ORIGINAL ARTICLE

AG-2017-18
dx.doi.org/10.1590/S0004-2803.201700000-33

Impact of alcohol consumption among patients in hepatitis C virus treatment

Andréa Carvalho Maia **VIEIRA-CASTRO**[1] and Luiz Carlos Marques de **OLIVEIRA**[1,2]

Received 24/2/2017
Accepted 17/4/2017

ABSTRACT – Background – Recent studies have questioned the recommendation of abstinence from alcohol for at least 6 months for alcoholic patients to be treated for hepatitis C. **Objective** – The present study aimed to assess the impact of alcohol consumption among patients undergoing hepatitis C treatment. **Methods** – In this cross-sectional study, 121 patients [78 (64.5%) men; 28-70 years] were evaluated. They were divided as follows: patients who consumed <12 g of ethanol/day throughout life (Group 1), 12-59 g/day (Group 2) and ≥60 g/day (Group 3). Patients were treated with pegylated-interferon plus ribavirin. **Results** – These three groups could not be distinguished in terms of the severity of liver fibrosis and frequency of HCV genotype-1 infection. In Group 3, treatment discontinuation (32.4%) was higher than in the Group 1 (9.4%) or Group 2 (0%), it was higher among patients who drank during treatment (66.7% vs 21.4%) and among those who had not been abstinent for at least 6 months (72.7% vs 15.4%). Moderate alcohol drinkers showed good adherence and did not discontinue the treatment. The frequencies of sustained viral response among patients in Group 3 (44.4%) were similar to those in Group 1 (61%) and Group 2 (68.4%). **Conclusion** – Heavy drinkers more often discontinued treatment for hepatitis C, but those that received this treatment had acceptable sustained viral response rates. These results suggest that heavy drinkers should not be systematically excluded from the treatment, but they should be monitored to avoid drinking and abandoning treatment, mainly those who have not been abstinent for at least 6 months.

HEADINGS – Alcoholism. Patient compliance. Hepatitis C. Therapeutics.

INTRODUCTION

Alcohol abuse and hepatitis C virus (HCV) infection are the main causes of chronic liver diseases in the Western world[4,23]. The World Health Organization estimates that nearly 170 million people worldwide are infected by HCV, and chronic HCV infection may lead to cirrhosis and hepatocellular carcinoma[12]. Alcoholic individuals have high seroprevalence of HCV infection[4,27], and heavy alcohol consumption is common in patients with chronic HCV infection[1,8]. Alcohol and HCV may act synergistically and accelerate the development of liver disease by increased oxidative stress[7,20], and generation of reactive oxygen species (ROS), iron accumulation, steatosis induction, immune modulation, stimulation of HCV replication, and direct DNA damage[23].

Therefore, alcoholic patients with chronic HCV infection have a higher risk of developing cirrhosis and hepatocellular carcinoma, and HCV infection confers a worse prognosis in patients with alcohol use disorders[13]. For this reason, alcoholic patients should be treated for this infection. However, physicians are reluctant to treat HCV in alcoholic patients, based on results from studies which have revealed that these patients had a poorer response to treatment. This could be the result of an increase in viral load[17,28], an increase in HCV quasi-species[7,31], and a reduction in the efficacy of interferon therapy caused by alcohol[20,25], and by alcoholic patients' higher treatment discontinuation rate[1].

Guidelines[14] recommend that alcoholic patients should be treated for HCV infection if they agree to participate in a support program to prevent drinking, in addition to having been abstinent for at least 6 months before beginning the treatment. Some authors suggest at least 1 year of abstinence before beginning the HCV treatment[24]. However, recent studies have shown that sustained viral response (SVR) rates among heavy alcoholic patients who have not been abstinent for more than 6 months before beginning the treatment are comparable with those achieved among those who are abstinent and also those who are not alcoholic[8,29].

The relatively small number of alcoholic patients included in some studies and the different methodologies used require that new studies should be performed to assess the repercussions of alcohol consumption on hepatitis C treatment. Thus, the present study aimed to assess the impact of alcohol consumption among patients undergoing hepatitis C treatment.

