

## CLINICAL AND LABORATORIAL CHARACTERISTICS OF THE LIVER IN AGED AND NON-AGED ALCOHOLICS

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**ABSTRACT:** The medical bibliography is deficient in research involving structural and laboratory abnormalities of the liver in asymptomatic and oligosymptomatic male alcoholics. The present study describes the alterations in tests that evaluate liver aggression, lesion and dysfunction, also correlating these with the changes in the consistency and sensitivity of the liver in aged and non-aged alcoholics. Cross-sectional study involving 100 alcoholic men, 50 aged and 50 non-aged. Of the aged and non-aged, respectively, the liver was palpable in 68% and 80%, the spleen was percutable in 72% and 74% and palpable in 12% and 22%, non-painful soft hepatomegaly was observed in 14% and 8%, painful hepatomegaly in 0% and 2%, firm hepatomegaly (painful and non-painful) in 54% and 70%, hepatomegaly and splenomegaly (percutable and palpable spleen) in 84% and 84%, and portal hypertension in 10% and 14%. Elevated levels of aspartate aminotransferase were observed in 66% and 84%, alanine aminotransferase in 24% and 60%, gamma glutamyl transferase in 46% and 82% and alkaline phosphatase in 0% and 16% of the aged and non-aged, respectively. Elevation of aspartate aminotransferase greater than twice the reference value and the ratio aspartate aminotransferase to alanine aminotransferase greater than 2 were observed in 18% and 42% and 18% and 10% of the aged and non-aged, respectively. Hypoalbuminemia and hyperbilirubinemia were observed in 70% and 24% of the aged and 40% and 44% of the non-aged, respectively. The clinical and laboratory alterations observed are compatible with acute liver disease in 18% and 42%; chronic liver disease in 54% and 70%; portal hypertension in 10% and 14% of aged and non-aged patients, respectively.

**KEY WORDS:** Alcoholics; Liver; Health Services for the Aged.

**Alcoholism. Alcoholics. Físical examination. Liver. Clinical Enzyme Tests. Health Services for the Aged**

### CARACTERÍSTICAS CLÍNICAS E LABORATORIAIS DO FÍGADO EM ALCOOLISTAS IDOSOS E NÃO IDOSOS

**RESUMO:** A bibliografia médica carece de pesquisas que envolvem anormalidades estruturais e laboratoriais do fígado em homens alcoolistas assintomáticos e oligossintomáticos. O presente estudo descreve as alterações de testes que avaliam a agressão, lesão e disfunção, correlacionando-as com as mudanças da consistência e sensibilidade do fígado em alcoolistas idosos e não idosos. Este estudo transversal envolve 100 homens alcoolistas, 50 idosos e 50 não idosos. Em idosos e não idosos, respectivamente, o fígado estava palpável em 68% e 80%, o baço estava percutível em 72% e 74% e palpável em 12% e 22%, hepatomegalia mole dolorosa foi observada em 14% e 8%, hepatomegalia mole não dolorosa em 0% e 2%, hepatomegalia firme (dolorosa e não dolorosa) em 54% e 70%, hepatomegalia e esplenomegalia (baço percutível e palpável) em 84% e 84% e hipertensão portal em 10% e 14%. Foram observados níveis elevados da aspartato aminotransferase em 66% e 84%, da alanino aminotransferase em 24%

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e 60%, da gamaglutamiltransferase em 46% e 82% e da fosfatase alcalina em 0% e 16% dos idosos e não idosos, respectivamente. Foi observada a elevação da aspartato aminotransferase maior que duas vezes o valor de referência e a relação aspartato aminotransferase sobre alanino aminotransferase maior que 2, em 18% e 42% e 18% e 10% dos idosos e não idosos, respectivamente. Hipoalbuminemia e hiperbilirrubinemia ocorreram em 70% e 24% dos idosos e 44% e 30% dos não idosos, respectivamente. As alterações clínicas e laboratoriais observadas são compatíveis com doença aguda do fígado em 18% e 42%, doença crônica do fígado em 54% e 70%, hipertensão portal em 10% e 14% dos pacientes idosos e não idosos, respectivamente.

**PALAVRAS-CHAVE:** Alcoólicos; Fígado; Serviços de Saúde para Idosos.

## INTRODUCTION

Some aspects and characters of alcoholism and of the alcoholics are universal while other may differ between groups in consequence of the interaction among factors that influence of each of the aspects of installation of the alcohol abuse habit. It becomes necessary, consequently, to compare individualized populations to enrich the analyses of the patterns of alcoholism and of the clinical and laboratory changes determined by chronic alcohol abuse. The World Health Organization (WHO) estimates that 2 billion people worldwide consume alcohol and that 76.3 million have alcohol-related illnesses<sup>1</sup>. In Brazil, 12% to 15% of adult males are dependent on alcohol<sup>2</sup> and the per capita consumption of alcoholic beverages has increased<sup>3,4</sup>.

