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HBsAg, Anti-Hepatitis C Virus and Anti-HIV Seroprevalence Among Patients Admitted to Our Hospital between 2005 and 2013

2005-2013 Yılları Arasında Hastanemize Başvuran Hastalarda HBsAg, Anti-Hepatit C Virüsü ve Anti-HIV Seroprevalansı

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ABSTRACT

Objectives: Hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV infections constitute a major health problem in our country as is in the world. This study intended to determine the distribution of the seropositivity rates for HBsAg, anti-HCV, and anti-HIV according to genders, age groups, and years in patients admitted to our hospital.

Materials and Methods: We retrospectively analyzed HBsAg, anti-HCV, and anti-HIV test results in patients admitted to our hospital between June 2005 and December 2013. The tests were conducted using the methods of chemiluminescent microparticle immunoassay (Architect i 1000, Abbott, USA), chemiluminescent immunoassay (Vitros ECI Q, Ortho Clinical Diagnostics, USA, ADVIA Centaur Bayer-Siemens, Germany), and electro-chemiluminescence immunoassay (Cobas 6000, Roche Diagnostic GmbH, Germany).

Results: The seropositivity rates and the number of the samples studied were as follows: HBsAg was found in 3.379 out of 152608 patients (2.21%), anti-HCV in 877 out of 155.585 patients (0.56%) and anti-HIV in one out of 125.084 patients (0.0008%). Positivity rate distribution by gender was determined as 39.42% of females and 60.58% of males for HBsAg; 53.48% of females and 46.52% of males for anti-HCV. The only sample found to be positive in anti-HIV test belongs to a female patient.

Conclusion: Our HBsAg positivity rate was relatively low whereas anti-HIV and anti-HCV results were found to be similar with the country statistical data. (Viral Hepatitis Journal 2014; 20(3): 125-130)

Key words: Hepatitis B virus, anti-Hepatitis C virus, anti-HIV, seroprevalence

Conflict of interest: The authors reported no conflict of interest related to this article.

ÖZET

Amaç: Dünyada olduğu gibi ülkemizde de hepatit B virüsü (HBV), hepatit C virüsü (HCV) ve HIV enfeksiyonları önemli bir sağlık sorunu oluşturmaktadır. Bu çalışmada hastanemize başvuran hastalarda HBsAg, anti-HCV ve anti-HIV seropozitiflik oranlarının yıllara, cinsiyetlere ve yaş gruplarına göre dağılımlarını belirlemeyi amaçladık.

Gereç ve Yöntemler: Haziran 2005-Aralık 2013 tarihleri arasında hastanemize başvuran hastalarda HBsAg, anti-HCV ve anti-HIV test sonuçları geriye dönük olarak incelenmiştir. Testler kemilüminesans mikropartikül immunoassay (Architect i 1000, Abbott, USA), kemilüminesans immünassay (Vitros ECİ Q, Ortho Clinical Diagnostics, USA, Advia Centaur XP Bayer-Simens, Germany) ve elektrokemilüminesans immünoassay (Cobas 6000, Roche Diagnostic GmbH, Germany) yöntemleri ile çalışılmıştır.

Bulgular: Çalışılan örnek sayıları ve seropozitiflik oranları; HbsAg 152,608 hastada 3379 (%2,21), anti HCV 155,585 hastada 877 (%0,56) ve anti HIV 125084 hastada bir (%0,0008) olarak bulunmuştur. Pozitiflik oranlarının cinsiyetler göre dağılımlar; HBsAg için %39,42 kadın, %60,58 erkek, anti-HCV için %53,48 kadın, %46,52 erkek olarak tespit edilmiştir. Anti-HIV testinde pozitif bulunan tek örnek kadın hastaya aittir.

