Clinical and biochemical profile of alcohol users in Basra

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المرتسم السريري (الإكلينيكي) البيوكيمائي (الكيميائي الحيوي) لمعاقري الكحول في البصرة

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الخلاصة: أجرى الباحثون تحرياً شمل جميع المرضى النفسيين ومرضى الطب العام الذين حُوِّلوا إلى اثنين من المستشفيات في البصرة، بالعراق، في الفترة من أيلول/ سبتمبر 2000 إلى نيسان/ أبريل 2001، حيث استخدموا في التحري اختبار كشف اضطراب معاقرة الكحول. وقد كشفوا عن أن 189 مريضاً لديهم مشكلات تتعلق بالكحول، وكانت أعمار معظمهم تتراوح بين 30 و49 عاماً، وكان ثلثاهم يتعاطى الكحول لمدة تزيد على 10 سنوات. وكان 53٪ من المرضى يستهلك ما يزيد على زجاجة (750 ميلي لتر) من المشروبات الروحية يومياً، فيما أبلغ 14.8٪ منهم عن شربهم الكحول صباحاً. وكشف الباحثون عن ارتفاع في مستوى الإنزيمات الكبدية، وعن ضخامة كبدية، وعن يرقان، وتليّف الكبد (تشمُّع الكبد) لدى 46.0٪ منهم. وقد كان تليّف الكبد (تشمُّع الكبد) أكثر شيوعاً لدى المرضى الذين يشربون العرق المصنَّع محلياً. وقد عانى الكثير من المرضى من اضطرابات نفسية شملت اضطرابات القلق والاكتئاب ومحاولات الانتحار، فيما كان 80.9٪ منهم يتعاطى أدوية نفسية المفعول أخرى.

ABSTRACT All psychiatric and general medical male patients referred to 2 hospitals in Basra, Iraq from September 2000 to April 200l were screened using the Alcohol Use Disorder Identification Test. A total of 189 men were identified as having alcohol-related problems. The majority were aged 30–49 years, and two-thirds had drunk alcohol for over 10 years. About 53% of patients exceeded 1 bottle (750 mL) of spirits daily, and 14.8% reported morning drinking. Elevation of liver enzymes, hepatomegaly, jaundice and cirrhosis were identified in 46.0%. Liver cirrhosis was more common in patients drinking locally made arak. Many of the patients suffered psychiatric disorders, including anxiety disorders, depression and suicide attempts, and 80.9% took other psychoactive drugs.

Profil clinique et biochimique de consommateurs d'alcool à Basra

RÉSUMÉ Tous les patients de sexe masculin soignés en psychiatrie et en médecine générale adressés à deux hôpitaux de Basra (Iraq) de septembre 2000 à avril 200l ont été soumis à un dépistage de l'alcoolisme par le test AUDIT (*Alcohol Use Disorder Identification Test*). Au total, on a recensé 189 hommes souffrant de problèmes liés à l'alcool. La majorité d'entre eux étaient âgés de 30 à 49 ans et les deux tiers consommaient de l'alcool depuis plus de 10 ans. Environ 53 % des patients buvaient chaque jour plus d'une bouteille (750 ml) d'alcools forts et 14,8 % déclaraient boire dès le matin. Une élévation des enzymes hépatiques, une hépatomégalie, une jaunisse et une cirrhose ont été observées chez 46,0 % des sujets. La cirrhose hépatique était plus courante chez les patients qui buvaient de l'arak local. De nombreux patients souffraient de troubles psychiatriques (troubles anxieux, dépression et tentatives de suicide) et 80,9 % prenaient d'autres psychotropes.

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Introduction

Hazardous alcohol intake and related disorders are a major health issue. A World Health Organization (WHO) project on psychological problems in general practice has shown that alcohol dependence or harmful alcohol use is present in about 6% of patients attending primary care, ranking third in frequency after major depression and generalized anxiety [*1*].

