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Alcohol-related seizures may be associated with more severe depression, alcohol dependence syndrome, and more pronounced alcohol-related problems

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ABSTRACT

Severe alcohol abuse and related medical and social functioning risks, as well as clinically significant depression, are common in patients who are admitted to hospital with alcohol-related seizures (ARS) and significantly affect the quality of life of the patient. Compared with studies involving patients with alcohol dependence, no large-scale studies with the aim of finding the prevalence and severity of depression and its most commonly affected aspects for patients with ARS have been carried out in Latvia yet. The habits and frequency of alcohol use in correlation to depression and its severity are also not known. One hundred ten patients were included in the study – 60 patients with ARS and 50 patients with alcohol use disorder (AUD) – without ARS. The research population consists mainly of working-age adults; however, most patients with ARS have significantly impaired daily activity and social life. Compared with patients who only have alcohol dependence, a more common problem in patients with ARS is having an alcohol dependence level that requires additional clinical examinations and consultations by a narcologist using the Alcohol Use Disorder Identification Test (AUDIT) scale, and this level is more often related to depression particularly characterized by pronounced suicidal thoughts (exhibited by almost 1 out of every 4 patients). According to the Hamilton Depression Rating Scale (HAM-D), depression has affected 81.7% of patients with ARS and 96% of patients with AUD. Seizures negatively affect patients' physical and emotional well-being in over 80% of cases; moreover, it is common for most patients to feel depressed after the seizures. Over half of the patients with ARS scored 20–40 points according to the AUDIT scale, indicating serious alcohol abuse disorder. Our research data can help bring awareness of the need to more carefully evaluate patients with ARS for an early detection of alcohol abuse disorder and depression with a risk of self-harm and unintentional harm to others as well as to decrease the burden on social care and healthcare.

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1. Introduction

Alcohol use disorder (AUD), which is an "umbrella term" used to describe the misuse of alcohol that involves problems controlling one's drinking and being taken over by the use of alcohol and which has different medical and emotional consequences, is a common medical problem that doubles the risk of developing depression and vice versa — depression doubles the risk of developing AUD [1]. In studies conducted in the UK, the prevalence of AUD is 14% [2] and up to 40% among inpatients [3]. About half of the patients with these disorders experience alcohol withdrawal syndrome during the time they are decreasing or discontinuing alcohol use [4,5]. Different scales can be used to objectify AUD in patients with alcohol dependency, for example, the Alcohol Use Disorder Identification Test (AUDIT), which is widely used. Alcohol-related seizures (ARS) (defined as acute symptomatic seizures associated with alcohol withdrawal and alcohol intoxication [6]) develop mainly in long-term alcohol dependence and are usually bilateral tonic–clonic seizures, occur in up to 30% of patients experiencing alcohol withdrawal, and occur multiple times in 60% of cases [7]. An acute symptomatic seizure due to alcohol withdrawal must occur between 7 and 48 h after a person with long-term alcohol abuse had stopped drinking alcohol [6]. The occurrence of epilepsy in patients with alcohol dependence is three times greater than in the general population, whereas the occurrence of alcoholism in patients with epilepsy is only slightly more common than in the general population [8]. Treating