Sonuç: HBsAg pozitiflik oranımız genel olarak ülke verilerine göre düşük, anti-HIV ve anti-HCV sonuçlarımız ise ülke verileri ile benzer bulunmuştur. (Viral Hepatit Dergisi 2014; 20(3): 125-130)

Anahtar kelimeler: Hepatit B virüsü, anti-Hepatit C virüsü, anti-HIV, seroprevalans

Çıkar çatışması: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

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Introduction

Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections, which are major public health problem, are the common infectious diseases in Turkey as well as in the world. In HBV and HCV infections, whose symptoms can vary from the mild and transient form to the severe and prolonged form, the patients can recover completely from the infection or the infection may transform into chronic infections that predispose to develop fulminant hepatitis or hepatocellular carcinoma and cirrhosis. These infections are mainly transmitted by parenteral and perinatal routes. Unlike HBV, HCV is not a sexually-transmitted-disease. The symptoms of human immunodeficiency virus (HIV) infection varies from an asymptomatic carriage to fatal infections with a broad range of clinical picture. Basically, as a sexually-transmitted disease, it can transmit through exposure to infected blood as well as via tissue transplantation and perinatal route (1,2).

Almost one-third of the world population is infected with HBV (3). Our country is of intermediate endemicity in terms of HBV seropositivity (1). HCV is affecting approximately 170 million people across the world (1), however, given the epidemiologic studies conducted in our country, it does not pose a common or severe problem for our country with the exception of certain risk groups (4). HIV infection is still posing a significant problem throughout the European Continent on which our country is located. Even though the number of individuals newly infected with HIV is continuously increasing, there is an overall reduction in the number of AIDS cases (5).

In this study, we aimed to determine the distribution of seropositivity rates of HBsAg, anti-HCV and anti-HIV with regard to genders, age groups and years among patients who were admitted to our hospital between 2005 and 2013 for various reasons and, thus, to contribute to country statistics.

Materials and Methods

In our study, we retrospectively evaluated the results of HBsAg, anti-HCV and anti-HIV tests performed in patients, who had been admitted to our hospital between June 2005 and December 2013 for various reasons, through the Hospital Information Management System. The tests were conducted using the methods of chemiluminescent microparticle immunoassay (Architect i 1000, Abbott, USA), chemiluminescent immunoassay (Vitros ECI Q, Ortho Clinical Diagnostics, USA, ADVIA Centaur Bayer-Siemens, Germany) and electro-chemiluminescence immunoassay (Cobas 6000, Roche Diagnostic GmbH, Germany). The reference values considered to be positive according to the devices used in HBsAg and anti-HCV tests were: ≥1.0 S/CO for Architect i1000, ≥1.0 S/CO for Vitros ECI Q, ≥1.0 COI for Cobas 6000, ≥1.0 ID for Advia Centaur, and in anti-HIV tests: ≥1.0 S/CO for Architect i 1000, ≥1.0 S/CO for Vitros ECI Q, ≥1.0 COI for Cobas 6000, and >1.0 ID for Advia Centaur.

Results

HBsAg tests were studied in a total of 152.608 patients, anti-HCV tests in 155.585 patients and anti-HIV tests in 125.084 patients. The positivity rate distribution by years and age groups is shown in Table 1, Table 2 and Table 3. The total number of patients in whom HBsAg, anti-HCV and anti HIV tests were studied between 2005 and 2013 and the positivity rates according to genders and age groups are shown in Table 4. A patient was diagnosed as HIV positive in 2009 and the test result was confirmed. Each patient sample was studied once.

Discussion

Studies on HBsAg positivity rates conducted in different regions of our country have demonstrated different results. Our country is located in a zone of intermediate endemicity and it has been stated that HBsAg positivity rates vary from 1.7% to 21% (6,7).