METHODS

Setting and patients

A cross-sectional study was performed in the Regional Superintendency of Health of Uberlândia (SRS-Uberlândia in the Portuguese acronym), in the state of Minas Gerais, Brazil. The SRS- Uberlândia is responsible for the free distribution of HCV treatment drugs to patients living in Uberlândia or in the other 17 neighboring cities. Patients aged 18 years and older who had undergone hepatitis C treatment between February 2007 and April 2011 were included in the present study, except for those who did not agree to participate (n=15) and others who could not be contacted

Declared conflict of interest of all authors: none
Disclosure of funding: no funding received
[1] Programa de Pós-graduação em Ciências da Saúde, Faculdade de Medicina, Universidade Federal de Uberlândia, Uberlândia, MG, Brasil; [2] Departamento de Clínica Médica, Faculdade de Medicina, Universidade Federal de Uberlândia, Uberlândia, MG, Brasil.
Correspondence: Luiz Carlos Marques de Oliveira. Departamento de Clínica Médica, Faculdade de Medicina, Universidade Federal de Uberlândia. Av. Pará, 1720, Bloco 2H, Sala 1, Campus Umuarama – CEP: 38405-320 – Uberlândia, MG, Brasil. E-mail: oliveiralcm@ufu.br

after the end of the treatment (n=10). During the HCV treatment, patients were followed by infectologists/gastroenterologists, peginterferon injections were applied by nurses/nursing assistants in different health service locations and patients were referred to a psychologist if the responsible doctor found this necessary or if the patient had requested a consultation with a psychologist.

Procedures

At the end of hepatitis C treatment, each patient responded to a semi-structured self-administered questionnaire to collect information about socio-demographic data (sex, age, weight, height and ethnicity), presence of comorbidities (diabetes mellitus, depression and/or chronic renal failure) and drug use, including medications. With regard to alcohol consumption, the following aspects were assessed: daily intake, frequency, duration of lifetime consumption and time of abstinence before the beginning of HCV treatment. Aiming to determine the amount of alcohol consumed, a beer bottle (660 mL) and a shot of distilled beverage (50 mL) were considered to contain 25 g and 17 g of alcohol respectively, while a liter of wine had 80 g of alcohol. Alcohol consumption was also tracked through the Cut down, Annoyed, Guilty, Eye-opener (CAGE) questionnaire[11], and Alcohol Use Disorders Identification Test (AUDIT)[2]. Patients were divided into the following categories to assess the effects of alcohol consumption on pre-treatment viral load, liver histology, adherence to treatment and SVR: those who consumed less than 12 g of ethanol/day or who were abstinent throughout life (Group 1), those who consumed between 12 and 59 g/day (Group 2) and those who consumed 60 g/day or more (Group 3) for 10 years or more.

Patients' medical charts were used to collect data on previous and current treatments (peginterferon/ribavirin doses, dose reduction and duration of treatment), HCV genotype and pre-treatment viral load, the results of liver histology tests and presence of coinfections by the human immunodeficiency virus (HIV) or hepatitis B virus (HBV). In addition, results of HCV-RNA determinations were collected to assess early viral response (EVR), end-of-treatment response (ETR) and SVR.

Patients' adherence to treatment was observed in the electronic records of the SRS-Uberlândia, where drug delivery dates, doses and amounts are included. When the treatment ended, patients reported their adherence to bi-therapy and, in the case of discontinuation of treatment, the patient and/or a family member were contacted to find out the reasons.

The stages of liver fibrosis were established according to the METAVIR scoring system[3]. SVR was defined as undetectable HCV-RNA in the 24th week after the end of the treatment. Patients who did not have an EVR or ETR, or who had an HCV-RNA detectable in the 24th week after the end of the treatment were considered as failed SVR.

HCV treatment

Patients were treated with 1.5 mcg/kg of pegylated interferon alpha 2a or 2b administered subcutaneously once a week and 800-1200 mg of ribavirin per day, according to body weight for 24 (genotypes 2 and 3) or 48 (genotype 1) weeks. Patients who received 80% of peginterferon doses or more and 80% of ribavirin doses or more during ≥80% of the expected treatment period were considered as adherents to the treatment, according to the 80/80/80 rule[21]. Reasons for discontinuing treatment were adverse reaction to drugs and abandonment of treatment due to alcohol consumption. In the latter case, as patients had been advised not to drink during the treatment, they abandoned this treatment due to fear of adverse effects caused by the interaction between alcohol and antiviral drugs or to it being suspended by a physician.