Harmful or heavy alcohol drinking makes a substantial contribution to the burden of disease and premature mortality [*2*]. Drinking at levels causing detectable biochemical abnormalities is associated with mortality that is twice that of the normal population [*3*]. The health cost of alcohol-related problems is high [*4*], added to which is the cost of social harm and accidents related to acute alcohol intoxication. Alcohol abusers are almost 4 times as likely to be hospitalized for injury compared with controls [*5*].

The problem of alcohol abuse is universal, and exists in both developed and developing countries [*6,7*], even in countries such as Iraq where there are religious and social taboos attached to alcohol drinking [*8*].

The aim of the present work was to evaluate the pattern of harmful alcohol intake among male patients attending medical and outpatient clinics in Basra, Iraq, and to look into various health problems associated with alcohol intake.

Methods

All male patients referred to the psychiatric outpatient clinic at Basra General Hospital and male patients admitted to the medical unit of the same hospital and Basra Teaching Hospital, during the period September 2000 to April 200l were screened by the consultant psychiatrist using the Alcohol Use Disorder Identification Test (AUDIT) questionnaire [*9*]. All the men were interviewed by the same research team member (J.M.), all the questions were fully explained to them in Arabic. Patients who could not read or write gave verbal responses, and the form was filled by the researcher. The ethical committee of the College of Medicine approved the study protocol.

A total of 189 male patients scored positive on the AUDIT as having alcohol-related problems and were included in the study. The aim of the study and the questions in the questionnaire form were fully explained to the patients. We recorded patients' employment and economic status (monthly or daily income) and consumption of other psychoactive drugs. Alcohol consumption was estimated approximately by the number of bottles drunk per day. Since the majority of those abusing alcohol were of low educational status it was easier to record their daily intake of alcohol by bottle rather that the actual amount or volume and most (176 out of 189 patients) were drinking spirits, usually served in a standard bottle measuring 750 mL. An assessment was made of social behaviour (factors which indicated self-neglect, such as general appearance, shaving and hair, clean clothes, in addition to marital status and sexual behaviour) and nutritional status (appetite and reduction of food intake).

All the patients with alcohol problems underwent a full physical examination including measurement of blood pressure, pulse rate and temperature. The patients' general appearance and the colour of the skin and sclera were noted with special emphasis on jaundice, wounds and scars and skin tattoos (as a possible indicator of abnormal social behaviour, or alcohol and drug abuse). Examination of abdominal organs, heart and lungs and central nervous system (CNS) was also carried out clinically and confirmed by ultrasound.

Samples of blood (7 mL) were collected for the estimation of various biochemical and haematological parameters. Laboratory investigations included measurement of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and gamma-glutamyl transferase (GGT), serum albumin, uric acid and mean corpuscular volume (MCV), according to standard methods. Liver cirrhosis and hepatocellular carcinoma were diagnosed by liver biopsy and histopathological examination. Other investigations, such as ultrasound and magnetic resonance imaging, were done as required. Liver function tests were analysed according to the type of alcoholic beverage consumed.

Statistical analysis was carried out using the *SPSS*. The *t*-test was used to compare means and regression analysis for correlation between various parameters. $P < 0.05$ was considered statistically significant.

Results

Of the 189 male patients identified as drinking alcohol harmfully by the AUDIT test, the majority (77.8%) were in the age group 30–49 years, and only 5.3% were between 20 and 29 years (Table 1). The duration of alcohol intake was ≥ 10 years in about 67.7% of patients and ≥ 20 years in 26.5%. The duration of alcohol abuse was strongly correlated with the patient's age, with older patients having taken alcohol for a longer duration ($r = 0.933$, $t = 12.13$, $P < 0.0001$). All the patients drank large daily amounts of alcohol with 53.4% of patients drinking 1 or more 750 mL bottles of liquor per day, and 28 (14.8%) patients taking alcohol in the morning. The majority of patients used the locally manufactured drink arak (48.7%) and locally made gin (42.9%).

A high proportion of alcohol users also used tobacco (154, 81.5%), with 63.5% smoking more than 20 cigarettes per day (Table 1), and 20.6% smoking more than 40 cigarettes daily. A high proportion (153, 80.9%) also used other psychoactive drugs. These drugs included mainly centrally acting anticholinergic drugs (e.g. benzhexol and procyclidine) and benzodiazepines (Table 1).

