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Seroprevalence of Hepatitis B and Hepatitis C in Inpatients for Alcohol and Drug Addiction Treatment in the Psychiatry Clinic of a Private Hospital

Bir Özel Hastane Psikiyatri Kliniği'nde Alkol ve Madde Bağımlılığı Tedavisi Almak İçin Yatarak Tedavi Gören Hastalarda Hepatit B ve Hepatit C Seroprevalansı

Serpil Oğuz Mızrakçı[1], Fatima Mükerrem Güven[2], Sevil Alkan[3]

[1] Özel Lara Anadolu Hastanesi, Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Antalya

[2] Özel Lara Anadolu Hastanesi Psikiyatri, Antalya

[3] İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Anabilim Dalı, Çanakkale Onsekiz Mart Üniversitesi,Tıp Fakültesi, Çanakkale

ORCID ID: Serpil Oğuz Mızrakçı https://orcid.org/0000-0002-7331-5877,
Fatima Mükerrem Güven https://orcid.org/0000-0002-4684-6330, Sevil Alkan https://orcid.org/0000-0003-1944-2477,

***Sorumlu Yazar / Corresponding Author:** Serpil Oğuz Mızrakçı, **e-posta / e-mail:** serpiloguz2002@yahoo.com

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Abstract

Aim Hepatitis B (HBV) and hepatitis C virus (HCV) infections pose a serious health problem in our country as well as all over the world. The main transmission routes of these agents include parenteral contact with infected blood or body fluids (percutaneous injury), sexual transmission, and contact with blood and body fluids of infected people. Accordingly, people with drug abuse are an important risk group for these infections. The number of studies in this field in Turkish context is limited. In this study, we aimed to evaluate the seroprevalence of HBV and HCV in inpatients for alcohol and substance addiction treatment in a private hospital psychiatry clinic.

Material and Method This retrospective study relied on the files of the patients who were hospitalized in the Alcohol and Substance Treatment Clinic in the sense that the results of HBsAg, anti-HBs, and anti-HCV parameters were evaluated retrospectively from the hospital automation system.

Results Of the 568 patient included in the study, 154 (27.1%) were female, 414 (72.9%) were male, and the mean age was 35 (18-88). Findings revealed that 7 (1.23%) of the patients were positive for HBsAg, 229 (40.4%) for anti-HBs, and 41 (7.21%) for anti-HCV. There was no significant difference between HBsAg and Anti-HCV positivity rates by gender.

Conclusion In our study, anti-HCV positivity was detected at a very high rate (7.21%). It can be concluded that the evaluation of these people in terms of test accuracy with HCV RNA as well as treating the infections detected in this group with effective new generation antivirals will also be beneficial with respect to reducing the number of people who can transmit the infection.

Keywords Drug abuse, Hepatitis B, Hepatitis C, seroprevalence.

Özet

Amaç *Hepatit B (HBV) ve hepatit C virüsü (HCV) enfeksiyonları, tüm dünyada olduğu gibi ülkemizde de oldukça önemli bir sağlık sorunudur. Bu etkenlerin başlıca bulaşma yolları, enfekte kan veya vücut sıvılarıyla parenteral temas (perkütan yaralanma), cinsel yolla bulaş ve enfekte kişilerin kan ve vücut sıvılarıyla temastır olup, madde kullanımı olan kişiler bu enfeksiyonlar açısından önemli bir risk grubudur. Ülkemizden bu alanda yapılmış çalışma sayısı sınırlıdır. Bu çalışmada, özel bir hastanede psikiyatri kliniğinde alkol ve madde bağımlılığı tedavisi almak için yatarak tedavi gören hastalarda HBV ve HCV seroprevalansını değerlendirmeyi amaçladık.*

Gereç ve Yöntem *Retrospektif olan bu çalışmada, Alkol ve Madde Tedavi Kliniğinde yatarak tedavi gören hastaların dosyaları, HBsAg, anti-HBs ve anti-HCV parametrelerinin sonuçları hastane otomasyon sisteminden retrospektif olarak değerlendirildi.*

Sonuçlar *Çalışmaya alınan 568 hastanın 154 (%27,1)'ü kadın, 414 (%72,9)'ü erkek ve yaş ortalaması 35 (18-88) idi. Hastaların 7 (%1,23)'sinde HBsAg, 229 (%40,4)'unda anti-HBs, 41 (%7,21)'inde anti-HCV pozitifliği saptandı. Cinsiyetlere göre HBsAg ve Anti-HCV pozitifliği oranları arasında fark yoktu.*

Sonuç *Çalışmamızda anti-HCV pozitifliği oldukça yüksek bir oranda (%7,21) saptandı. Bu kişilerin HCV RNA ile test doğruluğu açısından değerlendirilmesi ve yine bu grupta saptanan enfeksiyonların etkin yeni nesil antiviraller ile tedavi edilmesi enfeksiyonu bulaştırabilecek insan sayısını azaltmak açısından da yararlı olacaktır.*