The World Health Organization (WHO) classifies as aged, in developing countries, individuals higher than 60 years of age<sup>5</sup>. The fraction of aged in the Brazilian population has grown from 4.8% in 1991 to 5.8% in 2000 and 7.4% in 2010<sup>6</sup>. In a survey conducted by the Institute of Psychiatry of the Hospital of the Clinics of São Paulo, it was found that 9.1% of the aged individuals abused alcohol and, in Brazil the rate of alcoholism among aged men is about 20%<sup>3</sup>. It is known that there are differences in the patterns of alcoholism according to the age segments, especially between the aged and non-aged groups<sup>7</sup>.

Workers in Brazilian institutions dedicated to the care of abusers of alcohol have observed an increase in

the prevalence of alcohol dependency among the aged, the reasons for this being varied<sup>8</sup>. While the aged present lower rates of problems related to alcoholism than the young, around 6% to 11% of aged patients admitted in hospitals show manifestations of alcohol dependency. In the rest home the rates of alcoholism rise to 49%<sup>9</sup>. The significant increase in lifetime expectancy among Brazilians is accompanied by a proportional rise in the need for care of aged alcoholics. It is observed that individuals, in the 'third age', which already consumed alcohol at younger ages increased the consumption, as well as others that did not use to consume it, engaged in the regular consumption. It is admitted that the main triggers for the initiation or the increase in alcohol usage would be the installation of loneliness and of inactivity regimes, depressive mood and the sensations of losses and abandonment<sup>3</sup>. The pleasure or the absence of displeasure propitiated by some alcohol usage regimes would be motive forces to induce and install the habit of searching for alcohol or psychoactive drugs<sup>10</sup>.

It is presently established that alcohol is the most important factor, together with nutritional deficiencies following low food ingestion and inadequate uptake and metabolism of nutrients, in causing the various structural, functional and metabolic liver alterations<sup>11-14</sup>.

It is most common in studies evaluating the clinical and laboratorial disturbances occurring in chronic alcoholics the utilization of patient samples with exuberant clinical manifestations. Studies are scarce involving patients in stages where the clinical manifestations are absent or very discrete.

We are living a period in medicine where technology infiltrates the most varied aspects of medical science and it is important to rescue the medical semiotic arts and discuss the problems that occur when searching for diagnoses through laboratory and imaging examinations to the detriment of clinical examination. The present study describes the alterations in tests that evaluate liver aggression, lesion and dysfunction, also correlating these with the changes in the consistency and sensitivity of the liver.

## MATERIAL AND METHODS

### I – PATIENT GROUPS

In this cross-sectional observational analytical study the patients were forwarded from the First Attendance and Screening Center of the city clinics hospital. They were submitted to medical exams and considered apt for psychiatric treatment under hospital admittance regime (Hospital Espírita de Marília – HEM).

Two groups were completed in the period between January 2014 – July 2015, 50 in each of the aged and non-aged.

At admittance, patients answered questions in a structured form sheet (available upon request) dedicated to the collection of demographic, psychiatric and clinical data, plus the alcoholism pattern. They were submitted to clinical examination, always by the same physician and inside the first 24 hours from hospitalization.

A blood sample was collected from a vein of an upper member for determination of laboratory parameters. Patients were inside the first 24 hours of internship and under at least 8 hours fast. Exams included: hemogram (hematimetric), aspartate and alanine aminotransferases (automated kinetic-UV), Total bilirubin and fractions (colorimetric), gamma glutamyl transferase (enzimatic), alkaline phosphatase (enzimatic), total and fractions of proteins (colorimetric), serum amylase (enzimatic), blood glucose (enzymatic, colorimetric) and immunologic markers of hepatitis B (HBsAg) and C (antibody anti-HCV) viruses of human immunodeficiency virus (antibody anti-HIV) by (HBsAG, AntiHCV e AntiHIV by AntiHBs, AntiHCV and AntiHIV G2EleysysE2G300, Roche), and syphilis serology (flocculation - Venereal Disease Research Laboratory).

Coproparasitologic examinations were negative for *Schistosoma mansoni* eggs.

The nutritional status of the patients was evaluated through the Quetelet index of Weight in Kg / Height in meters<sup>2,15</sup>. The amount of alcohol ingested (in grams, g) per day was calculated through the equation: daily volume of the distilled drink taken in (milliliters, ml) x percent (%) of alcohol in the drink x density of alcohol (0.8) / 100. The amount of alcohol in 100 ml of

the Brazilian sugarcane liquor varies between 40 and 43 grams<sup>16</sup>.