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alcohol dependence should be a priority for patients with ARS as opposed to beginning antiepileptic therapy (AET) [8]. In the United States, approximately 85,000 people die from alcohol-related causes annually [9]. Alcohol abuse accounts for one in 10 deaths among working-age adults [10]. Different factors – genetic and environmental factors, personality traits, and other comorbidities such as anxiety and depression – increase the risk of developing alcohol dependency. Alcohol abuse can lead to psychological consequences and problems in functioning socially, including interference with daily activities such as work and caring for family. There are many studies which indicate that alcohol abuse can cause psychiatric illnesses such as depression, anxiety, eating disorders, sleep disorders, and abuse of other substances [11,12]; mood disorders and anxiety are the most common psychiatric comorbidities in patients with AUD. Alcohol use disorder has a significant comorbidity with mental illnesses and vice versa — alcohol use plays a significant role in affective disorders, anxiety, schizophrenic psychosis, and other mental illnesses [13]; however, patients with such conditions seldom receive specific therapy that could affect both aspects — alcohol use and psychiatric disorders [14]. When alcoholism is comorbid with these psychiatric illnesses, patients have greater difficulty abstaining from the use of alcohol and have the tendency to attempt to commit suicide, and suicide rate is higher among these individuals; therefore, it is important to carefully evaluate possible psychiatric complaints made by patients with AUD, thereby decreasing the severity of illness for these patients [15]. The timely discovery of severe depression with suicidal thoughts and timely administration of prophylactic measures and treatment of depression can therefore reduce the mortality rate for this group of patients. In those alcohol-dependent patients who have turned for help, mood disorders are one of the most frequent psychiatric complaints, and complaints and their frequency can be as high as 80% [16]. So far, no studies with the aim of determining the occurrence and severity of depression and its most commonly affected aspects in patients admitted to hospital with ARS comparing with alcohol-dependent patients have been conducted in Latvia. Likewise, the habits and frequency of alcohol use in correlation with depression and the severity thereof are also not known. As part of our research, we endeavored to determine the frequency of depression and the most affected aspects (emotional, psychosomatic, effect on sleep, daily functioning, etc.) in patients with ARS and alcohol-dependent patients, as well as to evaluate the effect seizures have on the development of depression and its severity. At the same time, we wanted to evaluate the habits of alcohol use in both of these groups by evaluating the clinical parameter – seizure – as a possible "marker" that might indicate severe AUD and more severe depression.

2. Materials and methods

This descriptive cross-sectional study compares 60 patients with ARS with 50 patients with AUD without ARS in regard to multiple variables (like alcohol use habits and the occurrence of depression). Patients with ARS (in our study including only patients with alcohol withdrawal seizures) were included in the group with ARS, and patients without previous ARS were included in the group with AUD. Our group of authors employed a similar study design in the previous research to compare alcohol use habits and depression in patients with ARS with and without comorbid epilepsy [17]. Patients were recruited for the study between January 2016 and December 2016 to participate in a survey which was conducted at the Emergency Department and the Neurology Clinic of Riga East Clinical University Hospital "Gaiļezers", and Riga Psychiatry and Narcology Centre. The inclusion criteria were as follows: adult patients aged 18–88 years with an admission diagnosis of ARS or AUD, being fully oriented and able to give informed consent at the time of interview, and with no signs of acute alcohol intoxication or other medical problems requiring additional medical intervention. Upon consenting to the study, patients were interviewed using a study questionnaire (shown in Results), as well as AUDIT and the Hamilton Depression Rating Scale (HAM-D) ([18], copyright permission granted).The AUDIT, an internationally standardized and validated screening tool approbated in Latvian and Russian languages, with recommendations in cases of different alcohol use habits, was used to identify AUD in the groups of patients with ARS and AUD. According to the AUDIT scale, four groups of alcohol use-related problems are divided as follows: low risk of alcohol-related problems (0–7 points), hazardous alcohol use (8–15 points), harmful alcohol use (16–19 points) — defined as alcohol use habits that cause physical or mental health problems, and alcohol dependence (>20 points). The last group indicates possible alcohol dependence, and further diagnostic tests are necessary to diagnose it. Quantities of different types of alcoholic drinks were recalculated into grams of absolute alcohol and are shown as units of alcohol. In Latvia, one unit of alcohol corresponds to 12 g of absolute (100%) alcohol. The data were statistically analyzed using the IBM SPSS Version 22 (IBM Corporation, New York, USA). Descriptive statistics included frequencies for categorical variables (shown in absolute numbers and percentages) and mean/median, and standard deviation for numerical variables. An assessment of the normality of data was done by using the Shapiro–Wilk test. Pearson's correlation coefficient was calculated to assess correlations, and associations between variables among patients were assessed by using Chi-square test. The study was approved by the Medical and Biomedical Research Ethics Committee of the Riga East Clinical University Hospital. The work described here has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki). Informed consent was obtained for participation in the study, and the privacy rights of human subjects were complied with.