Data analyses

Data were stored and analyzed in the Statistical Package for the Social Sciences software (SPSS, 2009, Chicago, IL, USA), version 17.0. Frequencies among the three groups were compared according to gender (male or female), ethnicity (black or non-black), HCV genotype (1 or 2-3), first HCV treatment (yes or no), viral load ($<10^6$ UI/mL or $\geq 10^6$ UI/mL), HIV-HCV coinfection (yes or no), presence of comorbidities (yes or no) and liver fibrosis stage (≤F2 or ≥F3), using the chi-square test or Fisher's exact test. Mean ages, body weight and body mass index (BMI) were compared among the three groups using Student's t-test. Crude odds ratios (OR) and their respective 95% confidence intervals (95% CI) were calculated directly from the frequencies observed to identify the association between the SVR frequencies (dependent variable) and the independent variables. The independent variables were as follows: gender (male or female), age (≤40 or >40 years), ethnicity (black or non-black), BMI (<24.9 or ≥24.9 kg/m^2), alcohol consumption (<60 g/day or ≥60 g/day), HIV-HCV coinfection (yes or no), genotype (1 or 2-3), pre-treatment viral load ($<10^6$ UI/mL or $\geq 10^6$ UI/mL), liver fibrosis stage (≤F2 or ≥F3), adherence to treatment (<80% or ≥80%) and re-treatment (yes or no). Additionally, the OR and their respective 95%CI were calculated to assess the associations between dependent variables (discontinuation of treatment and SVR) and independent variables [daily lifetime alcohol consumption (Groups 1, 2, and 3), period of abstinence before beginning the treatment (≥6 or <6 months) and alcohol consumption during treatment (yes or no)]. A P value ≤0.05 was considered to be significant.

Ethical issues

The present study was approved by the Institutional Research Ethics Committee, and a written consent was obtained from each patient.

RESULTS

A total of 121/146 (82.9%) patients were evaluated, of which 78 (64.5%) were men and 43 (35.5%) were women, aged between 28 and 70 years. The frequency of male patients was proportionally smaller in Group 1 and the frequencies of patients with a pre-treatment viral load $\geq 10^6$ UI/mL and HIV-HCV coinfection in Group 3 were proportionally greater than in Group 1. Among the three groups assessed, there were no significant differences in mean ages, body weight and BMI, in the frequencies of non-black ethnicity, for HCV genotype 1 infection, naïve patients and comorbidities (Table 1). The frequency of pre-treatment viral load $\geq 10^6$ UI/mL was similar (OR=1.80; 95%CI: 0.39-8.22) among Group 3 patients who had [12/22 (54.5%)] or had not [4/10 (40%)] been abstaining from alcohol for 6 months or more. Among patients who were not in alcohol abstinence for at least 6 months before the start of the hepatitis C treatment, 3/6 (50%) of Group 2 and 2/11(18.2%) of Group 3 did not drink during treatment. None of the patients had a positive serological test for HBsAg.

In the electronic records of the SRS-Uberlândia, it was possible to find results of liver biopsy of 114/121 (94.2%) patients. Among the patients who were abstinent throughout life (n=42), who consumed <60 g of ethanol/day (n=39) and who consu-

TABLE 1. Socio-demographic and clinical data of patients with chronic HCV infection according to different alcohol consumption patterns (n=121)

Variables	Group 1 (n=64)	Group 2 (n=20)	Group 3 (n=37)
	n (%)	n (%)	n (%)
Socio-demographic			
Age (mean ± SD; years)	50.4 ± 10.2	45.7 ± 7.5	46.8 ± 8.0
Sex (male)	28 (43.8[d])	16 (80[c])	34 (91.9[b])
Ethnicity (non-black)	57 (89)	19 (95)	34 (91.9)
Weight (mean ± SD; kg)	66.3 ± 14.2	74.8 ± 16.4	73.1 ± 14
BMI (mean ± SD; kg/m^2)	24.5 ± 4.1	25.5 ± 4.6	24.4 ± 4.1
HCV Genotype			
Genotype 1	47 (73.4)	15 (75)	31 (83.8)
Genotype 2 or 3	17 (26.6)	5 (25)	6 (16.2)
Naïve	45 (70.3)	17 (85)	30 (81.1)
Viral load ≥10^6 UI/mL[a]	15/55 (27.3[f])	5/17 (29.4)	16/32 (50[e])
Coinfection with HIV	7 (10.9[h])	4 (20)	12 (32.4[g])
Comorbidities			
Diabetes	9 (14.1)	2 (10)	1 (2.7)
Depression	3 (4.7)	0	3 (8.1)
Chronic renal failure	5 (7.8)	1 (5)	0

n (%): number of patients and percentage; SD: standard deviation; BMI: body mass index; HCV: hepatitis C virus; HIV: human immunodeficiency virus. Group 1: Alcohol consumption <12 g/day or abstinence. Group 2; Alcohol consumption between 12 and 59 g/day, and Group 3: Alcohol consumption ≥ 60 g/day. [a] Percentages calculated according to valid responses. P<0.01: b>d; c>d. P<0.05: e>f; g>h.

med ≥60 g/day (n=33), respectively, there was no significant difference (P>0.05) in the number of patients with liver fibrosis stage ≤F2 [24 (57.1%), 24 (61.5%) and 18 (54.5%)] or liver fibrosis stage ≥F3 [18 (42.8%), 15 (38.5%) and 15 (45.4%)].