Organic and neuropsychiatric disorders

The patients complained of various organic disorders (Table 2). Hepatic problems were found in 26 (13.8%) patients, cirrhosis in 32 (16.9%) and hepatomegaly in 87 (46.0%). Anal problems were reported by 113 (59.8%) patients, including haemorrhoids, anal fissure and anal abscess. Brain and cortical atrophy was detected by radioimaging in 3 (1.6%) patients. Systemic hypertension was present in 38 (20.1%) patients. Of the other findings (not shown on table), decreased appetite was reported by half of the patients (54.5%) and the majority of patients also reported decreased sexual activity (impotence).

Neuropsychiatric disorders (Table 3) were common among patients, including features of anxiety, depression and suicide attempts and various organic CNS involvement, such as delirium tremens and psychosis. Korsakoff psychosis was detected in 3 (1.6%) patients

Liver enzyme tests

Of the 32 patients with liver cirrhosis, the highest proportion were drinkers of *arak* (20.6%) followed by gin (16.0%) (Table 4). No cases of cirrhosis were seen among those drinking beer or whisky.

Two-thirds of the patients had raised ALT (47.1%) and AST (16.9%) levels (Table 4). A higher proportion of beer drinkers (7/13, 53.8%) had abnormal liver enzymes. There was a significant correlation between

Table 1 **Age distribution and alcohol, tobacco and psychoactive drug use among 189 male alcohol users attending clinics in Basra**

Variable	No. of patients	%
Age group (years)		
20–29	10	5.3
30–39	74	39.2
40–49	73	38.6
50–59	28	14.8
≥ 60	4	2.1
Duration of alcohol use (years)		
< 5	14	7.4
5–9.9	47	24.9
10–14.9	30	15.9
15–19.9	48	25.4
≥ 20	50	26.5
Main alcoholic drink consumed		
Arak	92	48.7
Gin	81	42.9
Beer	13	6.9
Whisky	3	1.6
Approximate amount consumed (bottle[a]/day)		
¼	13	6.9
½	33	17.5
¾	42	22.2
1	62	32.8
1½	39	20.6
Smoking (no. of cigarettes/day)		
0	35	18.5
< 10	9	4.8
10–19	25	13.2
20–29	51	27.0
30–39	30	15.9
40–49	29	15.3
50–59	7	3.7
≥ 60	3	1.6
Other psychoactive drugs used[b]		
Centrally acting anticholinergics	103	67.3
Benzodiazepines	29	18.9
Anticholinergics + benzodiazepines	15	9.8
Codeine (cough mixtures)	4	2.6
Anticholinergics + codeine	2	1.3

[a] *750 mL bottle, mostly spirits.*
[b] *Percentages calculated from those using other psychoactive drugs (n = 153).*

AST and ALT values ($P < 0.001$) (Table 5). The elevation of both enzymes was positively correlated with the MCV value ($P < 0.019$ and 0.005). The elevation of both ALT and AST was not related to the amount of alcohol drunk per day or the duration of alcohol ingestion, and was weakly correlated with the patient's age, but not significantly so.

GGT levels were elevated in 38 patients and the elevation of the GGT value correlated with the elevation in ALT levels ($P = 0.045$) (Table 5).

Hypoalbuminaemia occurred in 28.6% of patients, an effect that was not related to the amount or duration of alcohol intake, while it was correlated with the ALT level ($P = 0.026$) and weakly correlated with AST ($P = 0.065$) (Table 5).

Increased MCV levels were detected in 39.7% of patients, and the proportion was highest among the drinkers of whisky (2/3, 66.7%). This increase was weakly correlated with the daily amount of alcohol drunk but not with the duration of alcohol ingestion.

Different types of alcoholic beverages resulted in elevation of serum uric acid in 16.9% of the , especially among drinkers of arak (20.7%). No beer or whisky drinkers had raised uric acid. This elevation was positively correlated with ALT and AST levels but not significantly so (Table 5).