3. Results

3.1. Demographic data and alcohol use habits

One hundred ten patients – 60 with ARS (further analyzed as group with ARS) and 50 with AUD (further analyzed as group with AUD) – participated in our study. In the group with AUD, 44% (n = 22) were women and 56% (n = 28) were men with the mean age of 47.04 ± 11.88 (26–70) years. In the group with ARS, 28.3% (n = 17) were women and 71.7% (n = 43) were men with the mean age of 46.38 ± 9.89 (26–66) years. The mean age between these groups did not differ statistically (p = 0.93), and statistically significant difference regarding gender (p = 0.110) was not observed. In the group with ARS, 78.3% (n = 47) of the patients had had already previous episodic seizures for more than one year because of acute alcohol withdrawal; respectively, they were alcohol-related. The median period of experiencing seizures was 4 (2–28) years. During the worst month of the previous year, 83.3% (n = 50) experienced 1–2 seizures a month. One patient had had a maximum of 6 seizures a month in the previous year. The mean of alcohol use across the patient group with ARS was 5.33 (±4.79) times a month, consuming a mean of 13.93 (±10.15) alcohol units per one day of drinking. The highest consumed quantity was 37.50 units of alcohol per one day of drinking. The most commonly used types of alcohol in the group with ARS were the following: vodka (36.7%, n = 22), beer (23.3%, n = 14), whiskey/cognac (8.3%, n = 5), wine (3.3%, n = 2), and more than one type of alcohol — 26.7% (n = 16).

3.2. Treatment

Interestingly, 56.7% (n = 34) of all patients in the group with ARS received antiepileptic drug therapy (AEDT) to overcome ARS. Out of all patients receiving AEDT, 29.4% (n = 10) used the therapy regularly. The most commonly used medications were the following: *carbamazepine* (40.1%, n = 24), *clonazepam* (8.3%, n = 5), and *valproic acid* (10%, n = 6). Other less used medications were *diazepam*, *phenobarbital*, and *phenazepam* — each in one patient, accordingly. *Carbamazepine* was used in daily doses between 400 mg to 1200 mg, and the most commonly used dosage was 400–800 mg per day: in 66.7% (n = 16) of

all patients receiving it. Despite received therapy, 40% (n = 24) of all patients in the group with ARS admitted that they have not been informed about the fact that alcohol withdrawal could provoke seizures.

3.3. Emotional and physical aspects related directly to seizures

Almost one-fifth (18.3%, n = 11) of all respondents in the group with ARS admitted that seizures did not negatively affect them; nevertheless in most cases (81.7%, n = 49), seizures affected the patient's physical health and emotional wellness. In 26.7% (n = 16) of cases, seizures had negative impact on physical well-being; in 13.3% (n = 8) of cases, seizures affected emotional sphere; and in 41.7% (n = 25) of cases, they had both negative physical and negative emotional impact. Of all patients in the group with ARS, 66.7% (n = 40) felt depressed immediately after each seizure. It is known that 51.7% (n = 31) of all patients in the group with ARS had some long-term disease, for example, hepatic dysfunction or hepatitis, pancreatitis, diabetes, psoriasis, gallstones, gastritis, and others, which may be directly related to harmful use of alcohol.

