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Ultrasonographic Assessment of the Prevalence of Hepatic Steatosis in Inactive Hepatitis B Carriers

İnaktif Hepatit B Taşıyıcılarında Ultrasonografik Olarak Hepatosteatoz Sıklığının Araştırılması

Ayşe İNCİ[1], Cenk Emre MERAL[2]

[1]*Artvin State Hospital, Department of Infectious Diseases and Clinical Microbiology, Artvin, Turkey*

[2]*Artvin State Hospital, Department of Gastroenterology, Artvin, Turkey*

ABSTRACT

Objective: The aim of this present study was to determine the prevalence of hepatic steatosis in chronic hepatitis B carriers followed up in our clinic, by ultrasonographic findings.

Materials and Methods: Seventy-six patients, who were admitted to the outpatient clinic of Artvin State Hospital Infectious Diseases Department, and were followed up as inactive hepatitis B infection carriers, between August 2012 and April 2013 were evaluated.

Results: The mean age of the patients (53.9% male) was 37.68±14.12 years. Based on abdominal ultrasound findings, hepatic steatosis was detected in 16 (21.1%) patients. A significant male predominance was noted in patients with steatosis. Moreover, the mean age of the patients with steatosis was significantly higher when compared to those without steatosis ($p<0.05$).

Conclusion: The mean age of the patients (53.9% male) was 37.68±14.12 years. Based on abdominal ultrasound findings, hepatic steatosis was detected in 16 (21.1%) patients. A significant male predominance was noted in patients with steatosis. Moreover, the mean age of the patients with steatosis was significantly higher when compared to those without steatosis ($p<0.05$). *(Viral Hepatitis Journal 2013; 19(2): 46-8)*

Key words: Hepatitis B, steatosis, ultrasound

ÖZET

Amaç: Bu çalışmada amacımız kliniğimizce takip edilen kronik hepatit B taşıyıcılarında ultrasonografi bulgularını değerlendirerek hepatosteatoz sıklığının araştırılmasıdır.

Gereç ve Yöntemler: Ağustos 2012-Nisan 2013 döneminde Artvin Devlet Hastanesi Enfeksiyon hastalıkları polikliniğine başvuran ve inaktif hepatit B taşıyıcısı olarak takip edilen 76 hasta değerlendirilmiştir.

Bulgular: Hastaların (%53,9 erkek) yaş ortalaması 37,68±14,12 yıl idi. Batın ultrasonografi bulgularına bakıldığında 16 (%21,1) hastada hepatik steatoz saptandı. Steatozlu hastalarda erkeklerin çoğunlukta olduğu görüldü. Ayrıca steatozlu hastaların yaş ortalaması steatozu olmayan hastalarla karşılaştırıldığında anlamlı olarak yüksek bulundu ($p<0,05$).

Sonuç: İnaktif taşıyıcıların takibinde batın ultrasonografi istenmesi steatoz dışında diğer durumlar içinde ek bilgi sağlayacaktır ve konuyla ilgili daha ileri ve geniş kapsamlı araştırmalara ihtiyaç vardır. *(Viral Hepatit Dergisi 2012; 19(2): 46-8)*

Anahtar Kelimeler: Hepatit B, steatoz, ultrason

Introduction

Viral hepatitis is known to be one of the important health problems. About 5% of the individuals worldwide are hepatitis B carriers (1).

Turkey is considered to be a moderate endemic region for hepatitis B infection(2).

Hepatic steatosis (HS) is defined as a hepatic lipid content greater than 5% of liver weight, or histopathological demonstration of lipid vacuoles in more than 5% of hepatocytes(3).

HS has no specific clinical signs; the patient usually suffers from pain and sense of fullness in the right upper quadrant of the abdomen(4). Hepatic steatosis may be evaluated by noninvasive methods such as ultrasound (US), computed tomography (CT) scans, and magnetic resonance imaging (MRI) as well as by invasive methods such as liver biopsy. Since MRI and CT are expensive methods and liver biopsy is a troublesome procedure for the patient, US is the diagnostic method most frequently used(5).

There are studies showing that HS is common in chronic hepatitis C patients, but there are limited data about the concurrent existence of hepatitis B and hepatic steatosis(6).

The aim of this present study was to investigate the prevalence of HS by means of ultrasonographic findings in chronic hepatitis B carriers.

Address for Correspondence/Yazışma Adresi: *Dr. Ayşe İnci, Artvin State Hospital Department Of Infectious Diseases And Clinical Microbiology, Artvin, Turkey*
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Material and Method

Seventy-six patients, who were admitted to the outpatient clinic of Artvin State Hospital, and were followed up as inactive hepatitis B carriers between August 2012 and April 2013, were evaluated. Those who remained HBsAg positive for 6 months, HbeAg (-), antiHBe (+) and had normal serum transaminase levels and Hepatitis B virus (HBV) DNA lower than 2000 IU/mL, platelet levels, albumin, protrombin time and bilurubin levels were normal range considered as inactive carriers. The frequency of HS was determined by evaluating the abdominal US findings of these patients. USG examination was performed by different radiologists. Statistical Package for the Social Sciences (SPSS) for Windows (version xxx; SPSS Inc., Chicago, IL, USA) was used to analyze data. The Chi-square test and ANOVA test were used for statistical analyses. A p value <0.05 was considered statistically significant.

Results

Of the 76 participants, with a mean age of 37.68±14.12 years, followed up as inactive hepatitis B carriers and evaluated based on abdominal US, 41 (53.9%) were male and 35 (46.1%) were female. HS was detected in 16 (21.1%) patients.