When the statistics of the Ministry of Health is examined, a decline was observed in acute HBV notifications in children, especially since 2005, correspondingly; it has been also observed that most of the notifications were in young adults. According to the data from the Turkish Red Crescent Blood Centre, while HBsAg positivity rate was 6.7% in 1985, it was witnessed to decline to 0.6% in 2012, however, these data have been assumed to be insufficient to display the HBV epidemiology (4). In another study covering the entire country between 2008 and 2011, HBsAg positivity rate was found to be 4% in 5471 people who were over the age of 18 (8). In a study covering the years between 1998 and 2008, while HBsAg positivity rate was found to be 4.69% in blood donors in 1998, and it was observed to decline to 1.84% in 2008 (9). In another study, the positivity rate, which was 1.06% in 2001, was also observed to rise between 2004 and 2006 (2.21%, 2.75%, and 3.08%, respectively), and subsequently, a decline was experienced, and after then, the positivity rate was observed to be 0.97% in 2010 (10). When the positivity distribution was analysed according to gender, the rates were found to be 1.43% in males and 0.9% in females (9,10). In similar studies conducted on donors, HBsAg positivity rates were found to be 1.76%, 0.86%, 3.3%, and 1.06% (11,12,13,14). When the different studies performed in our country were examined, HBsAg positivity rates have been realized to vary according to the region and the years, and these rates ranged from 2.5% to 12.6% (Table 5). When the positivity rate was analysed according to gender, it was found to be higher in males than that in females. In our study, the positivity rate in males of all ages was determined to be high (15,16,17,18,19,20,21,22, 23,24,25,26). In their study analysing the studies on the prevalence of HBsAg which were conducted in Turkey between 1999 and 2009, Toy et al. determined that the estimated overall population prevalence of HBsAg positivity was 4.57%, the lowest positivity rate was in the age group of 0-14 years (2.84%), and the highest rate was in the age group of 25-34 years (6.36%) (27). In our study, the total positivity rate was found to be 2.21% between 2005 and 2013. When the evaluation was made according to the years, the highest positivity rate was determined to occur in 2005 (5.49%). The positivity rate has gradually declined in the following years.

In our study, HBsAg positivity was found to be 1.11% in people aged between 0 and18 years, the highest rate was observed to be in the age group of 31-50 years (3.10%). In a study conducted on subjects aged 0-19 years in Kırıkkale between 2001 and 2002, the positivity rate was found to be 1.2% and the highest rate was detected in people aged between 40-59 years (8.6%) (28). This rate was determined to be higher than the rate found in our study. In a previous study conducted in the same region, the positivity was seen to be on the rise to 2.4% in the age group of 15-49 years, while the positivity was 0.6% in people aged

Table 1. Distribution by years of HBsAg positivity

	2005		2006		2007		2008		2009		2010		2011		2012		2013	
HBsAg	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**
Total	475 (5.49)	8658	545 (3.58)	15206	526 (2.70)	19481	432 (2.30)	18774	345 (2.06)	16733	333 (1.76)	18958	266 (1.26)	21177	270 (1.48)	18219	187 (1.21)	15402
0-18	29 (2.62)	1105	28 (1.91)	1463	26 (1.40)	1862	17 (1.30)	1309	11 (1.20)	918	7 (0.58)	1202	5 (0.30)	1663	8 (0.64)	1250	5 (0.35)	1435
19-30	86 (5.19)	1656	102 (3.65)	2791	93 (2.55)	3561	69 (0.02)	3129	50 (1.98)	2528	54 (1.84)	2934	50 (1.36)	3669	59 (1.61)	3662	46 (1.08)	4261
31-50	210 (7.31)	2867	255 (5.06)	5041	213 (3.53)	6030	187 (3.26)	5730	133 (2.79)	4768	121 (2.28)	5305	110 (1.94)	5677	89 (1.79)	4985	69 (1.61)	4281
51-64	109 (6.03)	1808	100 (3.18)	3147	124 (3.07)	4043	103 (2.51)	4107	92 (2.36)	3892	79 (1.83)	4325	69 (1.45)	4773	71 (1.87)	3791	43 (1.74)	2477
65-	41 (3.35)	1222	60 (2.17)	2764	70 (1.76)	3985	56 (1.24)	4499	59 (1.28)	4627	72 (1.39)	5192	32 (0.59)	5395	43 (0.95)	4531	24 (0.81)	2948