The patients included were alcoholics older than 18 years, satisfying the alcoholism criteria of the International Disease Code (CID 10). Patients not satisfying one of the following criteria were excluded: not consenting to participate, not having complete documentation, presenting indications of mental deficiency, showing *delirium tremens*, with manifestations considered as indicators of cardiac, hepatic or renal insufficiency, using illicit drugs or medications that can modify the values of the variables under study.

Patients were duly informed on the objectives of the study and gave their consent for participating in it through filling and signing the Term of Free and Clarified Consent (TFCC). Privacy with respect to names and confidentiality were guaranteed to them, as well as all the norms of the Helsinki Declaration. This study was approved by the Ethics Committee, CAAE: 27564714.1.0000.5413 – Opinion substantiated of CEP: 626.044 (Faculdade de Medicina de Marília – SP).

Continuous variables were presented as averages and standard deviation. Statistical comparisons utilized the chi-squared and the Student t-test, at the 5% significance level.

## RESULTS

Average age of patients in the aged group was 64.7 years and in the non-aged group was 47 years; this mode of preparing the groups promoted statistical significance ( $p = 0.001$ ). Correlated data were the higher prevalence of patients with a job among the non-aged ( $p = 0.006$ ), the higher prevalence of retired in the aged ( $p = 0.001$ ), and the higher average salary among the non-aged ( $p = 0.023$ ) (Table 1).

The difference between average ages of starting alcohol usage in the groups was not significant. Average duration of alcohol consumption was higher among the aged ( $p = 0.001$ ) while the daily amount consumed was higher in the non-aged ( $p = 0.001$ ). There was a trend towards reducing the amount of alcohol consumed per day with age inside the aged group. Starting from 40 years of consumption, there was a reduction of the amounts

consumed in both groups (equally  $p = 0.04$ ). Prevalence of tobacco smoking was similar in both groups (Table 2).

When the palpated liver was painless, either soft or firm, the duration of consumption was higher among the aged ( $p = 0.001$  in both cases). The duration of consumption was higher among the aged in all cases where the liver was soft and painless, firm and painless, or non-palpable ( $p = 0.001$  for all comparisons). The daily consumption was higher among the non-aged when the liver was non-palpable ( $p = 0.022$ ) and when the liver was firm and painless ( $p = 0.001$ ). Prevalence of firm and painless liver was higher than all other categories of liver palpation states in both groups (equally  $p = 0.001$ ). (Table 3)

Prevalence of palpable and enlarged as measured-by-percussion spleen, and the palpation characters of organ did not show differences between the groups. The rates of hepatosplenomegaly, including the palpable and measured-by-percussion spleen, were similar in the groups, as well as the association between firm liver and spleen, which are suggestive of portal vein hypertension (Table 4).

Average albumin level was lower than the reference value in both groups ( $p = 0.001$ ) but the rate of hypoalbuminemia was lower among the aged than the non-aged ( $p = 0.001$ ). Average globulin value was above the normal limit in both groups but significantly so only among the aged ( $p = 0.019$ ).

Average values of aspartate aminotransferase (AST) activities were elevated in both groups, reaching significance in the non-aged group ( $p = 0.008$ ). Average values of alanine aminotransferase (ALT) were elevated only in the non-aged group, the difference being significant ( $p = 0.004$ ). The rates of elevated aspartate aminotransferase did not differ between groups while the rate of elevated alanine aminotransferase was higher in the non-aged group ( $p = 0.005$ ). The rate of AST higher than twice the normal upper limit was higher among the non-aged ( $p = 0.027$ ); individuals with this condition were 58% in the group. There was no difference in the rate of the elevated ( $>2$ ) AST/ALT ratio between the groups, the individuals with that condition being 28% in the total sample (18% in the aged, 10% in the non-aged).

Average alkaline phosphatase levels were in the

normal range in both groups but, comparing the two groups, both the average value and the rate of elevated values were higher in the non-aged group ( $p = 0.001$  and  $p = 0.024$ , respectively). Average values of gamma glutamyl transferase were higher than normal in both groups ( $p = 0.004$ ), but the rate of elevations was higher in the non-aged group ( $p = 0.001$ ). Association of elevated rates of alkaline phosphatase and gamma glutamyl transferase occurred significantly among the non-aged patients ( $p = 0.035$ ).

There was no significant difference in the prevalence of elevated serum amylase among the aged (2%) and non-aged (12%). Average amylase values were in the normal range but the levels were higher among the non-aged ( $p = 0.003$ ). (Table 5)

The rates of appearance of lowered serum albumin (below 3.5 g %) were higher when the liver was palpable than non-palpable, in both groups (aged  $p = 0.04$ , non-aged  $p = 0.002$ ). The rate of hypoalbuminemia was higher when the palpated liver was firm and painless ( $p = 0.002$ ). The prevalence of elevated total bilirubin was higher when the liver was palpable than non-palpable, the difference showing up only among the non-aged ( $p = 0.03$ ) (Table 6)

The frequencies of positive serologic reactions for hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and syphilis were similar in both groups, as well as the frequency of tattooed patients (Table 7).

