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A Public Health Challenge – Influences on Alcohol Pattern in Liver Cirrhotic Patients with or without Diabetes Mellitus

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Abstract

The alimentary culture, especially the alcohol consumption, has a major impact, being responsible for many important diseases, a burden to public health and the therapeutic strategies. According to the World Health Organization, the average alcohol consumption per capita and per year in Romania is 24.48 litres of pure alcohol. The alcohol consumption is a proven risk factor for diabetes mellitus, generating a heavy financial burden on the health care and social system. We have included in our study 33 patients with hepatic cirrhosis, with or without diabetes mellitus, who were admitted in three medical departments, in Iasi, Romania. We focused on their perception upon the findings on the holter ECG, and the way those results have induced changes in the patient dinking habits. The diagnosis of hepatic cirrhosis was made on laboratory findings, and by imagistic methods.

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Patients under 50 years of age were the most prone to change the alcohol consumption due to the risk of aggravation of the disease. The vital risks associated with the arrhythmic events recorded on the holter ECG, even when clearly presented to our patients, didn't generate a change in drinking habits in almost half of the patients. In order to contribute to a major changing in patient attitude towards the drinking habits, these cardiac investigations should be associated with other methods in order to achieve the desired results. The associated diabetes increased the patient compliance to the recommended lifestyle changes, including drinking habits.

Keyword: public health; elderly; liver cirrhosis; alcohol habits; arrhythmic events; diabetes mellitus.

Introduction

The cultural profile of a region implies several elements. One of these elements, which have a major impact on our lives in this time period, is the alimentary culture. The eating habits, with pros and cons discussions, likes and dislikes are generating a lively picture of the contemporary society (Stefanescu and Stefanescu, 2012). The alimentary culture is also considered responsible for many major health problems of our society and the impact of the alimentary culture is the subject for many studies dedicated to public health and therapeutic strategies (Leon and Saburova, 2007; Dima, Grecu and Dimienescu, 2012). One of the most important elements of the alimentary culture in Eastern Europe is the alcohol consumption (Rehm, Rehn, Room, Monteiro, Gmel and Jernigan, 2003; Landberg, 2010). According to the World Health Organization (WHO Global Status Report on Alcohol and Death, 2011), data regarding Romania about the average alcohol consumption per capita and per year is 24.48 litres of pure alcohol and the pattern of drinking rating scale is 3 (on a scale from 1 to 5), the highest consumption in Europe being of 55.99 litres for Bosnia & Herzegovina and the lowest one being of 7.66 litres for Iceland. This report also describes the five years recorded alcohol per capita consumption in Romania among adults (over 15 years of age) as stable.

The same report indicates that in 2005 the analysis of all cause mortality rates showed that the age-standardized death rate per 100,000 people for subjects aged over 15 years was 60.2 for liver cirrhosis in male drinkers. The alcohol consumption has proven a consistent contribution to another disease which is generating a heavy financial burden on the health care and social system – the diabetes mellitus. Due to the fact that the alcohol is having a cardiovascular protective effect – there is a large public opinion that alcohol consumption is providing benefits regardless of the quantity consumed (Chetreanu and Zdrenghea, 2009).

The Global Health Risks Report from 2009 indicates that the alcohol use is generating worldwide about 3.5 % of the global disability-adjusted life year (DALY) (from a total estimation of 1.53 billions lost years for all mankind) (WHO Global Health Risks, 2009).

One of the most challenging steps (Furtunescu, Minca, Vasile and Domnariu, 2009) in the management of the alcoholic patient is the effort to change his drinking behaviour (Grothues and Bischof, 2005) who is having a great influence on other eating habits (Emmanuelle Kesse and E3N Group, 2001). In our region of Moldova, the alcohol drinking habit is one of the most important causes that generate social and health care problems which imply heavy financial expenses – in terms of hospitalization, home care and family burden (Ellison, 2007; Vicol, Stîngă, Caba, Ioan and Astărăstoae, 2008; Popescu, Popescu, Lupu, Panus, Neagu-Sadoveanu and Buda, 2010).

Materials and Methods

The purpose of the study

We performed a combined survey on some representative alcoholic patients. On focus, we were interested in the patient perception upon the findings of an important cardiac investigation (Mocan, Agoston-Coldea, Rusu, Pais, Gatfosse, Mocan and Rusu, 2008), as the twenty-four hours electrocardiogram recording (the holter ECG), and the way those results have induced changes in the patient drinking habits.

Patients

We have included in our study 33 patients with hepatic cirrhosis, with or without diabetes mellitus, who were admitted in three medical departments of St. Spiridon Hospital and the Rehabilitation Clinical Hospital, in Iasi, during a period of 6 months in 2012. In our study, there were included only the patients having hepatic cirrhosis of alcoholic etiology and mixed etiology (alcoholic and viral) – this association being of greater risk (Henry and Moloney, 2013). The diagnosis of hepatic cirrhosis was made according to the presence of the following assessments: non-invasive methods as ultrasonography, hepatic elastography (Foucher and Chanteloup, 2006), and invasive methods like upper gastrointestinal endoscopy, and liver biopsy. Ultrasonography had positive results for ascites; the existence of esophageal or gastric varices were confirmed by the flexible endoscopy; in this group, other criteria were fulfilled by positive liver biopsy or transient elastography fibroscan used for measuring liver stiffness (Lupșor, Badea, Stefănescu, Grigorescu, Serban and Radu, 2010). Atrial fibrillation was an

exclusion criterion for the Holter ECG investigation (Serafi, 2013). The demographic characteristics of the patients brought into the study are presented in *Table 1*.

