



Hepatitis C Prevalence in Different Age Groups; People Over 50 Years of Age May Receive One-Time Testing for Anti-HCV

Farklı Yaş Gruplarında Hepatit C Sıklığı; Elli Yaş Üstü Bireyler Anti-HCV Yönünden Bir Kez Taranabilir

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ABSTRACT

Objective: The aim of this study was to determine seroprevalence of hepatitis C virus (HCV) in different age groups in Sakarya province. In this regard, we also aimed to contribute roughly to HCV profile of Turkey, and to determine whether there was a need for anti-HCV testing in different age groups in terms of public health.

Materials and Methods: We retrospectively evaluated the results of anti-HCV test in 97525 patients who attended our hospital between October 2009 and February 2014. Anti-HCV antibodies in serum samples were analyzed with chemiluminescence microparticle immunoassay (CMI) method (Architect i2000, Abbott).

Results: Overall anti-HCV seropositivity was determined as 1.12% in this study. Anti-HCV positivity according to 0-9, 10-19, 20-29, 30-39, 40-49 and 50 and over age groups was found to be 0.3%, 0.3%, 0.4%, 0.4% and 2.1% of 0.8%, respectively. Highest positivity was 2.1% detected in 50 years and over age group. There was a significant correlation between anti-HCV seropositivity and increasing age ($p=0.020$).

Conclusion: This study showed that anti-HCV seroprevalence increased with advancing age. Based on the results of this study, since there is possibility of risky transfusions made before the era of routine screening tests before transfusion, and risk of viral transmission at procedures without aseptic conditions, one-time anti-HCV testing may be offered for screening purposes in individuals over the age of 50 years.

Key Words: Hepatitis C virus infection, anti-HCV, HCV seroprevalence, age-specific anti-HCV

ÖZET

Amaç: Bu çalışmanın amacı, Sakarya ilinde farklı yaş gruplarında hepatit C virüsü (HCV) enfeksiyonu sıklığını belirlemek ve ülkemiz epidemiyolojik verilerine katkıda bulunmanın yanı sıra, toplum sağlığı açısından taranması gereken yaş grupları için önerilerde bulunmaktır.

Gereç ve Yöntemler: Ekim 2009 ile Şubat 2014 tarihleri arasında çeşitli nedenlerle hastanemize başvuran ve anti-HCV çalışılması için mikrobiyoloji laboratuvarına serum örneği gönderilen 97525 hastanın sonuçları değerlendirilmiştir. Serum örneklerindeki anti-HCV antikorlarının varlığı kemiluminesens mikropartikül immunoassay (CMIA) yöntemi ile (Architect i2000, Abbott) araştırılmıştır.

Bulgular: Bu çalışmada, anti-HCV seroprevalansı tüm yaş gruplarında %1,12 olarak saptanmıştır. Anti-HCV pozitifliği 0-9, 10-19, 20-29, 30-39, 40-49 ve 50 yaş üstü grupları için sırasıyla; %0,3, %0,3, %0,4, %0,4, %0,8 ve %2,1 oranında bulunmuştur. Anti-HCV seroprevalansı ile artan yaş arasında anlamlı korelasyon saptanmıştır ($p=0,02$). Yaş grupları arasında en yüksek anti-HCV seropozitifliği 50 yaş üzeri grupta tespit edilmiştir.

Sonuç: Bu çalışma, artan yaş ile birlikte anti-HCV seroprevalansının da arttığını ortaya koymuştur. Elde edilen sonuçlar doğrultusunda, kan transfüzyonu öncesinde yapılan rutin tarama testlerinin kullanıma girmediği dönemde riskli kan transfüzyonu yapılmış olma ihtimali ve aseptik koşullarda yapılmayan girişimlerde viral bulaş riskine karşı, 50 yaş üstü bireylerde tarama amaçlı en az bir kez anti-HCV testinin yapılması önerilebilir.

Anahtar Kelimeler: Hepatit C virüs enfeksiyonu, anti-HCV, HCV seroprevalans, yaş gruplarında anti-HCV

Introduction

Hepatitis C virus (HCV) infection affects large populations in Turkey as well as all over the world and continues to be a major public health problem. Determining the reliable HCV seroprevalance in general population is important in terms of public health and treatment policies (1). The global seroprevalence of anti-HCV is estimated at 1.3-2.1% (2). The reports concerning hepatitis C epidemiology are often based on studies held on blood donors. Blood donors, however, are selected population due to donor selection criteria. Therefore, HCV seropositivity determined in blood donors is lower than general population, thus, does not reflect the data of whole country. Anti-HCV seroprevalance is given for healthy blood donors as 0.03-0.3%, whereas it is reported for the whole population as 0.5-2.1% (1,2,3,4).