## DISCUSSION

It is common that the alcoholic does not get fed adequately due to the caloric value of alcohol. The quantity of calories in the drinks are enough to substitute an important fraction of what should be derived from the dietary components, leading to the reduction of the necessity of ingesting food<sup>17</sup>. Inadequate ingestion of proteins and other nutrients is an important factor in the generation of liver lesion<sup>14</sup>. Concomitantly, hepatocyte lesion is accompanied by reduction in the synthesis of proteins and other substances.<sup>11</sup> The outcome is the establishment of a vicious cycle where liver dysfunction is accentuated.

In countries in development, especially among the less favored economic strata, undernourishment is a relatively common occurrence, independently from alcoholism, to the point of not making observable some statistically significant difference in the degrees of undernourishment between alcoholics and non-alcoholics<sup>18</sup>. A possible explanation for such observation would be that the malnutrition does not show up more intensely among alcoholics in consequence of their frequent hospitalizations motivated by a greater frequency of alcoholic intoxication due to a reduction of the metabolic tolerance<sup>7,19</sup>. During the periods of hospitalization there is an interruption of alcohol consumption, improvement in quality and quantity of feeding and correction in vitamin deficiencies, which allow for recovery of nutritional deficiencies of many patients. The nutritional condition of patients in this study was considered good to regular in 100% to 86% of them, in the respective groups of aged and non-aged<sup>15</sup>. The average values of the Body Mass Index were located inside the healthy category. Only 10% of the aged and 4% of the non-aged were underweight.

It is inside the socioeconomically less privileged strata of populations that the most intense and more widespread rates of alcoholism are observed<sup>20</sup>. According to this, patients forming our study groups belonged to the strata D (29%) and E (71%), with low income and school attendance rate. Some studies question the influence of school attendance effects. It is admitted that some of these inconsistencies would reflect systematic biases that are common in field studies and may be intensified according to the kinds of populations studied<sup>21</sup>.

The most commonly cited risk factors for liver alcoholic disease are age, age at starting the use, duration of the usage, pattern of drinking, gender, obesity, dietary and genetic factors, tobacco smoking habit<sup>22</sup>. With respect to age, in Brazil, there is a new demographic pattern transforming the age structure with a significant increase in the aged component, but it is possible that there might be local or temporal fluctuations in this trend<sup>23</sup>. The number of aged patients admitted into the psychiatric hospital where our study was installed has not varied significantly in the last 5 years<sup>24</sup>.

The age at the start of alcohol usage was similar

in the aged and non-aged groups. As expected, the average duration of the consumption was longer among the aged. The average daily consumption of alcohol was higher among the non-aged. In both groups, after 39 years of the habit, there was a trend towards reduction of the daily consumption. This reduction in consumption, also described by Parry<sup>19</sup>, had already been observed in a previous study carried out with patients hospitalized at the same hospital<sup>24</sup>. It suggests a reduction in alcohol tolerance due to the involvement of operant and classical conditions (Pavlovian) and interactions between neurotransmitter systems<sup>25</sup>. It could also be related to clinical conditions, physical symptoms, medication use and marked liver functional change, which is not the case of the aged in this study. In a longitudinal study conducted in the United States of America (USA), it was verified that the decline in heavy alcohol use with the age was not associated with cohort effects<sup>26</sup>.

In studies involving patients with clinical characters similar to the chronic alcoholics in this, it was observed that 82% of the patients presented histologic alterations<sup>27</sup> while evidence of necrosis or fibrosis were present in 40%-50% of them.<sup>28,29</sup> Liver histologic lesions of steatosis, hepatitis or cirrhosis may be associated in the same individual with variable intensities; furthermore, any one of them, in isolation or in association, may cause metabolic alteration via liver dysfunction<sup>14</sup>. On another side, it should be considered that alcoholics, even with minimal liver damage, may present abnormalities in pancreatic function, with reduction in enzyme production and consequent disturbance in digestion and absorption of nutrients<sup>30</sup>.

Considering that liver biopsy in asymptomatic or oligosymptomatic alcoholics, besides involving ethical problems, does not find receptivity by patients who do not consider themselves sick, the characterization of the type of liver lesion was limited to the palpation characteristics of the liver. Increases in liver dimensions may occur in the absence of liver lesion, as well as it may occur that a damaged liver may not be palpable. A diminished consistency of the liver at palpation (soft liver) is observed in acute congestion, fatty infiltration and in acute inflammatory processes. An accentuated consistency (firm liver, not necessarily hard) occurs in

processes that determine liver fibrosis. A painful liver is related to the presence of inflammatory process, usually acute<sup>31-33</sup>. Presence of splenomegaly was evaluated by both palpation and percussion, according to the procedure of Battlo et al.<sup>31</sup> In the alcoholic, the soft spleen may result from acute alcoholic hepatitis, while the firm spleen appears when portal hypertension is installed<sup>31</sup>.

