



Retrospective Investigation of HBsAg and Anti-HCV Seroprevalence in Patients Admitted at the Outpatient Clinics of Internal Medicine

Dahiliye Polikliniğine Başvuran Hastalarda HBsAg ve Anti-HCV Seroprevalansının Retrospektif Olarak Araştırılması

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Abstract

Aim: Hepatitis B and Hepatitis C viruses are among the viral hepatitis agents and constitute an important public health problem as they can cause serious complications. Patients examined at outpatient internal medicine clinics are among the main risk groups, as they have concomitant diseases and undergo various procedures. In this study, we aimed to retrospectively investigate the seroprevalence of HBsAg and Anti-HCV in outpatients in internal medicine in our region.

Material and Methods: HBsAg and Anti-HCV parameters of the patients admitted to our hospital's internal medicine outpatient clinics between January 2017 and July 2022 are evaluated. Then, HBV-DNA and HCV-RNA levels of the patients who were found to be reactive in these parameters and demographic data such as age and gender were examined retrospectively.

Results: In this study, HBsAg test results of 2618 patients and Anti-HCV test results of 2943 patients were obtained. The mean age of patients with HBsAg tests was 34.2±15.7, and the mean age of patients with Anti-HCV tests was 34.3±15.7 years. The HBsAg reactivity rate was 0.9%; and the mean age of patients showing reactivity was 47.7±14.4 years. The Anti-HCV reactivity rate was %0.1, with a mean age of 52.6±21.3 years. Neither HBsAg nor Anti-HCV reactivity was not present in the same patient in our study.

Conclusion: The early detection of Hepatitis B and Hepatitis C viruses is crucial in reducing the risk of developing complications, simplifying the treatment process, and decreasing the likelihood of transmission. As a result, the implementation of screening tests as a component of preventive medicine is of utmost importance.

Keywords: HBV infection, HCV infection, seroprevalence

Öz

Amaç: Viral hepatit etkenleri arasında yer alan Hepatit B ve Hepatit C virüsleri ciddi komplikasyonlara neden olabildikleri için önemli bir halk sağlığı sorunu oluşturmaktadır. Dahiliye polikliniklerine başvuran hastalar eşlik eden hastalıklar ve uygulanan işlemler nedeniyle başlıca risk grupları arasındadır. Biz bu çalışmayla bölgemizde dahiliye polikliniklerine başvuran hastalarda HBsAg ve Anti-HCV seroprevalansını retrospektif olarak incelemeyi amaçladık.

Gereç ve Yöntem: Ocak 2017-Temmuz 2022 tarihleri arasında hastanemiz dahiliye polikliniklerine başvuran hastaların HBsAg ve Anti-HCV parametreleri, bu parametrelerinde reaktiflik saptanan hastaların HBV-DNA ve HCV-RNA düzeyleri, yaş ve cinsiyet gibi demografik verileri retrospektif olarak değerlendirildi.

Bulgular: Çalışmada 2618 hastanın HBsAg, 2943 hastanın ise Anti-HCV test sonuçları elde edildi. HBsAg çalışılan hastaların yaş ortalaması 34.2±15.7 iken Anti-HCV çalışılan hastaların yaş ortalaması ise 34.3±15.7 olarak bulundu. HBsAg reaktifliği oranı %0.9 saptandı; reaktiflik belirlenen hastaların yaş ortalaması 47.7±14.4 olarak bulundu. Anti-HCV reaktifliği oranı %0.1 gözlemlendi; reaktiflik saptanan hastaların yaş ortalaması 52.6±21.3 olarak belirlendi. Çalışmamızda HBsAg ve Anti-HCV reaktifliğinin birlikte görüldüğü hasta izlenmedi.

Sonuç: Hepatit B ve Hepatit C virüslerinin erken tanısı komplikasyon gelişim riskini azaltmakta, tedavi süreçlerini kolaylaştırmakta ve bulaş riskini düşürmektedir. Bu sebeple koruyucu hekimlik kapsamında tarama testlerinin yaygınlaşması oldukça önemlidir.

Anahtar Sözcükler: HBV enfeksiyonu, HCV enfeksiyonu, seroprevalans



INTRODUCTION

Viral hepatitis infections impose a critical global public health problem due to severe complications such as chronic hepatitis, hepatic cirrhosis, and hepatocellular carcinoma. Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are among the leading causes of acute and chronic viral hepatitis agents.^[1]

Approximately a third of the world population is reported to have contracted HBV infection previously, 250.000 people are reported to be infected chronically, and 887.000 patients were lost due to complications of HBV infection in 2015.^[1-4] Turkey is considered to be among the moderately endemic countries with regard to the HBV seroprevalence, with a range of 2-4%.^[3,5]