3.4. Description of alcohol use

The mean AUDIT scale points in the group with AUD were 18.84 ± 6.40 (6–30), and in the group with ARS 20.0 ± 6.92 (6–36); there was no significant difference between these two groups (p = 0.988). Severity of AUD regarding AUDIT points in both patient groups is displayed in table form (Table 1). There are no statistically significant differences between the patient groups according to the levels of the AUDIT scale, possibly because of the relatively small number of patients in each group. Counting all together, when evaluating alcohol use habits in both patient groups, it is clearly seen that patients with ARS have alcohol drinking disturbances at least as dominant as for patients with already diagnosed alcohol dependence syndrome — it means that all patients admitted to hospital with ARS should be regarded as patients with potentially long-term alcohol use with a significant alcohol dependence syndrome. By evaluating individual answers in the AUDIT scale, main results in both patient groups are revealed in table form (Table 2). When emphasizing the most important aspects, altogether, 98.3% (n = 59) of patients of the group with ARS during the last year have admitted to having caught themselves thinking that they are not able to control the amount of alcohol consumed, including 36.7% (n = 22) of patients who had such thoughts once a week and 6.7% (n = 4) who had them daily or almost daily. The same number of patients, or 98.3% (n = 59) in the group with ARS, had to change their plans on a regular basis because of alcohol intoxication — 28.3% (n = 17) of those have had to do it once a week and 1.7% (1 patient) every day or almost every day. Thirty-five percent (n = 21) of patients in this group on average have had to change their plans once a month because of alcohol use. Within the last year, 83.3% (n = 50) of patients with ARS have experienced a sense of guilt after using alcohol; moreover, 25% (n = 15) of patients have experienced it regularly, at least once a week. An indicator of the severity of alcohol use and its potentially harmful effect is that 56.6% (n = 34) of patients from the group with ARS regularly – at least once a month – do not remember what happened while they were consuming alcohol, including 33.3% (n = 20) of patients who have such an experience often or at least once a week. Altogether, almost all or 98.3% (n = 59) of patients with ARS have had some experience of not remembering events because of alcohol. The direct negative effect of alcohol use is also indicated by the fact that in 36.7% (n = 22) of cases in the group with ARS, the patient or someone next to the patient has been injured because of alcohol use. Patients with ARS who are admitted to hospital are characterized by heavy alcohol use disturbances; however, their conditions are often not diagnosed because the main attention is on the seizure itself based on which the patient is hospitalized and not on the provocative reasons. It is clearly seen by the fact that only 38.3% (n = 23) of patients with ARS have received the recommendation to stop using alcohol from relatives, friends, colleagues, or medical staff within the last year.

At the same time, 32% (n = 16) of patients in the group with AUD at least once a week have caught themselves thinking that they cannot control the amount of alcohol they consume. Eighty-six percent (n = 43) of patients have had to change their plans because of alcohol use; moreover, 24% (n = 12) have had to do it often (1 or more times a week). Overall, 92% (n = 46) of patients in the group with AUD have been affected by a sense of guilt after consuming alcohol within the last year, including 22% (n = 11) who have experienced it one or more times a week. Seventy percent (n = 35) of patients have not remembered events because of alcohol use within the last year; however, in most cases (or in 54% (n = 27) of patients), it has occurred one or fewer times a month. Sixteen percent of all patients often (1 or more times a week) have the experience of not remembering events because of this reason, which is comparatively less often than patients with ARS who do not remember events in 98.3% of cases, including 33.2% (n = 20) of cases (p < 0.005) where it happens often. In 20% of cases, patients in the group with AUD or someone next to them had been injured because of alcohol use, which is comparatively less often (though not reaching statistical significance, p = 0.213) than patients in the group with ARS — 36.7% (n = 22). The recommendation to not use alcohol was received by a noticeably larger number of AUD patients within the last year compared with the group of patients with ARS — 68% (n = 34) vs. 38.3% (n = 23), p < 0.005, which might be related to the fact that patients with AUD have been admitted to hospital to treat problems directly related to long-term alcohol use, while patients in the group with ARS were admitted because of seizures to a general hospital without a dedicated narcology service available.