Of the patients with fatty liver, 10 (62.5%) had grade 1 and 6 (37.5%) had grade 2 HS; 14 (87. 5%) were male and 2 (%12.5) were female; and the mean age was 46.43±15.11 years. The mean age of the 60 patients without HS (45% male) was 35.35±13.00 years.

A significant male predominance was noted in the group with steatosis. Moreover, the mean age of the patients with steatosis was significantly higher than that of those without steatosis (p<0.05). There was no significant difference between the groups in terms of mean serum aspartate aminotransferase (AST) and alanine transaminase (ALT) levels and disease duration (p>0.05) (Table 1).

In addition, gallstones were detected in three patients, and hemangioma was detected in one patient.

Table1. Comparison of demographic characteristics and laboratory findings of the patients with and without hepatic steatosis

	Without steatosis (n=60)	With steatosis (n=16)	p
Age, years, mean±SD	35.35±13.00	46.43±15.11	=0.029
Gender, M / F, n (%)	27 (45) / 33 (55)	14 (87.5) / 2 (12.5)	=0.01
Disease duration (month)	62	65	>0.05
ALT, mean±SD	19.33±6.61	18.62±7.13	>0.05
AST, mean±SD	21.30±11.37	19.50±6.93	>0.05

ALT, Alanine transaminase; AST, Aspartate aminotransferase; SD, Standard deviation

Discussion

Chronic HBsAg carrier state is characterized by persistent HBsAg positivity beyond 6 months. Chronic HBV infection is used as a synonym for chronic HBV infection carrier state. Although it in fact is not correct, chronic HBV infection carrier state stands for the state of being a carrier of inactive HBsAg carrier state (7).

Özdemir et al. (8) conducted a study in 233 inactive carriers with a mean age of 33.61±9.93 years and found that 57.9% of the participants were male. Ökten et al., (9) in their study on 372 inactive carriers, reported that 58.3% of the cases were male and 72.5% of the cases were in 20-40-year-age group. Another study on this subject noted that 59% of the participants were male and the mean age was 39.81±11.6 years (10). The results of the present study are consistent with the results of above-mentioned studies.

Hepatic steatosis is a common liver pathology. Conditions that lead to HS include obesity, alcohol consumption, diabetes, infectious diseases, inflammatory bowel diseases and drugs. Liver function tests may be normal, or slightly elevated transaminase levels may be observed (11). The prevalence of HS in inactive carriers was 21.1% in the present study.

In the study by Özdemir et al., (8) liver biopsy was performed in 37 inactive carriers, and fatty liver was noted in 2 cases, and mild chronic hepatitis together with fatty liver in one case. Data from some studies (6,9,10,12-15) in Turkey showing the prevalence of HS determined by biopsy or US are demonstrated in Table 2.

Among the studies performed about HS in Turkey, Bayan et al.[16] evaluated the patients who were admitted to the internal medicine outpatient clinic, in whom HS was detected by US, and found that 38.3% of the patients were male and the mean age was 43.4 years. Despite the studies showing the coexistence of HS and Hepatitis C virus (HCV), there are a few studies showing the relationship between chronic hepatitis B and HS (6).

In the present study, the mean age of the patients with HS was 46.43±15.11 years and 87.5% of them were male. Altıparmak et al.6 found the mean age to be 37.90±10.09 years in patients with HS and the proportion of males was 46.9%. Uyanıkoğlu et al.10 found the mean age and proportion of males to be 44.4±11.1 years and 76% respectively in patients with HS.

Comparison of the groups with and without HS in the present study revealed that there was a significant male predominance in patients with HS, and the mean age of the patients with HS was significantly higher than that of those without HS (p<0.05). No significant difference was found between the two groups in terms of AST and ALT levels and disease duration.

Similar to the results of our study, another study conducted on chronic hepatitis B patients in Turkey found that the mean age in the group with HS was significantly higher than that of those without steatosis, and determined no significant difference between the groups in terms of serum AST and ALT levels (6).

Uyanıkoğlu et al. (10) reported that the mean age of the patients, the mean age at disease onset and the percentage of male patients were significantly higher, and the DNA levels were significantly lower in patients with steatosis than that of those without HS. However, he also found no significant difference in

Table 2. Prevalence of hepatic steatosis in chronic hepatitis B and chronic hepatitis C in various studies

	Year	Province	HCV	HBV
Altıparmak et al.[6]	1997-2002	Ankara	39.0%	27%
Ökten et al.[9]	1987-1995	Istanbul	-	13%
Uyanıkoğlu et al.[10]	2010-2011	Erzurum	-	42%
Yılmaz et al.[12]	1989-1995	Izmir	51.35%	39.13%
Köklü et al.[13]	1994-2002	Ankara	62.5%	-
Ceylan et al.[14]	2001-2010	Istanbul	49.6%	-
Bilgi et al.[15]	1995	Edirne	64.3%	28.6%
Present study	2012-2013	Artvin	-	21.1%

HCV, Hepatitis C virus; HBV, Hepatitis B virus

terms of AST and ALT levels between the two groups. In addition to biochemical tests, US and assessment of alpha-fetoprotein levels at regular intervals, are also recommended in the follow-up of chronic hepatitis B carriers (9).

In the present study, the prevalence of steatosis in inactive carriers was found to be 21.1%. With regard to the association between inactive carrier state and HS, there was a significant male predominance in patients with HS, and the mean age of the patients with HS was significantly higher than that of those without HS. Follow-up abdominal US will provide additional information about the conditions other than steatosis in inactive carriers. Further and large-scale studies on this subject are needed.

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