Discussion

AUDIT was developed by the WHO as a screening instrument for the detection of hazardous and harmful alcohol consumption [*9*]. It measures alcohol consumption, drinking behaviour and alcohol-related problems during the previous year. AUDIT has been found to be sensitive, specific and superior to any other screening tool including various laboratory tests [*10*]. In the present study the problem of harmful

Table 2 **Organic diseases and clinical signs recorded among 189 male alcohol users attending clinics in Basra**

Disease/clinical sign	No. of patients	%
Flushed face	87	46.0
Decreased body weight	98	51.9
Hepatomegaly:	87	46.0
Diagnosed by clinical examination	73	(38.6)
Diagnosed by ultrasound	14	(7.4)
Systemic hypertension:	38	20.1
Untreated	21	(11.1)
Treated	17	(9.0)
Liver cirrhosis	32	16.9
Jaundice:	26	13.8
With hepatomegaly	21	(11.1)
With liver cirrhosis	5	(2.6)
Portal hypertension	2	1.0
Hepatic cell carcinoma	1	0.5
Brain and cortical atrophy[a]	3	1.6
Anal problems reported by patients	113	59.8

[a]*Diagnosed by computerized tomography scan or magnetic resonance imaging.*

Table 3 **Neuropsychiatric disorders and behaviour signs recorded among 189 male alcohol users attending clinics in Basra**

Disorder/sign	No. of patients	%
Neuropsychiatric disorders		
Alcoholic tremor	104	55.0
Suicide attempt	98	51.9
Insomnia	86	45.5
Alcohol amnesia (blackouts)	56	29.6
Anxiety	47	24.9
Depression	38	20.1
Irritability and/or agitation	23	12.1
Withdrawal and delirium	5	2.6
Korsakoff psychosis	3	1.6
Behaviour signs		
Self-neglect	138	73.0
Wounds and scars	65	34.4
Skin tattoos	26	13.8

drinking mainly affected those in the age range 30–49 years (77.8%) and two-thirds had drunk alcohol for more than 10 years. About 53% of the male patients exceeded 1 bottle (750 mL) of spirits daily, and 15% reported morning drinking.

The high rate of neuropsychiatric disorders detected in the present study would be expected in a sample of psychiatric outpatient clinic attenders. A high prevalence of psychiatric symptoms is also expected among alcohol users. Individuals with alcohol abuse or dependence generally experience a 2- to 3-fold increased risk of anxiety or depressive disorders [*11*]. Epidemiological and clinical studies confirm a high morbidity of substance use disorder and mental disorders, with a one-fifth to one-third increase in the suicide rate among alcoholics [*12*].

The high rate of heavy smoking in our patients agrees with other studies, which show a high association of alcohol intake with smoking; it is claimed that there is the same genetic predisposition for abusing both substances [*13,14*]. The association of alcohol abuse with the abuse of other psychoactive drugs was recorded in a considerable number of our patients, either used simultaneously or as a substitute for each other. Simultaneous intake of alcohol with other centrally acting drugs, often called combinational abuse, is usually practised for the combination of effects experienced by users of the 2 drugs at the same time. This pattern represents a unique health risk, especially among adolescent patients, and commonly involves the intake of illicit drugs such as cocaine and marijuana [*15*].

Table 4 **Biochemical changes among 189 male alcohol users attending clinics in Basra according to type of liquor mainly used**

Parameter	Type of liquor consumed								Total	
	Arak		Gin		Beer		Whisky			
	No.	%	No.	%	No.	%	No.	%	No.	%
Liver cirrhosis	19	20.6	13	16.0	0	0.0	0	0.0	32	16.9
Increased MCV	40	43.5	27	33.3	6	46.2	2	66.7	75	39.7
Increased ALT	40	43.5	42	51.9	7	53.8	0	0.0	89	47.1
Increased AST	18	19.6	12	14.8	2	15.4	0	0.0	32	16.9
Reduced albumin	34	37.0	17	21.0	2	15.4	1	33.3	54	28.6
Increased uric acid	19	20.7	13	16.0	0	0.0	0	0.0	32	16.9
Total	92	100.0	81	100.0	13	100.0	3	100.0	189	100.0

MCV = mean corpuscular volume; ALT = alanine aminotransferase; AST = aspartate aminotransferase.