3.5. Description of depression

The mean number of points scored by patients in the group with ARS according to the HAM-D was 13.22 ± 5.52 (3–24), whereas patients

Table 1
The Alcohol Use Disorder Identification Test (AUDIT).

ITEM (AUDIT scale points), group with ARS score (n = 60) vs. group with AUD (n = 50), p-value	
1. 0–7 points	5% (n = 3) vs. 6% (n = 3), p = n.s.
2. 8–15 points	21.7% (n = 13) vs. 28% (n = 14), p = n.s.
3. 16–19 points	16.7% (n = 10) vs. 18% (n = 9), p = n.s.
4. 20–40 points (indicating severe alcohol use disorder)	56.7% (n = 34) vs. 48% (n = 24), p = n.s.

Table 2
The Alcohol Use Disorder Identification Test (AUDIT): individual answers in the AUDIT scale.

ITEM (AUDIT scale question), group with ARS score (n = 60) vs. group with AUD (n = 50), p-value	
1. Alcohol consumption several times a week	45% (n = 27) vs. 54% (n = 27), p = n.s.
2. More than 6 alcoholic drinks in a single instance of alcohol use	43.4% (n = 26) vs. 38% (n = 19), p = n.s.
3. Have caught themselves thinking at least once a week that they are not able to control the amount of alcohol consumed	43.4% (n = 26) vs. 33.3% (n = 20), p = n.s.
4. Have to change plans on a regular basis because of alcohol intoxication	98.3% (n = 59) vs. 86% (n = 43), p = 0.013
5. Have experienced a sense of guilt within the last year	83.3% (n = 50) vs. 92% (n = 46), p = n.s.
6. Do not remember what happened while consuming alcohol	98.3% (n = 59) vs. 70% (n = 35), p < 0.005
7. The patient or someone next to the patient has been injured because of alcohol use	36.7% (n = 22) vs. 20% (n = 10), p = 0.213
8. Have received a recommendation to stop using alcohol from relatives, friends, colleagues, or medical staff within the last year	38.3% (n = 23) vs. 68% (n = 34), p < 0.005

with AUD scored 16.10 ± 6.20 (4–43). There is not a noticeable statistically significant difference between the groups in the mean number of points, p = 0.127. According to the HAM-D, depression (any severity) has affected 96% (n = 48) of patients with AUD and 81.7% (n = 49) of patients with ARS, p = 0.02. When evaluating the severity of depression in both groups, noticeable statistically significant difference between the groups was not assessed. The results are displayed in table form (Table 3).

When evaluating the most important aspects of depression regarding HAM-D, results show that a depressive mood occurs in 76% (n = 38) of patients with AUD and 81.7% (n = 49) of patients with ARS. Four percent (n = 2) of patients with AUD and no patients with ARS have had severe suicidal thoughts or have attempted suicides. However, mild and moderate suicidal thoughts and behavior have affected 12% (n = 6) of patients with AUD and almost twice as many patients with ARS – 23.3% (n = 14), p = 0.141.

By analyzing sleep disorders in both groups of patients, it was determined that 86% (n = 43) of patients with AUD and 88.3% (n = 47) of patients with ARS have been affected by trouble falling asleep. It is statistically significant that more frequent severe and regular sleep disorders have been observed in patients with AUD – 32% (n = 16) vs. 5% (n = 3), p = 0.001. Although a tendency not reaching statistical significance has been observed, patients with AUD more frequently have severe sleep disturbances (waking up at night one or more times and difficulty falling asleep again, any instance of getting up from the bed) – 20% (n = 10) vs. 6.7% (n = 4), p = 0.09. Overall, sleep disturbances can be observed in 74% (n = 47) of patients with AUD and 63.3% (n = 38) of patients with ARS without significant difference between the groups. Sleep disorders of waking up too early in the morning and the inability to fall asleep again have affected 16% (n = 8) of patients with AUD and 16.7% (n = 10) of patients with ARS without a significant difference between the groups.