Table 2. Distribution by years of anti-hepatitis C virus positivity

	2005		2006		2007		2008		2009		2010		2011		2012		2013	
Anti-Hepatitis C Virus	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**
Total	54 (0.61)	8853	108 (0.72)	15008	134 (0.68)	19788	149 (0.78)	19182	124 (0.72)	17331	80 (0.42)	18933	85 (0.39)	21535	89 (0.47)	18851	54 (0.34)	16103
0-18	0 (0)	1057	1 (0.08)	1281	0 (0.00)	1834	1 (0.08)	1306	0 (0)	921	3 (0.27)	1118	2 (0.12)	1643	1 (0.08)	1307	1 (0.08)	1252
19-30	4 (0.23)	1687	6 (0.22)	2670	7 (0.20)	3535	13 (0.42)	3098	8 (0.31)	2587	3 (0.11)	2842	2 (0.05)	3656	3 (0.08)	3681	4 (0.09)	4288
31-50	14 (0.48)	2916	28 (0.56)	4994	37 (0.59)	6277	37 (0.62)	6004	27 (0.01)	5048	17 (0.32)	5319	20 (0.34)	5840	16 (0.31)	5240	11 (0.24)	4506
51-64	17 (0.89)	1905	36 (1.12)	3208	34 (0.82)	4157	37 (0.87)	4259	36 (0.88)	4086	21 (0.48)	4419	27 (0.55)	4912	32 (0.80)	3993	12 (0.44)	2746
65-	19 (1.48)	1288	37 (1.30)	2855	56 (1.41)	3985	61 (1.35)	4515	53 (1.13)	4689	36 (0.69)	5235	34 (0.62)	5485	37 (0.80)	4630	26 (0.79)	3311

Table 3. Distribution by years of anti-HIV positivity

	2005		2006		2007		2008		2009		2010		2011		2012		2013	
Anti-HIV	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**	**Positive n (%)**	**Total n**
Total	0 (0)	7902	0 (0)	14272	0 (0)	18680	0 (0)	17869	1 (0,0065)	15328	0 (0)	12881	0 (0)	12968	0 (0)	13142	0 (0)	12042
0-18	0 (0)	876	0 (0)	1161	0 (0)	1615	0 (0)	1110	0 (0)	722	0 (0)	662	0 (0)	930	0 (0)	813	0 (0)	767
19-30	0 (0)	1497	0 (0)	2525	0 (0)	3292	0 (0)	2808	0 (0)	2224	0 (0)	2067	0 (0)	2585	0 (0)	3026	0 (0)	3709
31-50	0 (0)	2592	0 (0)	4697	0 (0)	5830	0 (0)	5458	1 (0,0240)	4168	0 (0)	3552	0 (0)	3789	0 (0)	3840	0 (0)	3537
51-64	0 (0)	1725	0 (0)	3090	0 (0)	3985	0 (0)	4037	0 (0)	3722	0 (0)	2962	0 (0)	2792	0 (0)	2630	0 (0)	1908
65-	0 (0)	1212	0 (0)	2799	0 (0)	3958	0 (0)	4456	0 (0)	4492	0 (0)	3638	0 (0)	2872	0 (0)	2833	0 (0)	2121

Table 4. Positivity rates of total number of patients on which HBsAg, anti-hepatitis C virus and anti-HIV tests were studied between 2005 and 2013 according to gender and age groups

	HBsAg						Anti-Hepatitis C Virus						Anti-HIV					
2005-2013	**Total**		**Female**		**Male**		**Total**		**Female**		**Male**		**Total**		**Female**		**Male**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Total	3379/152608	2.21	1332/73955	39.42	2047/78653	60.58	877/155585	0.56	469/74916	53.48	408/80669	46.52	1/125084	0.0008	1/60349	100	0/64735	0
0-18	136/12207	1.11	59/5381	43.38	77/6826	56.62	9/11719	0.08	6/5109	66.67	3/6610	33.33	0/8656	0	0/3667	0	0/4989	0
19-30	609/28191	2.16	237/12016	38.92	372/16175	61.08	50/28044	0.18	17/11945	34.00	33/16099	66.00	0/23733	0	0/9798	0	0/13935	0
31-50	1387/44684	3.10	545/22710	39.29	842/20974	60.71	207/46144	0.45	103/23231	49.76	104/22913	50.24	1/37463	0.0027	1/19028	100	0/18435	0
51-64	790/32363	2.44	309/16789	39.11	481/15574	60.89	252/33685	0.75	145/17289	57.54	107/16396	42.46	0/26851	0	0/14000	0	0/12851	0
65-	457/35163	1.30	182/17059	39.82	275/18104	60.18	359/35993	1.00	198/17342	55.15	161/18651	44.85	0/28381	0	0/13856	0	0/14525	0

Table 5. Rates found in the studies that was performed in the different regions of our country

