

Alcohol intake in patients admitted acutely to a general medical unit

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SUMMARY

The role of alcohol in causing acute medical admissions is recognised but not well quantified. Using a questionnaire we have studied prospectively alcohol intake in patients aged 18-60 years admitted to a medical unit and have analysed the contribution of alcohol to their admission. One hundred and six patients (61 male : 45 female) who fulfilled our preset age criteria were studied. Alcohol intake (mean \pm SEM) was 9 ± 1 and 12 ± 1 units on average and heavy drinking days respectively, and 38 ± 6 units during their last drinking week. Gamma glutamyl transferase (GGT) was >60 U/l (upper limit of normal) in 29 (n = 92). Eighteen (30%) men had drunk >50 units and seven (16%) women had taken >35 units in their last drinking week. In 25 (41%) men and 11 (24%) women alcohol intake was felt to contribute to their admission. In this subgroup, intake was 15 ± 2 and 20 ± 1 units on average and heavy drinking days respectively, and 87 ± 13 units in the last drinking week. GGT was available in 29 and was abnormal in 18. Admission diagnoses were drug overdose (n = 16), alcohol withdrawal symptoms (n = 7), liver disease (n = 6), haematemesis (n = 14) and others (n = 3). Fifteen (42%) felt they had a definite alcohol problem. The use and abuse of alcohol contributes significantly to the general medical workload in the age group studied.

INTRODUCTION

It is widely accepted that excessive alcohol consumption causes many different problems within our society.¹ It may contribute to physical and psychological ill health^{2,3} as well as accidents.⁴

A number of previous studies have reported alcohol-related problems in general hospital patients.² There have been marked differences in prevalence depending on the definitions of alcohol-related illness used, and the respective patient populations studied.

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Previous studies have concentrated mainly on identifying those patients with alcohol dependence or problem drinking. In contrast there have been few reports examining alcohol intake in patients admitted to medical units.⁶⁻⁷ Our aims were to record alcohol consumption in patients requiring acute medical admission and to assess the contribution of alcohol to the presenting illness. We also wished to study the value of serum gamma glutamyl transferase activity in identifying patients with potential alcohol problems, and to assess both dependence and the patients' perception of that dependence.

PATIENTS AND METHODS

Consecutive patients aged 18-60 years requiring emergency admission to a general medical unit in the Belfast City Hospital were identified over a six month period beginning in November 1990. Patients admitted to surgical or observation wards were not included. After informed verbal consent a questionnaire was used to obtain information about their use of alcohol. This was designed to assess patients' alcohol consumption, to study dependence and withdrawal symptoms and to ascertain their perception of the problem. Alcohol consumption on an average drinking day was quantified. Following this, consumption on a heavy drinking day was quantified and consumption during a week was estimated by asking them to say whether alcohol intake was 'light', 'average' or 'heavy' on each day during their last drinking week. The number of units of alcohol (equivalent to 8 g alcohol) during each of these periods was calculated.

Information on dependence and problem drinking was obtained using the 'CAGE' questionnaire.^{8,9} For our study problem drinkers were defined as those giving a positive reply to one or more of the 'CAGE' questions. Symptoms after withdrawal of alcohol were sought and graded from no symptoms through mild symptoms (defined as mild shakiness, nausea, vomiting and loss of appetite at least once during the last month) and severe symptoms (mild symptoms plus hallucinations and seizures or continuous drinking for the last month without withdrawal). At the end of the questionnaire patients were asked directly if they considered themselves to have an alcohol problem. A sample questionnaire is available on request.

Venous blood was analysed for mean cell volume, aspartate aminotransferase (AST) alanine aminotransferase (ALT) and gamma glutamyl transferase (GGT).

At discharge, case notes were reviewed by J McK to establish the diagnosis, reason for admission and whether or not alcohol intake had contributed directly to that admission.

Alcohol consumption during the last drinking week was grouped according to risk groups as defined by the Royal College of Physicians.¹⁰ They have suggested that weekly consumption <21 units in men and <14 units in women is "safe", 21-49 units in men and 14-35 in women is "hazardous" and >49 in men or >35 in women is "dangerous". A value of $p < 0.01$ was required for significance.

RESULTS

Three hundred and seventy-two patients were admitted during the study period. One hundred and six (61 male : 45 female) fulfilled the age criteria. The mean age was 38 ± 1 years.