Severe limitations to working and doing daily tasks (i.e., patients could not take part in everyday activities and care for themselves without forcing themselves) have affected 10% (n = 6) of patients with ARS, although none of the patients with AUD have been affected, p = 0.029. Overall, limited daily and work activity (from mild to severe disorders) has affected 88% (n = 44) of patients with AUD and 95% (n = 57) of patients with ARS. Overall, agitation is more common in patients with AUD than in patients with ARS – 76% (n = 38) vs. 43.3% (n = 26), p = 0.001; moreover, it has been moderate or severe in 20% (n = 10) of patients with AUD and only in 1.7% or 1 patient with ARS, p = 0.001. It is statistically significant that patients with AUD have experienced psychological symptoms of anxiety (such as internal tension, worry, feelings of apprehension about unimportant things, uneasiness, and fear that can be seen in the face and heard in the voice) more often – 90% (n = 55) vs. 38.3% (n = 23), p < 0.005. This group of patients (AUD) has also experienced the somatic symptoms of anxiety more often (96% (n = 48) vs. 66.7% (n = 40), p < 0.005), and these symptoms have been severe or unbearable in 12% (n = 6) of patients with AUD and 3.4% (n = 2) of patients with ARS, p < 0.005. Likewise, compared with the group of patients with ARS, patients with AUD could be observed to have the psychosomatic symptoms of depression such as indigestion more often (72% (n = 36) vs. 43.3% (n = 26), p = 0.008), as well as general somatic symptoms such as pain in the body, back, head, and muscles and energy drain accompanied by more pronounced fatigue (66% (n = 43) vs. 56.7% (n = 34), p = 0.607), genital symptoms (34% (n = 17) vs. 13.3% (n = 8), p = 0.018), and hypochondria accompanied by worries about physical feelings and organ functions even to the level of paying extra attention to their health and frequent complaints/requests for help because of health (52% (n = 26) vs. 25% (n = 15), p = 0.028). Within the context of depression, weight loss of more than 1.5 kg a week was observed in 14% (n = 7) of patients with AUD but only in 1.7% or 1 patient with ARS, p = 0.042. Awareness and understanding of their medical illness/condition were retained in 64% (n = 32) of patients with AUD and in only 26.7% (n = 16) of patients with ARS, p < 0.005. Moreover, 61.7% (n = 37) of patients in the group with ARS think that their illness and current health status are related to bad diet, climate, work overload, and insufficient rest and are not related to alcohol use; 11.7% (n = 7) of patients in this group exhibit severe difficulty in recognizing their medical condition and do not consider themselves ill. During the statistical processing of the data, no correlation was found between the number of points scored in the AUDIT scale and HAM-D in any of the patient groups. Neither was there any correlation between the age of patients and the number of HAM-D points in both groups or between the number of HAM-D points and the length of time in years that patients with ARS continued to have seizures.

Table 3
Hamilton Depression Rating Scale (HAM-D).

ITEM (severity of depression), group with ARS score (n = 60) vs. group with AUD (n = 50), p-value	
1. Very severe depression	5% (n = 3) vs. 8% (n = 4), p = n.s.
2. Severe depression	11.7% (n = 7) vs. 16% (n = 8), p = n.s.
3. Moderate depression	36.7% (n = 22) vs. 44% (n = 22), p = n.s.
4. Mild depression	28.3% (n = 17) vs. 28% (n = 14), p = n.s.

4. Discussion

Alcohol use disorder is a significant and common clinical problem that significantly affects the quality of life, social functioning, and physical and mental health status of the patient. Even though it has traditionally been accepted that dependence problems should be dealt with by a narcologist, we can deduce from the results of the study that AUD either leads to or is already related to significant psychiatric disorders from the beginning, for example, depression, which affects most patients. Overall, AUD can be observed more often in hospitalized patients with long-term illnesses. Alcohol-related seizures develop mainly in patients with long-term alcohol dependence; therefore, treating alcohol dependence should be the main recommended therapy as opposed to AEDT. Taking into account the frequent occurrence of alcohol dependence and depression in patients with ARS, the tactics and approach of the treatment therapy to the patients should be complex in nature with special focus on the psychoemotional factors accompanying the illness.