Among all patients, those monoinfected with HCV and those coinfected with HIV (n=23), respectively, had similar frequencies (P>0.05) of viral load ≥10^6 UI/mL [30/87 (34.5%) and 6/17 (35.3%)], liver fibrosis stage ≥F3 [38/92 (41.3%) and 10/22 (45.4%)] and discontinuation of treatment [12/98 (12.2%) and 6/23 (26.1%)]. A total of 6/23 (26.1%) HIV-HCV coinfected patients discontinued their treatment, of which three (50%) were due to adverse effects from drugs and three others (50%) due to alcohol consumption during treatment. Among HIV-HCV coinfected patients, 21 (91.3%) were undergoing antiretroviral therapy.

Among the variables assessed, the analysis showed that only HIV coinfection and adherence <80% were significantly associated with a failed SVR (Table 2). Treatment discontinuation was associated with heavy lifetime alcohol consumption and, among Group 3 patients, with a period of abstinence shorter than 6 months before the beginning of the treatment and with alcohol consumption during treatment (Table 3).

There were no significant differences (P>0.05) in the frequencies of dose reduction in peginterferon and/or ribavirin among Group 1 [15/64 (23.4%)], Group 2 [3/20 (15%)] and Group 3 [10/37 (27%)]. Among all patients, discontinuation of treatment was more frequent (OR=11.53; 95%CI: 1.96-67.94) among those with a positive CAGE [4/21 (19%) vs 2/100 (2%)] and more frequent (OR=38.67; 95%CI: 4.95-302.23) among those with AUDIT scores suggesting harmful alcohol use or possible dependence [4/7 (57.1%) vs 2/60 (3.3%)].

The frequencies of SVR among Group 3 patients (12/27; 44.4%) were similar (P>0.05) to those in Group 1 [36/59 (61%)] and Group 2 [13/19 (68.4%)]. Among Group 2 and Group 3 patients, the frequencies of SVR were not associated with lifetime alcohol consumption, period of abstinence longer or shorter than 6 months before beginning the treatment or alcohol consumption during the treatment (Table 3).

TABLE 2. Bivariate analyses among the variables studied and sustained viral response (n=105)

Variables	SVR		OR (95%CI)
	n[a]	%	
Sex			
Male	36/66	54.5	1
Female	25/39	64.1	1.49 (0.66-3.36)
Age (years)			
> 40	48/82	58.5	1
≤ 40	13/23	56.5	0.92 (0.36-2.34)
Ethnicity			
Black	1/6	16.7	1
Non-black	60/99	60.6	4.66 (0.89-24.29)
BMI (kg/m^2)			
≥ 24.9	27/49	55.1	1
< 24.9	34/56	60.7	1.26 (0.58-2.74)
Alcoholic consumption			
≥ 60 g/day	12/27	44.4	1
< 60 g/day	49/78	62.8	2.11 (0.87-5.13)
HIV/HCV coinfection			
Yes	5/19	26.3	1
No	56/86	65.1	5.23 (1.72-15.91)[b]
Genotype			
1	45/81	55.6	1
2 and 3	16/24	66.7	1.60 (0.62-4.16)
Viral load (UI/mL)			
≥ 10^6	15/30	50	1
< 10^6	38/60	63.3	1.73 (0.71-4.20)
Fibrosis stage			
≥F3	22/44	50	1
≤F2	36/55	65.4	1.89 (0.84-4.26)
Adherence			
< 80%	12/31	38.7	1
≥ 80%	49/74	66.2	3.10 (1.30-7.40)[c]
Retreatment			
Yes	11/26	42.3	1
No	50/79	66.3	2.35 (0.95-5.80)

n (%): number of patients expressed in absolute value and percentage; SVR: sustained viral response; OR: odds ratios; 95%CI: 95% confidence interval; HIV: human immunodeficiency virus; BMI: body mass index. Group 1: Alcohol consumption <12 g/day or abstinence. Group 2: Alcohol consumption between 12 and 59 g/day, and Group 3: Alcohol consumption ≥60 g/day for 10 years or more. [a] Value did not reach the total number due to missing data. [b] P<0.01. [c] P<0.05.