Antibody to HCV (anti-HCV) is a commonly used marker to determine HCV infection. HCV testing has been recommended since 1998 in those at highest risk for the disease, including injection drug users, people who have undergone hemodialysis, those who have received transfusions, organ transplants, or clotting factors (before 1987), and health care personnel who have been exposed to HCV-positive blood from circumstances such as needle sticks. Recently, the Centers for Disease Control (CDC) and Prevention have added a new group to that list: Every American adult born between 1945 and 1965 should take the test, since the prevalence of anti-HCV among persons born during these years is 3.25%, five times higher than among adults born in other years (5).

In this study, we aimed to retrospectively investigate the HCV seropositivity in patients of different age groups admitted to our hospital and to assess whether there was a need for testing anti-HCV in different age groups, especially in people over 50 years of age, in terms of public health.

Materials and Methods

This study was conducted in Sakarya University Training and Research Hospital from October 2009 to February 2014. Anti-HCV test results of 97525 patients were evaluated retrospectively. These patients were tested for HCV infection for diagnostic and treatment purposes as well as screening purposes such as health reports, marriage testing, and pre-operation/invasive process testing. Any repeated anti-HCV tests were excluded from the study. Tests were done with chemiluminescence micro particulate immunoassay (CMI), Architect I2000, Abbott) according to the manufacturer's recommendations. Test values, with s/co levels of greater than

1.1 were accepted as positive anti-HCV. Statistical analyses were performed using Medcalc® 13.0 (MedCalc Software, Ostend, Belgium).

Results

Anti-HCV seropositivity was determined as 1.12% in whole population included in the study. Anti-HCV seropositivity was increased significantly as the age advanced (p=0.02). When the age groups were evaluated, the highest positivity was 2.1% detected in 50 years and over age group (Table 1). One-way ANOVA [Post Hoc (Tukey)] test was used to determine the statistical correlation between the age groups and the anti-HCV seropositivity. Except for the 40-49 age group; significant differences were observed between all age groups.

Discussion

There are regional variations in HCV prevalence as the following: Central and East Asia and North Africa/Middle East are high prevalence regions (>3.5%) in terms of anti-HCV positivity whereas Central, Eastern, and Western Europe have moderate prevalence rates (1.5-3.5%) (6). Since Turkey is a country neighboring the Central/Eastern Europe and North Africa/Middle East, the prevalence rates are similar between these regions. In our country, anti-HCV prevalence in the general population is between 0.5% and 2.1% (2,4). According to the geographic regions, the prevalence rates vary between the lowest being 0.1% in Aegean Region and the highest being 0.8% in Southeast and Mediterranean Regions in Turkey. This study was conducted in Sakarya providence in Marmara Region; the rate is given as 0.5% for this region (4). The overall anti-HCV seroprevalance in this study was determined to be 1.1% in patients admitted to our hospital. Different rates varying between 0.38% and 2.1% have been found in similar studies in our region (4).

According to data from the World Health Organization (WHO), most European countries report HCV prevalence at 0.5-2% in the general population. The seropositivity of anti-HCV among injection drug users and hemophiliacs has been reported as high as >70%. Intermediate prevalence of 20% to 30% have been observed in patients receiving haemodialysis. Since universal precautions in medical settings are followed and transmission by blood products has been reduced to almost zero, the HCV infection incidence is declining (7). Mohd et al. (6) have determined anti-HCV seroprevalance for Central Europe, Eastern Europe, Western

Table 1. Anti-Hepatitis C virus positivity according to the age groups

Age Group	Anti HCV (+)		Anti HCV (-)		Total	p value*
	n	%	n	%		
Over 50	814	2.1	37763	97.9	38577	0.02
40-49	106	0.8	13723	99.2	13829	
30-39	80	0.4	17939	99.6	18019	
20-29	71	0.4	16582	99.6	16653	
10-19	21	0.3	7493	99.7	7514	
0-9	10	0.3	2923	99.7	2933	

*One-Way ANOVA tests were used to assess correlations between anti-HCV positivity and the age groups
 HCV: Hepatitis C virus

Europe, North Africa/Middle East and worldwide in 2013 as 2.4%, 2.9%, 2.4%, and 2.8%, respectively. In their study in 2014, Gower et al. (2) have given the anti-HCV seroprevalence for Central Europe, Eastern Europe, Western Europe, North Africa/Middle East and worldwide as 1.3%, 3.3%, 2.9%, 0.9%, and 1.6%, respectively.