Table 1. *The distribution of the patients on some clinical and demographic characteristics*

Characteristic	Number of patients	Percent from total number of patients
Age groups		
• < 50 years	4	12%
• 50 – 59 years	13	39%
• > 60 years	16	49%
Gender		
• male	19	42%
• female	14	58%
Residence		
• urban	14	58%
• rural	19	42%
Hepatic Cirrhosis Etiology		
• Toxic – alcohol	17	51%
• Mixed (viral and toxic)	16	49%
Child – Pugh Score		
• Class A	21	64%
• Class B	6	18%
• Class C	6	18%
Ascites		
• present	18	55%
• absent	15	45%
Portal Encephalopathy		
• present	3	9%
• absent	30	91%
Diabetes		
• present	2	6%
• absent	31	94%

The criteria for the diagnosis of cirrhosis were first formulated by Dr. Child and Dr. Turcotte in 1964, and scoring system modification was made later by Pugh et al. in 1972 (Durand and De Valla, 2005). The biological profiles of the investigated patients showed lower values for calcium, high-density HDL-Cholesterol, and iron, and higher values for serum bilirubin level, glycaemia, and gama-glutamyl-transpeptidase.

After data corroboration from anamnesis, clinical examination, electrocardiogram at rest, and biochemical results, the patients were submitted to a discussion on their health status. Because of the ECG abnormalities at rest or of the cardiac symptomatology, we explained to the patients the necessity to fulfil a more in depth investigation, namely the Holter ECG examination which can offer a better quantification of the autonomic dysfunction that follows the chronic liver disease (Frith and Newton, 2011; Fleckenstein and Frank, 1996). After their written approval, they had a 24 hours electrocardiogram monitoring. We used the CARDIOSCAN 11 software produced by DM Software – USA and the 300-3A

recorder with 7 leads. The holter ECG recorder has small dimensions and it is not interfering with the normal activity of the patient during the examination, so there is no additional stress induced by this device to our fragile patients (Milovanovic, Milinic, Trifunovic et al, 2009).

The results of the Holter ECG examination were interpreted by one of the authors and were quantified in terms of arrhythmic events – Supraventricular and Ventricular Premature beats, Bigeminy and Trigeminy events, Ventricular and Supraventricular Tachycardia, pauses of more than 2.0 seconds and ST segment elevation or depression. The arrhythmic events were classified according to the existing classifications (Chung, Pogwizd and Goldschlager, 2011). The standardized mortality ratio is higher for cirrhosis versus cardiovascular disease in type 2 diabetes mellitus (Tolman, Fonseca, Dalpiaz, TAN, 2007). In *Table 2*, we present the arrhythmic events recorded in the examined group of patients.

Table 2. *Arrhythmic events recorded in the study group*

Type of Arrhythmic Events	Number of patients (%)
Atrial premature beats	32 (97%)
Supraventricular Arrhythmia	22 (66.6%)
Ventricular Arrhythmia	
• Lown 0	0 (0%)
• Lown 1 (< 720 VPB/24 h)	2 (6.1%)
• Lown 2 (?720 VPB/24 h)	4 (12.1%)
• Lown 3 (multifocal, bigeminal or trigeminal premature beats)	4 (12.1%)
• Lown 4a (couplets)	10 (30.3%)
• Lown 4b (ventricular tachycardia)	10 (30.3%)
• Lown 5 (R on T phenomenon)	3 (9.1%)
ST segment elevation/depression	6 (18%)
RR pauses > 2.0 sec	12 (36%)

VPB – ventricular premature beats

The Holter ECG results were presented to the patients by one of the authors and there was a detailed explanation of the risks associated with the recorded arrhythmic events (Rehm, Sempos and Trevisan, 2003). The patients were treated with respect for their sick status and compassion, this being described as the best way to attain a good doctor-patient relationship (Cojocaru, Cace and Gavrilovici, 2013). After this the patient received a questionnaire to fill in answers about his drinking behaviour, the changes of this habit after learning the diagnosis of liver cirrhosis and for some of them the add of diabetes mellitus; other questions were focused on their perceptions of symptoms and their addressability to the doctor (the support received by the patient, the impact of the arrhythmic events on the quality of life and the consequences of the Holter ECG examination on the future lifestyle changes).