It should be considered that the hepatic alterations representative of steatosis, inflammation and fibrosis are not mutually exclusive and some of them may overlap, occurring in different degrees of intensity and simultaneously in the same patient.<sup>34</sup> Correlations have been found between histopathology and hepatic semiology<sup>35,36</sup>, serum biochemistry<sup>10,36,37</sup> and associations of clinical and biochemical data<sup>11,36,38</sup>, and the clinical, biochemical and diagnostic data associations<sup>39,40</sup>.

In studies with liver histopathology, 25%-35% of chronic alcoholics with mild or no clinical manifestation of hepatopathy were considered free of liver disease<sup>27,41</sup>. In the present study, the liver was not palpable in 32% and 20% of the elderly and non-elderly patients, respectively.

Some degree of liver steatosis is present in about 90% of alcoholics<sup>28, 38</sup>. The sample in our study showed soft liver, painful or not, which are characters of fatty liver, with or without inflammation, in 24% of patients, distributed in the aged (14%) and non-aged (10%). This frequency is close to the 20% of Mann<sup>42</sup> and 28% of Nakamura<sup>43</sup>, above that observed by Brunt (9%)<sup>44</sup> and Green (11%)<sup>45</sup> and far below Mezey<sup>17</sup> (56%) and Harinasuta<sup>46</sup> (61%). The large variation in the prevalence of steatosis between studies may have come from the nutritional state of the individuals in the samples, the degree and duration of the habit, plus constitutional and other environmental factors. In the present study, some bias might have been introduced together with the age selection in the composition of the sample.

Alcoholic hepatitis usually follows the sudden increase in daily intake by the alcoholic, which lasts for some time. In asymptomatic or oligosymptomatic alcoholics, the prevalence of acute hepatitis ranged from 13.5%<sup>43</sup>, 24.5%<sup>45</sup> and 38.9%<sup>46</sup>. According to Schenker<sup>29</sup>, the prevalence of acute hepatitis in alcoholics varied from 8% to 63% in previous studies. Indicators of probable acute inflammation are soft and painful hepatomegaly together

with elevation of AST (aspartate aminotransferase) at 2 to 6-fold the upper normal limit<sup>22,38,39</sup>. In our study, the AST elevation to 2-fold or higher than the reference value was observed in 12% of the aged and 28% of the non-aged, totaling 40% of the patients that, with a high probability, were under acute hepatitis at the time of examination. Other study indicated that a further 40% fraction of the acute hepatitis patients would develop cirrhosis if they continue with the heavy alcohol drinking<sup>42</sup>.

In Brazil, between 12% and 30% of alcoholics develop cirrhosis.<sup>47</sup> When the liver cirrhosis state is reached, the AST/ALT ratio becomes lower than 2 in consequence of greater elevation of ALT<sup>12,13</sup>. In our sample there was a high proportion of the ratio AST/ALT lower than 2. Firm hepatomegaly, painful or not, which indicates liver fibrosis occurred in 54% of the aged and in 70% of the non-aged (average 62%). The 5 year survival rate of cirrhotic individuals that stop drinking is 90%, compared to 70% among those that continue drinking<sup>48</sup>. In the last stages of the progression of the cirrhotic state, when icterus, ascites or gastrointestinal hemorrhage enter the picture, the survival rate becomes 60% among those stopping the drinking and only 35% among those continuing the habit<sup>42</sup>.

The combination of elevated total bilirubin, alkaline phosphatase and gammaglutamyltransferase (GGT), which is suggestive of cholestasis, was observed only among the non-aged patients (8%). No references were found in the literature on the prevalence of cholestasis in alcoholic liver disease.

It is highlighted that we were careful to exclude the possibility that alterations of liver enzymes, especially the aminotransferases, would have been due to comorbidities such as overweight and obesity, dyslipidemia, non-alcoholic steatohepatitis, infection by hepatitis B or C, syphilis, congestive cardiac insufficiency, anemia or the use of medicines or illicit drugs.

Different rates of hypoalbuminemia and hyperbilirubinemia were observed in both groups, independently of the presence or absence of hepatomegaly. The observation indicates that liver function is already compromised when the organ is not yet palpable. Greater frequency of hypoalbuminemia occurred when the organ was firm and not painful, indicating that fibrosis-settling factors are correlated with albumin synthesis-impairing factors.