Anahtar Kelimeler *Madde bağımlılığı, Hepatit B, Hepatit C, seroprevelans.*

INTRODUCTION

Hepatitis B (HBV) and hepatitis C virus (HCV) infections are very important health problems in our country as well as all over the world. While acute infection might cause serious mortality and loss of workforce, chronicity can increase the development of carriage, cirrhosis, and hepatocellular carcinoma. The main transmission routes of these viral agents are parenteral contact with infected blood or body fluids (percutaneous injury), infected mother to newborn (perinatal transmission), and contact with blood and body fluids of infected persons (horizontal transmission). Substance use is an important risk factor for the transmission of some infectious diseases and contributes to the global burden of disease. The prevalence of blood-borne infectious agents is found to be higher than the general population, especially in those with intravenous drug use, and this population serves as a source for viral transmission.[1,2]

Substance use and concomitant infections are important causes of morbidity and mortality. The prevalence of viral infections such as Human Immunodeficiency Virus (HIV) and HCV is also high in areas with high substance abuse. Most of the infections seen in substance abusers are blood-borne viral infections due to unsafe injections during intravenous drug use. Most of the infections seen in substance abusers are blood-borne viral infections due to unsafe injections during intravenous drug use. Most of the newly developed HCV infections in the world are infections that develop as a result of substance use, mainly intravenously. 60% of newly developing HCV infections each year are detected in substance users, especially intravenously.[1,2] In many studies, it has been reported that the rates of HBV and HIV infection in this group are higher than in the normal population.[3]

This study aimed to evaluate the HBV and HCV seroprevalence of patients who were hospitalized in Private Lara Anadolu Hospital Alcohol and Substance Treatment Clinic during the period between January 2015 and January 2020.

METHOD

This is a retrospective, non-intervention study. Data were obtained retrospectively from hospital records. In the study, the files of patients who were hospitalized for alcohol and substance addiction treatment in a psychiatry clinic in a private hospital between January 2015 and January 2020, and the laboratory results requested for HBV and HCV screening were evaluated retrospectively from the hospital automation system. All examinations were performed with the ARCHITECT ci4100 (Abbott) device using the Enzyme Linked Immunosorbent Assay (ELISA) method.

Inclusion Criteria

1. Patients over 18 years old
2. Patients receiving inpatient treatment for alcohol and substance addiction treatment in the Psychiatry Clinic
3. Those whose serological tests were sent for HBV and HCV infection

Exclusion Criteria

1. Patients under the age of 18
2. Duplicate test results from same patient
3. Outpatients

Statistical analysis

To analyze the data in question, the statistical program SPSS (The Statistical Packet for The Social Sciences) v. 23.0 (IBM, Armonk, NY, USA) was used. In statistical analysis, (f) frequency, (%) percentage and (X) arithmetic mean were calculated from descriptive statistical methods. Chi-square test was utilized to calculate the difference between the genders.

Ethical Aprroval

Necessary permissions were obtained from the institution where the study was carried out in order to undertake the

study. Within the scope of the study, the identity information and private data of the individuals were kept confidential. In addition, ethical approval was obtained from the ethics committee of Antalya Training and Research Hospital with the approval dated 19/08/2021 and numbered 12/9.

RESULTS

Of the 568 patients included in the study, 154 (27.1%) were female and 414 (72.9%) were male. The mean age was 35 (18-88). 7 (1.23%) of the patients were positive for HBsAg, 229 (40.4%) anti-HBs, and 41 (7.21%) anti-HCV positivity (Table 1). Anti-HCV positivity was detected in 41 patients, and the HCV RNA test requested for further examination was positive in 17 (2.99%) patients. Vaccination status of the patients could not be questioned as it was a retrospective study.

Table 1. Summary of Patients' Serological Test Results.

Gender	Number of patients	HBsAg positivity number (%)	Anti-HBs positivity number (%)	Anti-HCV positivity number (%)
Male	414	5 (1,2)	171 (41,3)	30 (7,25)
Female	154	2 (1,29)	58 (37,6)	11 (7,14)
Total	568	7 (1,23)	229 (40,4)	41 (7,21)

There was no statistically significant difference between the genders in terms of HBsAg and Anti-HCV positivity ($p>0.05$) (Table 2).

Table 2. Evaluation of HBsAg and Anti-HCV positivity by gender.

	Female (n=154) n, %	Male (n=414) n, %	P value
HBsAg positivity number (%)	2 (1,29)	5 (1,2)	1
Anti-HCV positivity number (%)	11 (7,14)	30 (7,25)	1

HBsAg positivity was found in 1.29% of foreign nationals and Anti-HCV positivity was detected in 0.52% of them. HBsAg positivity was found in 1.2% and Anti-HCV positivity was marked in 6.69% of the citizens of the Republic of Turkey (Table 3).