TABLE 3. Frequency of discontinuation of treatment and sustained viral response according to alcohol use patterns

	Discontinuation		SVR	
	n (%)	OR (95%CI)	n (%)	OR (95%CI)
Lifetime alcohol consumption				
Group 1 (n=64)	6 (9.4)	1	36/59 (61.0)	2.0 (0.8-4.9)
Group 2 (n=20)	0	ND	13/19 (68.4)	2.7 (0.8-9.3)
Group 3 (n=37)	12 (32.4)	4.6 (1.6-13.8)[a]	12/27 (44.4)	1
Time of abstinence before treatment				
Group 2				
≥6 months (n=14)	0	-	8/13 (61.5)	P=0.60[c]
<6 months (n=6)	0	-	5/6 (83.3)	
Group 3				
≥6 months (n=26)	4 (15.4)	1	9/19 (47.4)	1.5 (0.3-8.1)
<6 months (n=11)	8 (72.7)	14.7 (2.7-80.4)[a]	3/8 (37.5)	1
Alcohol consumption during treatment				
Group 2				
No (n=17)	0	-	10/16 (62.5)	P=0.52[c]
Yes (n=3)	0	-	3/3 (100)	
Group 3				
No (n=28)	6 (21.4)	1	11/23 (47.8)	2.8 (0.2-30.5)
Yes (n=9)	6 (66.7)	7.3 (1.4-38.3)[b]	1/4 (25.0)	1

OR: crude odds ratio; SVR: sustained viral response; 95%CI: 95% confidence interval; ND: not determined. Group 1: Alcohol consumption <12 g/day or abstinence. Group 2; Alcohol consumption between 12 and 59 g/day, and Group 3: Alcohol consumption ≥60 g/day, for 10 years or more. [a] P≤0.01; [b] P<0.05; [c] Fisher's exact test.

A total of eight (6.6%) patients used marijuana before the treatment: two (1.6%) continued using it and abandoned the treatment due to alcohol consumption. Of all three (2.5%) patients who used cocaine before the treatment, one (0.8%) continued using it and abandoned the treatment; the other two completed their treatment. None of the patients used any other immunosuppressive drugs apart from alcohol.

DISCUSSION

The results of the present study corroborate those found in other studies that observed, among patients with heavy alcohol consumption, higher frequencies of high viral loads[17,28,33], and similar viral loads among alcoholic patients who had been or had not been abstinent for 6 months or longer before beginning the treatment for hepatitis C[25]. Among patients with chronic hepatitis C, more advanced stages of liver fibrosis[22] or severe liver disease[10] are associated with heavy lifetime alcohol consumption. In the present study there was no association between higher alcohol consumption and more advanced stage of liver fibrosis, which has also been observed in other studies[1,33]. However, the lack of such association in the present study may represent a time bias.

The frequencies of dose reduction in peginterferon/ribavirin were similar among patients of the three groups; in other words, alcoholic patients tolerated the drugs against hepatitis C as well as those who were not alcoholic. Discontinuation of treatment was more frequent among patients with heavy lifetime alcohol consumption, among those with positive CAGE or an AUDIT score indicating harmful alcohol use or possible dependence, among those who drank heavily during treatment, and among those who had not been abstinent for at least 6 months. Here, it is important to emphasize that recent studies found that when alcoholic patients are accompanied by multidisciplinary teams (hepatologists, addiction specialists, psychiatrists as well as psychosocial support professionals) they are more likely to conclude their treatments for hepatitis C[8,16].

HIV-HCV coinfected patients had frequencies of viral load ≥10^6 UI/mL, liver fibrosis stage and discontinuation of treatment similar to HCV monoinfected patients. In another studies, similar frequencies of viral loads[15] and of liver fibrosis stages[15,34] among HIV-HCV coinfected patients and HCV monoinfected patients were also found. However, other authors observed higher HCV viremia[6], and more severe liver disease[6,10] among HIV-HCV co-infected patients than in HCV monoinfected patients. Similar[35] or higher[18] frequencies of adherence to hepatitis C treatment among HIV-HCV coinfected patients were found in other studies.

Among the variables analyzed, it was observed that HIV-HCV coinfected patients and those with an adherence <80% were the ones who most frequently had a failed SVR. It is described that chronic HCV infection treatment with pegylated interferon plus ribavirin in HIV-HCV coinfected patients achieves lower cure rates than those obtained in patients with HCV monoinfection[19], and the adherence to the hepatitis C treatment is an important condition for achieving the SVR[18,30].

Older studies found that the interferon therapy for chronic hepatitis C was less effective in heavy drinkers than in non-drinkers[26], and that the adverse effect of heavy drinking on efficacy of interferon therapy might be partly reversed by abstinence for more than 6 months before the start of the treatment[25]. In the present study, heavy lifetime alcohol consumption per se did not significantly influence negatively the response to HCV treatment with peginterferon/ribavirin, which was also observed in other recent studies[8,29].

Patients with moderate alcohol consumption showed good adherence, did not discontinue their treatment and had good SVR rates, thus showing that there should be more concern about dis-

continuation of treatment among patients with a history of heavy alcohol consumption and/or with positive CAGE or an AUDIT score indicating harmful alcohol use or possible dependence.