The research population consists mainly of working-age adults. The results of the study show that according to their medical history in most cases, patients acutely hospitalized with ARS have previously had similar episodes, and on average, these episodes have occurred for a four-year period. The pattern of alcohol use in patients diagnosed as having AUD and admitted to hospital to receive narcological help for any reason does not differ significantly from that in patients who have been admitted to hospital because of ARS, indicating that alcohol abuse is just as significant in this group, although not as well-recognized and therefore less often treated. Even though ARS occur within the parameters of alcohol withdrawal syndrome and do not require constant antiepileptic drug therapy, most patients have received this medical treatment to decrease seizures as opposed to only 40% of patients who have received adequate information that seizures can be alcohol-induced, and only 38% have received the recommendation to stop using alcohol within the last year. Over 80% of patients have admitted that seizures negatively affect their physical and emotional well-being and most feel depressed immediately after a seizure. Over half of the patients with ARS scored 20–40 points according to the AUDIT scale, indicating severe AUD; moreover, this group reached such a score slightly more often than the patients with AUD. Almost a half of all the patients with ARS regularly use alcohol several times a week. Practically, all patients with ARS have caught themselves thinking that they are not able to control their alcohol consumption and have had to change their plans because of alcohol use within the last year. An indicator of significant alcohol use-related problems is the fact that half of all patients with ARS regularly at least once a month do not remember what happened

during their use of alcohol which is statistically significantly much more often than in patients with AUD. In over a third of cases, the patients with ARS have injured themselves or someone next to them because of alcohol use. According to the HAM-D, depression has affected 81.7% of patients with ARS and almost all (96%) patients with AUD which indicates the striking necessity of recognizing this psychiatric comorbidity in both groups. Even though severe suicidal thoughts and an actual attempted suicide have occurred only in 2 patients in the group of patients with AUD, light and moderate suicidal thoughts and behaviors have affected almost twice as many patients in the group with ARS compared with that in the group with AUD (23.3% vs. 12%), which necessitates special attention and prevention in this group to decrease potential mortality. Sleep disorders occurred in both groups; however, they are more frequent and more severe in patients with AUD. Evaluating daily activity and functioning, as well as communication problems, more serious restrictions are observable in patients with ARS. Conversely, agitation, the psychological and psychosomatic symptoms of anxiety, and the somatic symptoms of depression can be observed statistically significantly more often in patients with AUD. Even though most patients with AUD have retained awareness and understanding of their medical condition, only about a fourth of patients with ARS are aware of their illness, playing possible negative role in compliance with treatment.

To emphasize the practical significance of the results of our study, it should be mentioned that there is a clinical necessity for the purposeful examination of patients with ARS already at the stage of the emergency medical care to ensure timely detection of depression and AUD which occur in most cases. Depression is a common illness in both patient groups — ARS and AUD; however, the clinical manifestations of depression and its affected aspects can be different in patients with AUD and those with ARS. It must be noted that almost a fourth of patients with ARS have mild or moderate suicidal thoughts; this must be taken into account when managing patients' long-term treatment. Despite most ARS patients being of a working-age, they have extremely limited daily activity and functioning, including work and communication, thereby creating an extra burden not only on the medical care system, but also on the social care system. It must be emphasized again that in almost a third of cases, patients with ARS have had episodes in which the patient or someone next to the patient has been injured, thereby endangering not only personal safety, but also safety of others.

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Conflict of interest

None of the authors have any conflict of interest to disclose.