Table 3. Summary of serology results by nationality.

Gender	Number of patients	HBsAg positivity number (%)	Anti-HBs positivity number (%)	Anti-HCV positivity number (%)
Citizen of the Republic of Turkey	488	5 (1,2)	212 (37,4)	38 (6,69)
Foreign national	80	2 (1,29)	17 (3)	3 (0,52)
Total	568	7 (1,23)	229 (40,4)	41 (7,21)

DISCUSSION

Both HBV and HCV infections are blood-borne diseases. In recent years, outbreaks of HCV have emerged, especially among young people with substance abuse, underlining the need for routine HCV testing for people who continue to engage in high-risk behaviors. These patients constitute risk groups in terms of HCV and HBV infection due to risky behaviors (injecting some recreational substances, using the same injector jointly by more than one or several people, factors such as self-harm with the effect of the substance used). It has been reported that the prevalence in these groups is higher than the population in terms of many infections transmitted by blood-body fluids, especially these infections in question.[5,6]

In this study, we aimed to evaluate the frequency of HCV and HBV infections in inpatients for alcohol and substance abuse treatment in a private hospital. The mean age of the participants in the study was 35, and a similar age population was examined with the existing studies. In addition, since the included sample size is 568, it is higher than other similar studies published in our country.[5,7] In a recent study by Demiralay et al.[5], 153 patients hospitalized in the same hospital were evaluated in 2018. The study revealed that 8.5% of the patients had positive anti-HCV test results, 16.3% had HBV immunity, and there was no

anti-HIV test result positivity. In our study, the sample size was enlarged in the sense that 568 patients hospitalized in the same clinic between 2015 and 2020 were evaluated. In addition, the study conducted by Demiralay et al.[5] was written from the perspective of psychiatry, and the sociodemographic characteristics of the patients and the relationship between substance use were evaluated in this study. In the current study, we evaluated patients in terms of infectious diseases. Again, in a similar recent study published in Turkey in 2020, HBsAg positivity rate was reported as 2.8%, anti-HCV positivity rate was 1.4%, and anti-HIV positivity rate was 0%.7. In our study, HBsAg positivity was detected in 7 (1.23%) of the patients, Anti-HBs positivity was found in 229 (40.4%) and anti-HCV positivity in 41 (7.21%) patients. Anti-HCV positivity was detected in 41 patients, and the HCV RNA test requested for further examination was positive in 17 (2.99%) patients. When it comes to HIV, no evaluation was made in our study. HBsAg positivity was lower than Dağlı's study[7], which included 434 patients living in Bursa, but anti-HCV positivity was found at a higher rate. This may be due to the vaccination status of the patients, the characteristics of the substance used (intravenous or oral substance), or regional differences. Since our study was retrospective, information about vaccination characteristics could not be accessed.

The result that the frequency of HCV infection in injecting drug users reaches 80%, reveals that protection from HCV infection and its complications should be a priority for these individuals.[8] In addition, the fact that reports stating that approximately fifty percent of those infected with HCV are not aware of this situation emphasize the importance of HCV screening once again.[9]

More specific tests, such as HCV RNA, should be confirmed in patients who are found to be positive for anti-HCV in screening tests.[8] HCV genotypes are also important in the treatment and follow-up of the disease. It has been determined that there are 6 different known genotypes and subtypes of the HCV virus. They show different geographical distributions.[10] Genotypes 1, 2, 3 are common all over the world, while genotype 4 is seen in the Middle East and Africa. In a meta-analysis study, HCV genotype 1 was found to be largely predominant in non-Arab Middle Eastern countries such as Turkey (82%), Israel (68%), Cyprus (68%), and Iran (55%). In this study, the dominant subtype in Turkey was identified as 1b subtype.[11]

It has also been reported that different HCV genotypes can be seen in this population from the genotypes showing a general distribution in the population. It has been reported that the prevalence of genotypes 1a and 3 is particularly high in injecting drug users.[12] In addition, while it is known that the dominant genotype is genotype 1 in Turkey, variable genotypes can be detected in other countries. In our study, Anti-HCV positivity rate was 6.69% for Turkish citizens, 0.52% for foreign nationals; that is, it was lower for foreign nationals. In addition, this information could not be reached because the genotype could not be studied in our study.