Hepatomegaly individuals presented hyperbilirubinemia rates higher than those with a non-palpable liver. This is one more indication that liver dysfunction was already present before the liver becomes palpable. Advancing further, it was seen that hepatosplenomegaly, expressed as the firm and not painful characteristics of both liver and spleen, was observed in 10% of the aged and 14% of the non-aged, which is suggestive of the development of portal venous system hypertension in consequence of the liver fibrosis.

In view of the impossibility, for various reasons already pointed at above, of practicing liver biopsies in the sampled individuals, this observation acquires clinical significance, especially under the evidence of the possibility that fibrosis can be reversible when the patient is still pre-cirrhotic and engages in complete alcohol abstinence<sup>48</sup>.

It was thought for a long time that the metabolic alterations accompanying alcoholism originated from inadequate ingestion or from disturbed digestion or absorption of nutrients. Even the liver lesions have been attributed to nutritional deficiencies. The situation is now established that the metabolic alterations that follow abusive usage of alcoholic beverages are determined mainly by the hepatotoxicity of ethanol<sup>14</sup>.

In acute hepatitis, except in very intense or prolonged forms, the levels of plasma proteins either do not vary or vary with small expressiveness. In chronic hepatitis and cirrhosis, in parallel with the intensification of the cellular structural damage, the trend is for decreases in the albumin levels and increase in the globulins, so that the albumin/globulin ratio is inverted from the normal, growing to  $>1$  values<sup>49</sup>.

Patients in this study with low albumin levels were 70% among the aged and 44% among the non-aged. Considering that only 10% of the aged and, 4% of the non-aged were underweight, and that there were no significant differences between the two groups with respect to the palpation characters of liver and spleen, which could be suggestive of chronic liver lesion, we are left with the conjecture that the albumin alteration in the two groups are consequent to dietary problems and not to liver synthesis dysfunction.

In this study, serum amylase elevation, suggestive of pancreatic aggression, was observed in 2% of the aged and in 12% of non-aged, and the association of hyperamylasemia and hyperglycemia was observed in 2% of patients in both groups. The influence of pancreatic impairment on patients' nutritional status requires more precise evaluation.

The frequencies of positive serological reactions for hepatitis B and C, HIV and syphilis were similar in both groups. No information on the frequency of hepatitis B, C and HIV and, tattooed in alcoholics was found in the Brazilian studies. Regarding syphilis, the positive reaction rate observed in 200 alcoholics admitted to the same hospital (Hospital Espírita de Marília) where this study was performed was 6.3%, similar to the rate of the aged and lower than that of the non-aged<sup>50</sup>. The frequency of tattooed patients is of interest to the physician since it may be parenteral route of entry for hepatitis B and C virus.

## CONCLUSION

The clinical and laboratorial alterations observed are compatible with acute liver disease in 18% and 42%, chronic liver disease in 54% and 70% and portal hypertension in 10% and 14% of the aged and non-aged patients, respectively.

This study contributed with mainly some baseline clinical data, mainly due to the sample characteristics, of male adults and male aged with scarce symptoms and signs, admitted into a psychiatric hospital for treatment of intoxication episodes. It is expected that the question form we developed for collection and examination of the clinical and laboratory data will be found useful for further studies in other samples.

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**Table 1.** Demographic aspects of aged and non-aged alcoholics admitted to the Hospital Espírita de Marília – HEM from 01/2014 to 07/2015

	Aged	Non-aged	p
	≥ 60 years	< 60 years	
<b>Number of patients</b>	<b>50</b>	<b>50</b>	
Average age	64,7±5,3	47,0±9,9	<b>0,001</b>
<b>Civil status</b>			
Married	17 (34%)	8 (16%)	0,060
Single	11 (22%)	18 (36%)	0,186
Separated	6 (12%)	11 (22%)	0,286
Divorced	5 (10%)	4 (8%)	1,001
Legally separated	4 (8%)	1 (2%)	0,362
Living together	2 (4%)	7 (14%)	0,159
Widower	5 (10%)	1 (2%)	0,204
<b>Skin color</b>			
White	35 (70%)	31 (62%)	0,526
Brown	10 (20%)	15 (30%)	0,355
Black	5 (10%)	4 (8%)	1,001
<b>General condition</b>			
Good	34 (68%)	40 (80%)	0,254
Regular	16 (32%)	3 (6%)	0,101
Bad	-	2 (4%)	-
<b>Body Mass Index</b>			
Average	23,0 ± 3,1	22,7 ± 3,7	0,651
Underweight	5 (10%)	2 (4%)	0,436
Healthy	29 (58%)	35 (62%)	0,297
Overweight	15 (30%)	10 (20%)	0,355
Obese	1 (2%)	3 (6%)	0,617
<b>Social class</b>			
A and B	-	-	-
C	-	2 (4%)	-
D	4 (8%)	9 (18%)	0,234
E	46 (92%)	39 (78%)	0,090
<b>Labor activity</b>			
Yes	25 (50%)	42 (69%)	<b>0,006</b>
Retired	23 (46%)	1 (4%)	<b>0,001</b>
No	2 (14%)	5 (5%)	0,436
Pension (ISS)	0 -	2 (8%)	0,494
Average income (Brazilian R\$)	747±413	1082 ± 943	<b>0,023</b>