It has been suggested that abstinence from alcohol for at least 6 months before beginning the treatment could reverse the histological hepatic changes produced by habitual heavy drinking and that improved by abstinence[25], and that abstinence of or moderation in alcohol intake reduce the viral load[9], which may increase the chances of response to HCV-treatment. However, it was also observed among heavy drinkers that 6 months of abstinence from alcohol may not be sufficient to offset the negative influence carried over by lifetime alcohol intake on the treatment with interferon[33]. In the present study, among patients who consumed ≥60 g of alcohol/day throughout life, the frequencies of SVR were similar among those who were or were not abstinent for at least 6 months before beginning the treatment, a result which is similar to that observed in another recent study among heavy drinkers[29]. Interestingly, the latter study showed that abstinence for less than 6 months before the treatment was associated with the lowest SVR rate only among moderate drinkers.

The negative influence of excessive alcohol consumption during the treatment on the SVR has been found in some studies[16,17]. In the present study, alcohol consumption during treatment was not significantly associated with a failed SVR, which has also been observed by other authors[5,8].

This study has several limitations. It was not possible to obtain data of all variables analyzed for all the patients included in this study, and this could have influenced the results and the statistical analysis. Additionally, there was no information about the patients undergoing re-treatment, in other words, whether they did not respond to previous treatments or were relapsing. The calculation of the amount of alcohol consumed throughout life required patients to recall their drinking habits and, consequently, memory bias cannot be entirely ignored.

In conclusion, in the present study it was observed that patients who consumed a moderate amount of alcohol showed good adherence to the treatment and good rates of SVR. Patients with a history of heavy alcohol consumption had frequencies of SVR similar to the patients who were abstinent or drank moderately. Among heavy alcohol drinkers who are not closely followed by a multidisciplinary team, such as in the present study, being abstinent for at least 6 months can be important to reduce the possibility of discontinuing the treatment; however, the opportunity to treat these patients may be missed. Postponing treatment can lead to worsening of liver disease, and patients with advanced liver fibrosis are more difficult to treat, mainly if they already have liver cirrhosis[32]. Although patients in this study had no used modern therapies for the treatment of hepatitis C (direct acting antiviral agents - DAAs), the results of the present study and of other studies[8,16] suggest that patients who continue to have a heavy alcoholic consumption must be encouraged to stop this habit, but they should not be systematically excluded from the treatment. Hepatitis C treatment with new drugs is expected to bring better results for alcoholic patients as well, which can be confirmed by future studies. Heavy drinkers should be closely monitored by a multi-professional team for counseling, guidance, support and motivation[8,16,29], so they can conclude their treatment, thus reducing the chances of liver complications.

ACKNOWLEDGEMENTS

Authors would like to thank Prof. Dr. Rogério de Melo Costa Pinto for his guidance on the statistical analyses.

Authors' contributions

Vieira-Castro ACM: conception and design; data collect; analysis and interpretation of the results; drafting the article; and final approval of the article. Oliveira LCM: conception and design; analysis and interpretation of the results; drafting the article; and final approval of the article.

Vieira-Castro ACM, Oliveira LCM. Impacto do consumo alcoólico entre pacientes em tratamento da hepatite C. Arq Gastroenterol. 2017;54(3):232-7.

RESUMO – Contexto – Estudos recentes têm questionado a recomendação de abstinência do álcool por pelo menos 6 meses para pacientes alcoolistas serem tratados para hepatite C. **Objetivo** – Este estudo objetivou avaliar o impacto do consumo de álcool entre pacientes submetidos ao tratamento para a hepatite C. **Métodos** – Neste estudo transversal, avaliou-se 121 pacientes [78 (64,5%) homens; 28-70 anos). Eles foram divididos em três grupos: pacientes que consumiam <12 g de etanol/dia na vida (Grupo 1); 12-59 g/dia (Grupo 2) e ≥60 g/dia (Grupo 3). Pacientes foram tratados com interferon-peguilado mais ribavirina. **Resultados** – Os três grupos não puderam ser distinguidos em relação à gravidade da fibrose hepática e das frequências de infecção pelo genótipo-1 do HCV. No Grupo 3, descontinuação do tratamento (32,4%) foi maior do que no Grupo 1 (9,4%) ou Grupo 2 (0%), foi maior entre pacientes que beberam durante o tratamento (66,7% vs 21,4%) e entre aqueles que não estavam em abstinência por pelo menos 6 meses (72,7% vs 15,4%). Pacientes do Grupo 2 tiveram boa aderência e não descontinuaram o tratamento. As frequências de resposta virológica sustentada entre pacientes do Grupo-3 (44,4%) foi semelhante àquelas do Grupo 1 (61%) e do Grupo 2 (68,4%). **Conclusão** – Bebedores pesados mais frequentemente descontinuaram o tratamento da hepatite C, mas aqueles que foram tratados tiveram aceitáveis taxas de resposta virológica sustentada. Esses resultados sugerem que bebedores pesados não deveriam ser sistematicamente excluídos do tratamento, mas sim serem monitorados para evitar beber e abandonar o tratamento, principalmente aqueles que não estão abstinentes por pelo menos 6 meses.