Researcher	Location of Study	Years of Study	HBsAg (%)	Anti-Hepatitis C Virus (%)	Anti-HIV (%)
Tekay F. (15)	Hakkari	2005	2.7	1	
Çetinkol Y. (16)	Kars	2007-2008	4.6	1.5	0.009
Tunç N. et al. (17)	Siirt	2009	10	0.6	0.08
Asan A. et al. (18)	Tunceli	2010	4.22	0.95	
İnci A. et al. (19)	Artvin	2010-2012	3.96	0.85	0.05
Demirpençe Ö. et al. (20)	Batman	2010-2011	12.6	1.9	0.015
Şafak B. (21)	Balıkesir	2011-2012	2.77	0.29	0.004
Iraz M. et al. (22)	İstanbul	2012-2013	5.5	1.3	
Kandemir Ö. et al. (23)	Mersin		4.1	1.1	
Çoban M. et al. (24)	Ankara	2011-2013	2.54	0.55	
Gürkan Y. et al. (25)	Ankara	2012	5.58	1.5	0.087
Uzun B. et al. (26)	İzmir	2012	2.5	1.3	0.04

between 1 and 5 years, and 0.9% in people aged 6-14 years (28,29). When the positivity is analysed according to the age group distribution, the lowest rate was observed in people aged between 0 and 19 years and the highest rate in people aged 30-50 years similar to that in our study (16,17,18,19,22,23,24,30).

While the seroprevalence of HCV, which causes chronic hepatitis and spreads through blood transfusion, is 0.5-2% in the world, different rates have been reported in various studies in our country. These rates have been reported to be 1.6% in health professionals and 0.3-0.5% in blood donors (31). When the studies performed across the country were reviewed, anti-HCV positivity was determined to vary between 0.02% and 0.004% in donors in 2008-2011, the positivity rate was determined to vary between 4.5% and 8.5% in a study performed on renal patients in 2010, and HCV positivity rate was found to be 0.95% in another study performed across the country between 2008 and 2011 (4,8). There have been various studies investigating HCV seropositivity in our country. In a study performed by Deveci et al., the rate was found to be 0.2% (32), in a study by Madendağ et al., 0.15% (33), in a study by Kaya et al. 0.63% (34), in a study by Dinç et al. 0.6% (35), and in a study performed by Çabuk et al., the rate was observed to vary from 1.7% to 2.3% (36). The rates in the similar studies were observed to range from 1.9% to 0.2% and the highest positivity rate was seen in people over the age of 50 (Table 5). Anti-HCV positivity rate was found to be 0.56% in our study. When the age groups were examined, a higher rise in proportion to age was detected, the highest positivity rate was found in people over the age of 65. While the rate was 53.48% in female patients, it was 46.52% in male patients. Having been found to be equal between genders between 2001 and 2002 in our province, the total positivity rate was found to be 0.9% and the highest positivity rate was seen in people over the age of 60. These findings are similar to those in our study (28).

According to the European health report 2009, an estimated 2.4 million people in the European Region, including our country, are living with HIV (4). According to the statistics of the Ministry of Health, 7050 HIV (+) cases have been reported from 1985, in which the first case was detected, to November 2013, and 73% of the reported cases was comprised of males and in people aged between 40 and 49 years (37). The rates ranging from 0.0% to 0.087% are similar to that in studies performed in our country (Table 5) (33,35). In our study, only one patient was found to be positive (0.0008%) and the test result that belonged to a female patient diagnosed in 2009 was confirmed.

Our study covers all the patients admitted to the hospital between 2005 and 2013. There has been no similar study covering such a long period in our country with the exception of studies performed on donors. For this reason, we think that our results reflect the truth regarding HBV, HCV and HIV positivity rates in our region.

In conclusion, nevertheless, HBsAg positivity rates seem to be low with respect to the statistics of our country, a rate as high as 5.49% was determined in our study in 2005, which is the first year of our study. The rates have declined within the subsequent years. We believe that this stems from the fact that the patients found to be positive in the previous year have been eliminated in the following years and this has prevented positive patients from being re-evaluated over the course of the years. Our anti-HCV results were found to be correlated with the country statistics and anti-HIV results were found to be considerably low.

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