References

[1] Boden JM, Fergusson DM. Alcohol and depression. Addiction 2011;106:906–14.
[2] Grant BF, Goldstein RB, Saha TD, Chou SP, Jung J, Zhang HT, et al. Epidemiology of DSM-5 alcohol use disorder results from the national epidemiologic survey on alcohol and related conditions III. JAMA Psychiat 2015;72(8):757–66. https://doi.org/10.1001/jamapsychiatry.2015.0584.
[3] Maldonado JR, Sher Y, Ashouri JF, Hills-Evans K, Swendsen H, Lolak S, et al. The "Prediction of Alcohol Withdrawal Severity Scale" (PAWSS): systematic literature review and pilot study of a new scale for the prediction of complicated alcohol withdrawal syndrome. Alcohol 2014;48:375.
[4] Schuckit MA, Danko GP, Smith TL, Hesselbrock V, Kramer J, Bucholz K. A 5-year prospective evaluation of DSM-IV alcohol dependence with and without a physiological component. Alcohol Clin Exp Res 2003;27:818.
[5] Goodson CM, Clark BJ, Douglas IS. Predictors of severe alcohol withdrawal syndrome: a systematic review and meta-analysis. Alcohol Clin Exp Res 2014;38:2664.
[6] Beghi E, Carpio A, Forsgren L, Hesdorffer DC, Malmgren K, Sander JW, et al. Recommendation for a definition of acute symptomatic seizure. Epilepsia 2010;51:671–5. https://doi.org/10.1111/j.1528-1167.2009.02285.x.
[7] Victor M, Brausch C. The role of abstinence in the genesis of alcoholic epilepsy. Epilepsia 1967;8:1.
[8] Hillbom M, Pieninkeroinen I, Leone M. Seizures in alcohol-dependent patients: epidemiology, pathophysiology and management. CNS Drugs 2003;17:1013–30.
[9] Goslawski M, Piano MR, Bian JT, Church EC, Szczurek M, Phillips SA. Binge drinking impairs vascular function in young adults. J Am Coll Cardiol 2013;62:201.
[10] Stahre M, Roeber J, Kanny D, Brewer RD, Zhang X. Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States. Prev Chronic Dis 2014;11:E109.
[11] Edelman EJ, Fiellin DA. Alcohol use. Ann Intern Med 2016;164:ITC1.
[12] Moss HB, Chen CM, Yi HY. Prospective follow-up of empirically derived alcohol dependence subtypes in wave 2 of the National Epidemiologic Survey on Alcohol And Related Conditions (NESARC): recovery status, alcohol use disorders and diagnostic criteria, alcohol consumption behavior, health status, and treatment seeking. Alcohol Clin Exp Res 2010;34:1073.
[13] Preuss UW, Gouzoulis-Mayfrank E, Havemann-Reinecke U, Schäfer I, Beutel M, Hoch E, et al. Psychiatric comorbidity in alcohol use disorders: results from the German S3 guidelines. Eur Arch Psychiatry Clin Neurosci 2018;268(3):219–29.
[14] Petrakis Ismene L, Gonzalez Gerardo, Rosenheck Robert, Krystal John H. Comorbidity of alcoholism and psychiatric disorders. An overview. Available from: https://pubs.niaaa.nih.gov/publications/arh26-2/81-89.htm, Accessed date: 29 April 2018.
[15] Shivani Ramesh, Goldsmith R Jeffrey, Anthenelli Robert M. Alcoholism and psychiatric disorders. Diagnostic challanges. Available from: https://pubs.Niaaa.nih.gov/publications/arh26-2/90-98.pdf, Accessed date: 29 April 2018.
[16] Brown SA, Schuckit MA. Changes in depression among abstinent alcoholics. J Stud Alcohol 1988;49(5):412–7.
[17] Suna N, Gutmane E, Liepina L, Tomilova A, Folkmanis V. Alcohol use disorder and depression in patients with alcohol-related seizures. Proc Latv Acad Sci Sect B 2018 [in press].
[18] Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry 1960;23:56–62 [PubMed PMID].