**Table 2.** Pattern of alcoholism of aged and non-aged patients admitted to the Hospital Espírita de Marília – HEM from 01/2014 to 07/2015

	Aged	Non-aged	p
	≥ 60 years	< 60 years	
<b>Number of patients</b>	<b>50</b>	<b>50</b>	
Average age at beginning of usage	21,3±9,5	20,4 ± 8,7	0,622
Average duration of consumption (years)	43,3±10,0	23,6± 10,7	<b>0,001</b>
Daily consumption (grams)	503±390	853 ± 618	<b>0,001</b>
<b>Age range (years) and consumption (grams)</b>			
20 to 29	-	2 1080 ± 1301	
30 to 39	-	11 1017 ± 854	
40 to 49	-	23 912 ± 474	
50 to 59	-	14 820 ± 486 *	
60 to 69	42 504 ± 339 *	-	<b>0,070</b>
70 to 80	8 283 ± 169 *	-	<b>0,004</b>
<b>Duration of consumption (years) and daily consumption (grams)</b>			
< 10	1 300 ± 0	5 952 ± 915	-
10 to 19	0 -	13 722 ± 539	-
20 to 29	3 567 ± 379	15 909 ± 641	0,202
30 to 39	5 682 ± 552	13 1178 ± 446	0,582
40 to 49	29 462 ± 309	4 675 ± 207 *	<b>0,040</b>
50 to 59	10 402 ± 265 *	-	<b>0,001</b>
60 to 63	2 456 ± 260 *	-	<b>0,040</b>
<b>Tobacco smoking</b>			
Yes	31 62%	39 78%	0,126
No	19 38%	11 22%	0,126

\* Statistical comparison between cells.

The medians were 22 years and 25 years for aged and non-aged, respectively.

**Table 3.** Consistency and sensitivity of the liver related to the pattern of alcoholism of aged and non-aged alcoholics

	Aged			Non-aged			p	p
	≥ 60 years			≤ 60 years				
	n.	Duration	Daily use	n.	Duration	Daily use		
	50	of use	(g)	50	Of use	(g)		
		(Years)			(Years)		(Time)	(Daily)
Liver palpable	34 (68%)*	43±2	460±114	40 (80%)*	24±2	650±790	<b>0.001</b>	<b>0.001</b>
Liver not palpable	16 (32%)**	43±15	431±394 <sup>e</sup>	10 (20%)**	23±11	892±569 <sup>e</sup>	<b>0.001</b>	<b>0.022</b>
<b>Liver palpable</b>								
Soft not painful	7 (14%)	43±4	555±439	4 (8%)	22±9	572±427	<b>0.001</b>	<b>0.001</b>
Soft painful	-	-	-	1 (2%)	27±0	600±0	-	-
Firm not painful	25 (50%) <sup>¶</sup>	44±8	334±176	25 (50%) <sup>¶</sup>	23±11	683±447	<b>0.001</b>	<b>0.001</b>
Firm painful	2 (4%)	41±1	492±170	10 (20%)	22±13	745±475	0.075	0.485

In both groups, the number of patients with palpable liver\* was significantly higher than those with not palpable liver\*\* (p: 0.001). In both groups, the prevalence of firm and not-painful liver was significantly higher than other characteristics of consistency and sensitivity of the liver. The amount of alcohol ingested by the non-aged group was significantly higher when the liver was not palpable<sup>e</sup> (p: 0.010)

**Table 4.** Splenomegaly in aged and non-aged alcoholics

	Aged	Non-Aged	p
	n. 50	n. 50	
Spleen palpable	6 (12%)	11 (22%)	0.287
Soft not painful	1 (2%)	3 (6%)	0.617
Firm not painful	5 (5%)	7 (14%)	0.758
Spleen percutable	36 (72%)	37 (74%)	1.000
Splenomegaly* with hepatomegaly	42 (84%)	48 (84%)	0.095
Portal hypertension **	5 (10%)	7 (14%)	0.758