HCV infection occurs in all age groups. It has been determined in this study and various studies conducted in Turkey that anti-HCV prevalence increases as the age advances (Table 2). Especially, after the age of 30, its prevalence increases and it is most commonly observed after the age of 50 (8). Similarly, in a study conducted in the general population in Turkey, it has been observed that anti-HCV antibodies positivity has increased proportionally and it has reached 1.3% in age 50-59, and it was the most prevalent with 2.4% in age 70 and over (9). Chronic hepatitis and cirrhosis have been reported to be most commonly observed in 50-59 age group (10). Kandemir et al. (11) have indicated that anti-HCV positivity rate increased with age; most commonly identified in individuals

aged 65 years and over. In addition, Yıldırım et al. (12) stated that the highest positivity rate was identified in those aged 60 years and over. In a similar multicenter study conducted by Altındış et al. (5), the rates were 0.39% and 1.35% for 18-49, and 50 years and over age groups, respectively. In the cities Afyon, Ordu and Sakarya, a higher HCV positivity in individuals of advanced age than in other regions has also been reported. According to another study, people over 50 years of age constituted 54.23% of the anti-HCV-seropositive individuals (13). In this study, we determined that, anti-HCV positivity increased with age, and we found the highest positivity rate in the 50 years and over age group as 2.1%. The Centers for Disease Control and Prevention (CDC) reported that people born from 1945-1965 are five times more likely to have hepatitis C. CDC recommends that those people should take screening test for anti-HCV (14). Testing for anti-HCV became mandatory in our country by law in blood donors since 1996. One possible cause of increased anti-HCV prevalence in older age

Table 2. Distribution of anti-Hepatitis C virus positivity and age groups shown in studies conducted in Turkey				
Study/Year	Province/City	Ages	Number	Anti-HCV Seropositivity (%)
Demiraslan, 2008, (15)	Adıyaman	9-13	723	0.0
Kurt, 2003, (16)	Ankara	All	3515	0.5
Kaçmaz, 2003, (17)	Ankara	20-29	252	0.0
		30-39	941	0.3
		40-49	1525	0.3
		50-59	902	0.4
		60-69	452	1.6
		70+	124	0.0
		Total	4196	0.5
Ceylan, 2002, (18)	Diyarbakır	0-6	360	0.56
		7-14	480	0.62
Yarar, 2005, (19)	Eskişehir	Before pediatric transfusion	19	0.0
Çoban, 2012, (20)	İstanbul	16-25	4161	0.34
Akman, 2008, (21)	İzmir	4-18	140	0.7
Tekerekoğlu, 2004, (22)	Malatya	18-45 female	1000	1.3
Çetinkol, 2012, (23)	Ordu	15-17	200	0.0
Günel, 2010, (24)	Tokat	0-15	371	0.0
Yıldırım, 2014, (12)	Düzce	18-29	-	0.8
		30-39	-	0.6
		40-49	-	0.4
		50-59	-	0.5
		60+	-	1.0
		Total	1321	0.7
Gürbüz, 2010, (25)	All Turkey	Public screening	41.006	0.52
		0-9	-	1.3
		60-69	-	1.3
		South-East Anatolia	-	1.0
Tozun, 2010, (9)	All Turkey	18-29	-	0.5
		30-39	-	0.8
		40-49	-	0.8
		50-59	-	1.3
		60-69	-	2.1
		70+	-	2.4
		Total	5471	1.0

groups is that frequent blood transfusions have been made before the start of the routine screening tests (13). As well as unsafe transfusions, invasive procedures such as birth, circumcision and dental practices with non-sterile devices can be attributed to increased HCV seroprevalence in elderly. Distribution of anti-HCV positivity and age groups shown in studies conducted in Turkey is given in Table 2.

HCV seroprevalence in the world is increasing substantially with age. In addition, the prevalence of HCV in the world is peaking usually and mostly in the 55-64 age group according to the global data (26).

CDC recommendation for one-time testing for HCV in people born during 1945-1965 depends on the following facts: 1) HCV infection is affecting large number of population and can be diagnosed before the symptoms appear; 2) Testing for anti-HCV antibodies are now minimally invasive, and reliable; 3) Early diagnosis can facilitate early access to the treatment limiting the progression of the disease and can save significant life years; 4) Determination of unrecognized infections can limit transmissions; and 5) Testing is cost-effective (14). In this study, we also determined that anti-HCV seroprevalence in those aged 50 years and over was approximately 5 times higher than in people of other age groups (except for the 40-49 ages group). People living in high HCV prevalence areas or people having a history of HCV risk exposure/behaviour are recommended to take HCV serology testing according to data from the WHO (27).

In this study, we also found that the anti-HCV positivity rate increases with age as indicated in the literature. The highest rate of anti-HCV is observed as 2.1% in people aged 50 years and over. Overall anti-HCV positivity rate for all age groups is 1.1%. According to data from this study together with WHO and CDC suggestions, we believe that it is appropriate to offer at least once anti-HCV serology testing for people over 50 years of age in whom the anti-HCV seroprevalence is relatively high.

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