In Demiralay et al.' study[5], the relationship between addicted substances and HCV positivity was evaluated, and anti-HCV positivity was found to be statistically significantly higher in heroin/cocaine users. In a meta-analysis, 722 people were included and it was revealed that HCV seroprevalence in patients addicted to non-intravenous substances ranged from 2.3 to 35.3%.[13]

In a recent meta-analysis examining the HCV seroprevalence in intravenous drug users in the Eastern Mediterranean Region (EMRO) countries of the World Health Organization, this rate was found to be 48.3%. In the same study, HIV seroprevalence was found to be 9.1%.[14]

Another systematic review attempting to estimate the global prevalence of HCV infection in intravenous drug addicts revealed that HCV seroprevalence among these individuals ranged from 78-93% in Pakistan and 54.9-80.1% in Iran.[15]

In our study, the cases were not evaluated in terms of addiction type. Anti-HCV positivity was found in 7.21% of the cases presented, and the HCV RNA test was positive in 2.99% of the cases. Our study results show a lower seroprevalence rate.

CONCLUSION

People who use addictive substances whether intravenously and via other routes (oral, inhaler, etc.) are at risk of contracting viral infections such as HBV, HCV, HIV. At the same time, those who use substances also serve as a source for these infections. It is very important to monitor this group very carefully in order to establish national data by determining the rates in different regions, and to develop prevention programs. Furthermore, the treatment of these infections detected in this group with effective new generation antivirals will also be beneficial in terms of reducing the transmission of infection.

Limitations of the study

The limitaions of the study included the retrospective design of the study, the limited number of patients as well as the fact that HCV genotypes were not studied and no discrimination was made according to the addicted substance.

Conflict of interest

There is no conflict of interest among the authors.

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No financial support was obtained from any institution for the study.

Place of study

Antalya Private Lara Hospital

Author contributions

Concept: SOM., FMG.; Design: all authors.; Supervision: SA.; Fundings: NONE.; Materials: SOM., FMG.; Data Collection and/or Processing: SOM., FMG.; Analysis and/or Interpretation: SA.; Literature Review: all authors.; Writer: SA, SOM, FMG.; Critical Reviews: SA.; Approval: all authors.

References

1. Alter MJ. Epidemiology of hepatitis C virus infection. World J Gastroenterol 2007; 13:2436–2441.
2. Amon JJ, Garfein RS, Ahdieh-Grant L, et al. Prevalence of hepatitis C virus infection among injection drug users in the United States, 1994–2004. Clin Infect Dis 2008; 46:1852–1858.
3. Ferreira RC, Rodrigues FP, Teles SA, et al. Prevalence of hepatitis B virüs and risk factors in Brazilian non-injecting drug users. J Med Virol 2009; 81:602–609.
4. https://www.cdc.gov/hepatitis/populations/idu.html [Access date: 15 October 2021].
5. Demiralay Ş, Keser İ, Güven M. Özel bir hastanenin psikiyatri servisinde bağımlılık tedavisi alan hastaların sosyodemografik ve klinik özelliklerinin retrospektif analizi. Klinik Psikiyatri 2021; 24:383-393.
6. Altuğlu İ, Tanyeri S, Zeytinoğlu A, et al. Madde kullanımı olan olgularda HBsAg, Anti-HCV ve Anti-HIV seroprevalansı: retrospektif bir değerlendirme. Arch Neuropsychiatry 2019; 56: 186-190.
7. Dağlı Ö. Screening of hepatitis and HIV infections in an alcohol and drug addiction treatment center. Pamukkale Tıp Dergisi 2020; 13(1):177-186.
8. Nelson PK, Mathers BM, Cowie B, et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. Lancet 2011; 378:571-583.
9. Holmberg SD, Spradling PR, Moorman AC, et al. Hepatitis C in the United States. N Engl J Med 2013; 368:1859- 1861.
10. Yıldırım D, Hasbek M, Alkan S, et al. Relationship Between HCV RNA and Serum Alanine Aminotransferase and HCV Genotype Distribution. J Clin Anal Med 2015;6(6):1-3.
11. Ghaderi-Zefrehi H, Gholami-Fesharaki M, Sharafi H, et al. The Distribution of Hepatitis C Virus Genotypes in Middle Eastern Countries: A Systematic Review and Meta-Analysis. Hepat Mon 2016;16(9): e40357.
12. Evren C, Bilici R, Ucbilek E, et al. A call for action for hepatitis C infection among people who inject drugs in Turkey. Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2017; 30:271-277.
13. Scheinmann R, Hagan H, Lelutiu-Weinberger C, et al. Non-injection drug use and Hepatitis C Virus: a systematic review. Drug Alcohol Depend 2007;89(1):1-12.
14. Shayan SJ, Nazari R, Kiwanuka F. Prevalence of HIV and HCV among injecting drug users in three selected WHO-EMRO countries: a meta-analysis. Harm Reduct J 2021;18(1):59.
15. Aceijas C, Rhodes T. Global estimates of prevalence of HCV infection among injecting drug users. Int J Drug Policy 2007;18(5):352–358