It is estimated that over 70 million individuals globally are living with chronic HCV infections, and in 2015, there were approximately 1.75 million newly reported cases of HCV infections.^[1,2] Turkey is reported to be in the 1.0-1.9% zone regarding HCV seroprevalence. In addition, approximately 250.000-550.000 persons are thought to be infected with HCV among the population older than 18 years.^[1,4,6]

The predominant modes of transmission for HBV and HCV vary across countries and regions.^[1,2] Patient populations that are identified to have an increased risk of contracting viral hepatitis include individuals undergoing hemodialysis, those who frequently receive blood or blood product transfusions, patients with cancer, and those undergoing invasive procedures.^[1,2,7] While HBV infection is a preventable disease due to the hepatitis B vaccine, there is no vaccine yet for hepatitis C infection.^[1] HBV vaccine was incorporated into the national vaccination calendar in 1998.^[8]

The objective of our study was to retrospectively evaluate the seroprevalence of HBsAg and Anti-HCV in outpatients visiting the internal medicine clinics. We aimed to examine the demographic distribution of these infections in our region by analyzing the data of patients based on their age and gender. Despite the significant progress made in the prevention and vaccination against HBV in our country, viral infections continue to be a critical public health issue. Hence, it is crucial to understand the prevalence of these infections in our region to take effective preventive measures.

MATERIAL AND METHOD

Following approval from the local ethics committee (2022/89, dated 08/10/2022), the study was initiated. The seroprevalence of HBsAg and Anti-HCV in patients admitted to the outpatient clinics of internal medicine was retrospectively investigated. Demographic information such as age and gender was also analyzed. The study was conducted by reviewing medical records of patients who visited the outpatient clinics of internal medicine at our hospital for various reasons between January 2017 and July 2022. For patients who tested positive for HBsAg and/or Anti-HCV, additional tests for HBV-DNA and

HCV-RNA levels were performed. Repeat results, patients with foreign nationality, and infants were excluded from the analysis.

HBsAg and Anti-HCV tests were done with i1000SR analyzer (Abbott Diagnostics Division, Germany). In the interpretation for HBsAg and Anti-HCV reactivity, a level of 1.0 mIU/mL was accepted as a reference, following the producer's recommendation.

A real-time PCR method was performed for the detection of HBV-DNA and HCV-RNA by using the manufacturer's system (Anatolia Geneworks, Turkey).

Statistical analysis

The data obtained in the study were analyzed by SPSS 22.0 (SPSS INC, Chicago, IL, USA). Categorical variables were given as a percentage and mean±standard deviation. The Chi-square test was used to compare independent groups with categorical variables. The p-value <0.05 was considered statistically significant.

RESULTS

HBsAg results of 2618 patients and Anti-HCV test results of 2943 patients were evaluated during the study period. 1827 (69.8%) patients with HBsAg results were female; while 2058 (69.9%) patients with Anti-HCV results were female. The mean age of patients with HBsAg results was 34.2±15.7 years (18-89) and mean age of patients with Anti-HCV results was 34.3±15.7 years (18-92).

HBsAg reactivity was detected in 24 patients (0.9%) (**Table 1**). Mean age of these patients was 47.7±14.4 years (22-77). Twelve patients were (50.0%) female. The distribution of HBsAg reactivity status by age groups is shown in **Table 2**. The highest rate of positivity rate was found in the age range of 46-60 years (p <0.001). HBsAg values were between 39.5-6451.0 mIU/mL (4162.6±1550.6). HBV-DNA results were found for 12 patients whose HBsAg values were 39.5-6451.0 mIU/mL (3602.0±1815.7), and whose ages were between 25-77 years (46.8±14.1). Out of the 12 patients, ten had HBV-DNA levels between 102-107 IU/mL and followed up without treatment. The remaining patients had negative HBV-DNA results and were given antiviral treatment (tenofovir and entecavir) with follow-up.

Anti-HCV reactivity was detected in five patients (0.1%) (**Table 1**). The mean age of these patients was 52.6±21.3 years (27-85). All five patients were female. The distribution of anti-HCV reactivity status by age groups is shown in **Table 2**. The highest rate of positivity was observed in patients over 80 years of age (p <0.001). Anti-HCV values were between 1.4-35.9 mIU/mL (12.7±13.9). All five patients took antiviral medications (sofosbuvir, ledipasvir and ribavirin) and followed-up. The mean Anti-HCV values of treated patients decreased from 12.7±13.9 mIU/mL to 1.2±1.1 mIU/mL. In our study, no patient with both HBsAg and Anti-HCV reactivity was found.