DESCRITORES – Alcoolismo. Cooperação do paciente. Hepatite C. Terapêutica.

REFERENCES

1. Anand BS, Currie S, Dieperink E, Bini EJ, Shen H, Ho SB, et al. Alcohol use and treatment of hepatitis C virus: results of a national multicenter study. Gastroenterology. 2006;130:1607-16.
2. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. AUDIT: The Alcohol Use Disorders Identification Test – Guidelines for use in primary health care. Second Edition, Geneva, World Health Organization. 2001.
3. Bedossa P, Poynard T. An algorithm for the grading of activity in chronic hepatitis C. The METAVIR Cooperative Study Group. Hepatology. 1996;24:289-93.
4. Bhattacharya R, Shuhart MC. Hepatitis C and alcohol. Interactions, outcomes, and implications. J Clin Gastroenterol. 2003;36:242-52.
5. Bruggmann P, Dampz M, Gerlach T, Kravecz L, Falcato L. Treatment outcome in relation to alcohol consumption during hepatitis C therapy: an analysis of the Swiss Hepatitis C Cohort Study. Drug Alcohol Depend. 2010;110:167-71.
6. Causse X, Payen JL, Izopet J, Babany G, Girardin MFSM. Does HIV-infection influence the response of chronic hepatitis C to interferon treatment? A French multicenter prospective study. French Multicenter Study Group. J Hepatol. 2000;32:1003-10.
7. Choi J. Oxidative stress, endogenous antioxidants, alcohol, and hepatitis C: pathogenic interactions and therapeutic considerations. Free Radic Biol Med. 2012;52:1135-50.
8. Costentin CE, Trabut JB, Mallet V, Darbeda S, Thépot V, Nalpas B, et al. Management of hepatitis C virus infection in heavy drinkers. Alcohol Alcohol. 2013;48:337-42.
9. Cromie SL, Jenkins PJ, Bowden DS, Dudley FJ. Chronic hepatitis C: effect of alcohol on hepatitic activity and viral titre. J Hepatol. 1996;25:821-6.
10. Delarocque-Astagneau E, Roudot-Thoraval F, Campèse C, Desenclos JC; Hepatitis C Surveillance System Steering Committee. Past excessive alcohol consumption: a major determinant of severe liver disease among newly referred hepatitis C virus infected patients in hepatology reference centers, France, 2001. Ann Epidemiol. 2005;15:551-7.
11. Ewing JA. Detecting alcoholism. The CAGE questionnaire. JAMA. 1984;252:1905-7.
12. Farias MS, Budni P, Ribeiro CM, Parisotto EB, Santos CEI, Dias JF, et al. Antioxidant supplementation attenuates oxidative stress in chronic hepatitis C patients. Gastroenterol Hepatol. 2012;35:386-94.
13. Fuster D, Sanvisens A, Bolao F, Serra I, Rivas I, Tor J, et al. Impact of hepatitis C virus infection on the risk of death of alcohol-dependent patients. J Viral Hepat. 2015;22:18-24.
14. Ghany MG, Strader DB, Thomas DL, Seeff LB; American Association for the Study of Liver Diseases. Diagnosis, management, and treatment of hepatitis C: an update. Hepatology. 2009;49:1335-74.
15. Gonvers JJ, Heim MH, Cavassini M, Müllhaupt B, Genné D, Bernasconi E, et al. Treatment of hepatitis C in HCV mono-infected and in HIV-HCV co-infected patients: an open-labelled comparison study. Swiss Med Wkly. 2010;140: w13055.
16. Le Lan C, Guillygomarc'h A, Danielou H, Le Dréau G, Lainé F, Védeilhié C, et al. A multi-disciplinary approach to treating hepatitis C with interferon and ribavirin in alcohol-dependent patients with ongoing abuse. J Hepatol. 2012;56:334-40.
17. Loguercio C, Di Pierro M, Di Marino MP, Federico A, Disalvo D, Crafa E, et al. Drinking habits of subjects with hepatitis C virus-related chronic liver disease: prevalence and effect on clinical, virological and pathological aspects. Alcohol Alcohol. 2000;35:296-301.
18. Lo Re V 3rd, Amorosa VK, Localio AR, O'Flynn R, Teal V, Dorey-Stein Z, et al. Adherence to hepatitis C virus therapy and early virologic outcomes. Clin Infect Dis. 2009;48:186-93.