Korsakoff psychosis was detected in 3 (1.6%) of our patients, which is in agreement with a previous study conducted in Baghdad [*9*]. The severe damaging effect was also detected in our study by the occurrence of delirium tremens in 5 (2.6%) patients, with a history of admission to the psychiatric inpatient unit.

Alcohol is a known hepatotoxin. It is metabolized by the liver and the resultant metabolic disturbances are implicated in hepatic damage [*16,17*]. In our study, the risk of abnormal liver enzymes increased with higher estimated amounts of alcohol consumption. Laboratory screening tests based on elevated MCV and GGT levels may help physicians who are confronting patient denial, but elevated MCV or GGT are neither specific for alcoholism nor sufficiently sensitive to serve as effective screening tests [*18*].

Alcohol intake *per se* is not the sole determinant of liver damage in most individuals. Genetic factors have been suggested [*19*]. Factors that may have contributed to hepatic injury in our patients include the type of congeners (chemical impurities) due to the low quality of the locally made liquor; patients with poor nutritional status, older age and elevated MCV are also more at risk. The majority of patients in our study drank locally-made liquor due to its ready availability and low price. The most widely used local beverage was arak, which contains 45% v/v ethanol and is produced by distillation and flavouring with *mastikki* gum [*20*]. The damage is not related to the amount of alcohol intake or the duration of drinking,

Table 5 **Regression analysis of the correlation between different parameters**

Parameter	*r*	df	*F*-value	*t*-value	*P*-value
Durationa vs age	0.698	156	147.1	12.13	< 0.001
AST vs ALT	0.881	32	107.9	10.39	< 0.001
ALT vs MCV	0.334	48	5.917	2.433	0.019
AST vs MCV	0.439	38	8.835	2.970	0.005
AST vs amountb	0.131	37	0.628	0.792	NS
ALT vs amount	0.136	48	0.884	0.940	NS
ALT vs duration	0.046	42	0.085	0.292	NS
AST vs duration	0.052	34	0.090	0.300	NS
ALT vs age	0.170	51	1.496	1.223	NS
AST vs age	0.048	41	0.093	0.305	NS
Albumin vs duration	0.020	70	0.027	0.164	NS
Albumin vs ALT	0.380	33	5.410	2.327	0.026
Albumin vs AST	0.331	35	3.643	1.909	0.065
MCV vs amount	0.040	155	0.252	0.502	NS
MCV vs duration	0.107	143	1.637	1.280	NS
ALT vs uric acid	0.301	22	2.095	1.448	NS
AST vs uric acid	0.281	23	1.880	1.370	NS
Albumin vs amount	0.159	76	1.940	1.390	NS
GGT v ALT	0.375	28	4.419	2.102	0.045

[a]Duration of alcohol intake in years; [b]Estimate of daily amount of alcohol drunk applied to drinkers of spirits, who were the majority of patients.
r =correlation coefficient; df = degrees of freedom; NS = not significant.
MCV = mean corpuscular volume; ALT = alanine aminotransferase; AST = aspartate aminotransferase; GGT = gamma-glutamyl transferase.

although the latter was strongly correlated with the patient's age. Liver cirrhosis was detected in 32 (16.9%) of our patients. Heavy drinkers may develop cirrhosis at a rate of 2% per annum [*21*].

Hypertension was detected in 20.1% of our alcohol users. There is a known association between hypertension and the chronic consumption of alcohol and this combination increases the risk of major cardiovascular events [*21*].

In conclusion, harmful alcohol ingestion is present in the Iraqi population and results in both physical and psychological damage to the drinker. It is associated with smoking and centrally acting drug abuse. Risk factors for alcohol-induced damage included the type of alcoholic beverage ingested, age and nutritional status, but it was not related to the amount consumed daily nor to the duration of alcohol intake. Larger clinical and epidemiological studies to elucidate the extent of the problem in Iraq are required in order to plan for preventive and curative measures.

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