Table 1: HBV and HCV serological test results

HBV serological test results	Numbers (n:2618)	%
HBsAg(+)	24	0.9
HBsAg(-)	2594	99.1
HCV serological test results	Numbers (n:2943)	%
Anti-HCV(+)	5	0.1
Anti-HCV(-)	2938	99.9

Table 2: Distribution of HBsAg and Anti-HCV reactive status according to age structure

	18-30 age n (%)	31-45 age n (%)	46-60 age n (%)	61-80 age n (%)	>80 age n (%)	p
HBsAg reactivity/ Number of patients studied	2/1379 (0.1)	8/691 (1.2)	9/106 (8.5)	5/222 (2.3)	0/220 (-)	<0.001
Anti-HCV reactivity/ Number of patients studied	1/1565 (0.1)	1/756 (0.1)	2/335 (0.6)	0/257 (-)	1/30 (3.3)	<0.001

DISCUSSION

Globally, viral hepatitis represents a significant challenge to public health due to its association with mortality, chronic illness, and economic losses. Despite the implementation of vaccination programs for hepatitis B virus (HBV) and improvements in living standards and public awareness, infections caused by HBV and hepatitis C virus (HCV) remain a major concern among infectious diseases.^[8,9]

In recent studies conducted in Turkey, HBsAg seroprevalence was found between 0.3-4.0%, and Anti-HCV seroprevalence between 0.3-1.3%, respectively.^[3,10-16] HBsAg and Anti-HCV seroprevalence was 2.5% and 0.9% in oncology patients and 1.0% and 0.8% in patients admitted at the outpatient clinics of family physicians in a tertiary care hospital in Karabük.^[4,7] HBsAg and Anti-HCV reactivities were 1.5% and 0.1% in the preoperative evaluation of the patients in a private hospital in Van.^[17] In a study in a tertiary care hospital in Niğde, where all patients in whom hepatitis markers were evaluated, HBsAg and Anti-HCV seroprevalences were respectively 4.0% and 1.2% in the general population, 0.04% and 0.04% in patients younger than 20 years, and 4.2% and 1.2% in patients older than 20 years.^[18]

In light of the findings of our study, it can be concluded that the expanded implementation of HBV vaccinations and heightened social awareness have had a positive impact. Our study also found that seropositivity for HBsAg and anti-HCV was higher among patients aged 45 and older when compared to other age groups. However, it should be noted that the limited sample size of our data may have influenced the results.

In other studies conducted in our region, HBsAg and Anti-HCV seroprevalence were respectively 1.0% and 0.3% in preoperatively evaluated patients and 2.0% and 0.9% in patients hospitalized in intensive care units.^[19,20] In a study where children born after the vaccination program was investigated, HBsAg reactivity was reported as 0.3%.^[3]

We found HBsAg seroprevalence as 0.9%, and Anti-HCV seroprevalence 0.1% in the present study. Factors such as study year, hospital (secondary or tertiary care) and hospital location (central or rural hospitals), and demographic characteristics of the study population may affect the results in seroprevalence studies. Our study was conducted in a secondary care rural state hospital. Patients generally prefer tertiary care hospitals located at the city center for diagnosis and treatment. For this reason, our results are consistent with existing medical literature, although the values obtained are slightly lower. We anticipate that the prevalence of HBsAg reactivity will continue to decrease in the future due to the inclusion of HBV vaccination in the national immunization schedule since 1998.

In a large-scale study at a tertiary care hospital in İzmir, Anti-HCV reactivity was 1.6%. The co-existence of Anti-HCV and HCV-RNA was also investigated in the study. Anti-HCV reactivity/HCV-RNA positivity was found in 7.0% of the patients, while Anti-HCV reactivity/HCV-RNA negativity was detected in 32.0%.^[21] In our study, HCV-RNA was also found positive in all patients with anti-HCV reactivity. It is well recognized that the anti-HCV test is a screening test and may produce false-positive results as its sensitivity increases. As such, further evaluation using HCV-RNA testing is necessary when anti-HCV reactivity is detected. Improving screening methods for the detection of patients positive for HBV and HCV is also important. As screening methods become more widespread, the diagnosis and treatment of these diseases will become easier. Particular caution is advised for individuals in high-risk groups, such as dialysis patients, immune-compromised individuals, individuals with multiple sexual partners, sex workers, intravenous substance users, patients receiving frequent blood transfusions or blood product transfusions, and healthcare workers.

The limitations of our study include its retrospective design, the relatively small sample size, and the lack of access to other screening tests for HBV.

CONCLUSION

Infections caused by HBV and HCV pose a significant threat to public health. Early detection of these infections prior to the development of complications such as cirrhosis or hepatocellular carcinoma improves the prospects for successful treatment and reduces the risk of virus transmission. As such, HBsAg and anti-HCV tests play a crucial role in screening for these infections. The literature includes a study that similarly investigated the seroprevalence of HBsAg and anti-HCV in Balıkesir. A comparison of positivity rates highlights the influence of various factors on seropositivity. In the interest of preventive medicine, it is recommended that screening tests for HBV and HCV become more widespread and that every healthcare center maintain records of the HBsAg and anti-HCV positivity rates among its patient population.

ETHICAL DECLARATIONS

Ethics Committee Approval: Permission for this study was obtained from Balıkesir University Ethics Committee (Date: 10/08/2022, Decision No: 2022/89)

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

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