Results

At the question on the way alcohol pattern has changed after the patient learned about the diagnosis of liver cirrhosis, the answers were ranged from totally to no change, as follows: 18.18% had a total change in habit, 33.33% had a moderately change, 39.39% a small change, and no change was registered in 9.09% of cases. The patients indicating that their lifestyle was totally changed are from the urban area, this results are concordant with other studies (Colditz, Giovannucci and Rimm, 1991). There was no correlation between the type of cirrhosis and lifestyle changes. The patients with hepatic cirrhosis Class B and C were more likely to change their lifestyle. Most of the interviewed patients confirmed that lifestyle changes have improved their health status: 20 patients indicated an obvious amelioration and 9 a partial improvement. The patients with important ameliorations were distributed evenly in all age groups and there was no correlation between the etiological type of cirrhosis and the degree of amelioration. The patients with no amelioration (12.12%) were all in the class C of Child-Pugh score scale for liver cirrhosis as recorded by other researchers (Planas, Montoliu et al, 2006). Also, there was no difference in the degree of amelioration when we have compared the patients from the urban and rural areas.

Regarding the conditions that determined the change in drinking habits, the most important factor was the potential aggravation of the disease – 11 patients were answering positively at this point. 7 patients were determined by the disease-related anxiety to change their lifestyle, 4 by the poor health condition, 4 by their family, 2 by their friends and 2 were persuaded when they were informed about the presence of the diabetes. There were no statistical differences when we have compared the answers from the patients in urban or rural area. The patients under 50 years of age were the most prone to change the alcohol consumption due to the risk of aggravation of the disease – the same results were seen in other studies (Campillo, Richardet, Scherman et al., 2003).

When there was no change in alcohol consumption pattern, this was due to previous habits (6.06%), and the opinion that "things couldn't get worse" (3.03%). The complete family support corresponded to 14 patients, the partial support was in 15 patients, and 4 patients declared that they didn't receive any family support. The patients who declared no family support were mainly in class C. There was an equal distribution of the patients – urban vs rural, who declared a total family support. The etiology of the cirrhosis, association of diabetes, age and type of arrhythmia recorded had no influence in the family support.

The answers concerning the number of the medical consultations requested per year, were distributed in this manner: less than 3 visits/year in 12 patients, between 3 – 5 visits/year in 15 patients, and more than 5 visits/year in 6 of them. The patients from the urban zones are predominant in the category with more than

5 visits per year. The patients in class A and B are seeking medical attention more frequently compared with class C, the latter addressability to the doctor is probably explained by the reduced mobility associated with class C of liver cirrhosis and its bad prognosis. The etiology of the hepatic cirrhosis has no influence upon the visits number to the doctor. The patients with diabetes had more than 5 visits per year, probably due to the mandatory visits requested by the diabetes treatment – these results are similar with the ones obtained in other studies (Bini, Weinshel, Generoso, Salman, Dahr and Pena-Sing, 2001)

At the question concerning the discomfort produced by the palpitations correlated to the recorded arrhythmic events – all the answers of the patients were placed in the category of „frequently" in 18 patients and „always" for 15 patients. There were no differences according to the etiology of the cirrhosis. More than half of the patients addressed immediately to the doctor because of the unpleasant sensation of palpitations. The patients having diabetes associated with liver cirrhosis are answering that they are looking for medical support in case of palpitations more frequently than the diabetes-free patients. Also, the patients from the rural area are generating more answers in "rarely" group than the patients from the urban area. In the diabetes group, there was no correlation between the type of arrhythmia and the frequency of medical controls. 85% of the patients paid great attention on the importance of the holter ECG results. The remaining 15% of the patients, who didn't understand the importance of the holter ECG investigation are over 60 years old and they come both from urban (1 patient) and rural area (4 patients). The negative answers to alcohol habit changes, in patients that understood the cardiovascular risks revealed by the holter ECG, were recorded at patients with class B and C of cirrhosis. These answers were evenly distributed in urban and rural areas. We cannot identify a correlation between the types of arrhythmia recorded and the answers. The association of diabetes had a magnified influence on the attitude of the interviewed patients, due perhaps to the anxiety about the cardiovascular and cerebrovascular risks and other complications secondary to diabetes.

Conclusions

In elderly patients, we haven't noticed a significant positive change in alcohol habits. This might be explained by their custom convictions, alimentary culture within the family generations, and also by their level of education which does not exceed the high school or professional school level, thus influencing the socio-economic status. Similar results were found in elderly diabetics (Felea, Covrig, Manea & Titan, 2013). The patients under 50 years of age were the most prone to change the alcohol consumption due to the risk of aggravation of the disease. The discomfort produced by the palpitations correlated to the recorded arrhythmic

events, and the addressability to medical consult were significantly influenced by the advanced age, the association of diabetes and the duration and the frequency of the arrhythmic episodes. The results of the cardiac investigation (the Holter ECG) didn't generate a change in drinking habits in almost half of the patients, even when the vital risks associated with the arrhythmic events were clearly presented to our patients. In order to contribute to a major changing in patient attitude towards the drinking habits, these cardiac investigations should be associated with other methods in order to achieve the desired results (van Hoof and Moll, 2012; Furtunescu, et al., 2009). The associated diabetes increased the compliance of the patients to the recommended lifestyle changes, including drinking habits.

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