropriate health policies for age groups. Since our study was a retrospective study, the medical history and risk factors of the patients could not be obtained. Therefore, our results may not reflect the serological data of all Syrian migrants. There is a need for multi-center studies in which more Syrian refugees are evaluated.

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