\* Spleen percutable and palpable. \*\* Spleen palpable

**Table 5.** Laboratorial aspects of aged and non-aged alcoholics

	Idosos	Não-Idosos	p
	≥ 60 anos	< 60 anos	
<b>Total proteins (6.5 to 8.0 g%)</b>	6.6 ± 0.6	6.3 ± 0.36	1.001
Albumin (3.5 to 4.8 g%)	3.3 ± 0.3	3.4 ± 0.3	<b>0.001</b>
<b>Low</b>	35 (70%)	20 (40%)	<b>0.001</b>
Globulin (2.0 to 3.0 g%)	3.27 ± 0.44	3.07 ± 0.37	<b>0.019</b>
<b>High</b>	32 (64%)	27 (52%)	<b>0.311</b>
<b>Total bilirubin (up 1.2 mg%)</b>	1.05 ± 0.52	1.11 ± 0.56	0.581
<b>High</b>	12 (24%)	15 (30%)	0.652
Aspartate aminotransferase - AST (≤ 37 U/L)	56 ± 38	99 ± 105	<b>0.008</b>
<b>High</b>	33 (66%)	42 (84%)	0.065
AST > 74 (2 VR)	9 (18%)	21 (42%)	<b>0.027</b>
AST > 74 and palpable liver	6 (12%)	14 (28%)	0.080
Soft and painless liver	1 (2%)	2 (4%)	1.001
Soft and painful liver	-	-	-
Firm and painless liver	4 (8%)	7 (14%)	0.522
Firm and painful liver	1 (2%)	5 (10%)	0.204
Liver not palpable	3 (6%)	6 (12%)	0.486
Alanine aminotransferase - ALT (≤ 42 U/L)	41.9 ± 37.2	80.0 ± 80.7	<b>0.004</b>
<b>High</b>	1 (24%)	30 (60%)	<b>0.005</b>
AST/ALT > 2	9 (18%)	5 (10%)	0.387
Alcaline phosphatase – AP (≤ 270 U/L)	69.7 ± 68.6	200.8 ± 66.0	<b>0.001</b>
<b>High</b>	0 -	6 (16%)	<b>0.024</b>
Gamaglutamyltransferase – GGT (11 to 50 U/L)	128.0 ± 184	256 ± 245	<b>0.004</b>
<b>High</b>	23 (46%)	41 (82%)	<b>0.001</b>
AP > 270 U/L and GGT > 50 U/L	0 -	6 (12%)	<b>0.035</b>
Amylasemia (60 a 160 UA%)	106.0 ± 23	129.4 ± 34.4	<b>0.003</b>
<b>High</b>	1 (2%)	6 (12%)	0.117
Amylase > 150 U/L and Blood glucose > 99mg%	1 (2%)	1 (2%)	1.001

**Tabela 6.** Consistency and sensitivity of the liver in relation to the liver function tests in aged and non-aged alcoholics

	Aged #		Non-aged ##		p	Albumin	Bilirubin
	≥ 60 years		< 60 years				
	n. 50		n. 50	Σ			
	Albumin	Bilirubin	Albumin	Bilirubin			
	≤ 3.5 g%	> 1.2 mg%	≤ 3.5 mg%	> 1.2 mg%			
Liver palpable	23 (46%) *	7 (14%) <sup>ε</sup>	18 (36%) *	12 (24%) <sup>ε</sup>	0.416		0.300
Liver not palpable	12 (24%)	5 (10%)	4 (8%)	3 (6%)	0.056		1.000
Total	35 (70%)	12 (24%)	22 (44%)	15 (30%)	<b>0.026 #</b>		<b>0.683 #</b>
					<b>0.001 ##</b>		<b>0.003 ##</b>
Consistence and Sensitivity of the liver							
Soft not painful	4 (8%)	1 (2%)	1 (2%)	1 (2%)	0.504		0.714
Soft painful	-	-	1 (2%)	1 (2%)	-		-
Firm not painful	18 (36%) **	5 (10%)	13 (26%) **	7 (14%)	0.002		0.002
Firm painful	1 (2%)	1 (2%)	3 (6%)	3 (6%)	0.430		0.976

# Aged ## Non-aged Σ Total bilirubin p Albumin p Bilirubin

In both groups, the prevalence of hypoalbuminemia was significantly higher when the liver was palpable \* than non-palpable (p: 0.026 and 0.001, respectively). The prevalence of significantly elevated bilirubin only occurred among patients with palpable liver of the non-aged group (p = 0.003). In both groups, the prevalence of firm not painful liver \*\* was significantly higher than the other characteristics of consistence and sensitivity hepatic

**Table 7.** Serologic conditions and prevalence of tattooing in the aged and non-aged alcoholics

	Aged	Non-aged
	50	50
Hepatitis B virus surface antigen	0 -	0 -
Antibody anti-hepatitis C virus	1 (2%)	2 (4%)
Antibody anti-HIV	1 (2%)	0 -
VDRL	3 (6%)	2 (4%)
Tattooing	3 (6%)	6 (12%)