19. Masferrer JM, Martínez-Rebollar M, Centeno ML. Tratamiento de la hepatitis por virus C en pacientes coinfectados por el virus de la inmunodeficiencia humana. Gastroenterol Hepatol. 2011;34:558-67.
20. McCartney EM, Beard MR. Impact of alcohol on hepatitis C virus replication and interferon signaling. World J Gastroenterol. 2010;16:1337-43.
21. McHutchison JG, Manns M, Patel K, Poynard T, Lindsay KL, Trepo C, et al. Adherence to combination therapy enhances sustained response in genotype-1–infected patients with chronic hepatitis C. Gastroenterology. 2002;123:1061-69.
22. Monto A, Patel K, Bostrom A, Pianko S, Pockros P, McHutchison JG, et al. Risks of a range of alcohol intake on hepatitis C-related fibrosis. Hepatology. 2004;39:826-34.
23. Mueller S, Millonig G, Seitz HK. Alcoholic liver disease and hepatitis C: a frequently underestimated combination. World J Gastroenterol. 2009;15:3462-71.
24. North CS, Sims O, Hong BA, Jain MK, Brown G, Lisker-Melman M, et al. An empirical study of alcohol consumption by patients considering HCV treatment. Am J Drug Alcohol Abuse. 2014;40:484-9.
25. Ohnishi K, Matsuo S, Matsutani K, Itahashi M, Kakihara K, Suzuki K, et al. Interferon therapy for chronic hepatitis C in habitual drinkers: comparison with chronic hepatitis C in infrequent drinkers. Am J Gastroenterol. 1996;91:1374-9.
26. Okazaki T, Yoshihara H, Suzuki K, Yamada Y, Tsujimura T, Kawano K, et al. Efficacy of interferon therapy in patients with chronic hepatitis C. Comparison between non-drinkers and drinkers. Scand J Gastroenterol. 1994;29:1039-43.
27. Oliveira LCM, Buso AG, Oliveira ATR, Arantes CA, Borges LV, Valente SRG. Prevalence of hepatitis B and hepatitis C markers in alcoholics with and without clinically evident hepatic cirrhosis. Rev Inst Med Trop São Paulo. 1999;41:69-73.
28. Oshita M, Hayashi N, Kasahara A, Hagiwara H, Mita E, Naito M, et al. Increased serum hepatitis C virus RNA levels among alcoholic patients with chronic hepatitis C. Hepatology. 1994;20:1115-20.
29. Russell M, Pauly MP, Moore CD, Chia C, Dorrell J, Cunanan RJ, et al. The impact of lifetime alcohol use on hepatitis C treatment outcomes in privately insured members of an integrated health care plan. Hepatology. 2012;56:1223-30.
30. Saiz de la Hoya P, Portilla J, Marco A, García-Guerrero J, Faraco I, Antón J, et al. Directly observed therapy for chronic hepatitis C: a randomized clinical trial in the prison setting. Gastroenterol Hepatol. 2014;37:443-51.
31. Seronello S, Montanez J, Presleigh K, Barlow M, Park SB, Choi J. Ethanol and reactive species increase basal sequence heterogeneity of hepatitis C virus and produce variants with reduced susceptibility to antivirals. PLoS One. 2011;6:e27436.
32. Silva GF, Villela-Nogueira CA, Mello CEB, Soares EC, Coelho HSM, Ferreira PRA, et al. Peginterferon plus ribavirin and sustained virological response rate in HCV-related advanced fibrosis: a real life study. Braz J Infect Dis. 2014;18:48-52.
33. Tabone M, Sidoli L, Laudi C, Pellegrino S, Rocca G, Della Monica P, et al. Alcohol abstinence does not offset the strong negative effect of lifetime alcohol consumption on the outcome of interferon therapy. J Viral Hepat. 2002;9:288-94.
34. Tovo CV, Becker SCC, Almeida PRL, Galperim B, Chaves S. Progression of liver fibrosis in monoinfected patients by hepatitis C virus and coinfected by HCV and human immunodeficiency virus. Arq Gastroenterol. 2013;50:19-22.
35. Weiss JJ, Bhatti L, Dieterich DT, Edlins BR, Fishbein DA, Goetz MB, et al. Hepatitis C patients' self-reported adherence to treatment with pegylated interferon and ribavirin. Aliment Pharmacol Ther. 2008;28:289-93.