Alcohol intake is shown in Table 1. This varied from 0 to 250 units per week. A breakdown according to accepted risk groups is shown in Table II. Forty-eight per cent of male admissions and twenty-two percent of female admissions had been drinking more than is considered safe.¹⁰

TABLE I
Alcohol intake (units) in the study population (mean \pm SEM).

	Men	Women	Total
Average day	12.6 \pm 1.2	4.6 \pm 0.7	9.2 \pm 0.8
Heavy day	16.4 \pm 1.3	5.5 \pm 1.0	11.8 \pm 1.0
Last drinking week	53.9 \pm 9.4	17.6 \pm 5.3	38.5 \pm 6.1
	n = 61	n = 45	n = 106

TABLE II
Alcohol consumption, CAGE questionnaire results, withdrawal symptoms and GGT according to recognised risk groups (n = 106).

	Men (n = 61)		Women (n = 45)		CAGE		Withdrawal Symptoms		GGT	GGT (n = 92)	
	n	Units/ Week	n	Units/ Week	+ve n	-ve n	Yes	No	(u/L)	Normal (<60 u/L)	Abnormal (>60 u/L)
Safe	< 21	32	< 14	35	6	61	2	65	52.8 \pm 12.8	49	8
Hazardous	21-49	11	14-35	3	3	11	2	12	74.6 \pm 17.3	5	7
Dangerous	> 49	18	> 35	7	20	5	20	5	194.0 \pm 54.1	9	14

TABLE III
Alcohol consumption on average and heavy days and last drinking week compared to biochemical and haematological markers using Spearman rank correlation coefficients.

	Average		Heavy		Week	
	RS	P	RS	P	RS	P
Average	—	—	0.89	< 0.001	0.84	< 0.001
Heavy	0.89	< 0.001	—	—	0.79	< 0.001
Weekly	0.84	< 0.001	0.79	< 0.001	—	—
MCV	0.26	< 0.01	—	(NS)	0.26	< 0.01
AST	0.30	< 0.01	—	(NS)	—	(NS)
ALT	0.28	< 0.01	0.29	< 0.001	—	(NS)
GGT	0.29	< 0.01	—	(NS)	0.32	< 0.01
AST/ALT ratio	—	(NS)	—	(NS)	—	(NS)

(NS: p > 0.01)

The relationships between the biochemical and haematological parameters and alcohol consumption are shown in Table III. Alcohol consumption on average and heavy drinking days correlated significantly with each other. Alcohol consumption during the last drinking week correlated with both MCV and GGT but not with either AST or ALT. The relationship between GGT and risk categories of alcohol consumption is shown in Table II. Of 35 whose consumption was considered unsafe GGT was abnormal in 21 suggesting a sensitivity of 60%. Of 57 patients whose consumption was considered safe 49 had a normal GGT indicating a specificity of 86%.

Twenty-nine (21 male : 8 female) had a positive CAGE enquiry (Table II). The sensitivity and specificity of a single positive CAGE answer in detecting patients who drink more than is safe was 59% and 91% respectively. Sensitivity improved to 80% if only those with "dangerous" intake were included. Six patients with a positive CAGE did not report excessive intake in their last drinking week. Two of these had a previous history of alcoholism, one other had collapsed with a serum alcohol level of 295 mg/dl and two had been advised to reduce their intake, because of a duodenal ulcer and epilepsy respectively.

Twenty-four (17 male : 7 female) had withdrawal symptoms (Table II) and in six men symptoms were severe. Sensitivity and specificity of these symptoms in detecting those who drink more than is safe was 56% and 97%. Fifteen (11 male : 4 female) believed they had a definite alcohol problem. All but the previously mentioned two patients were in the 'at risk' categories of alcohol consumption.

In 36 of our 106 patients alcohol intake contributed directly to their admission (Table IV). In three of the 16 with an alcohol related overdose, serum alcohol was available on admission and was >200 mg/dl in all. Gastritis was confirmed by endoscopy in all patients presenting with haematemesis. Two patients had collapsed when intoxicated. The 34 year old man with gout drank 189 units of alcohol per week.

Alcohol consumption in those with an alcohol related admission is shown in Table V. GGT was abnormal in 62%. Twenty-two (61%) of these patients had a positive CAGE enquiry, 21 (58%) reported withdrawal symptoms and in six (17%) symptoms were severe. Only 15 (42%) felt they had a definite alcohol problem.

TABLE IV

Final admission diagnoses in those patients whose alcohol ingestion contributed to admission.

Diagnosis	n	M/F
Drug overdose	16	9/7
Alcohol withdrawal	7	7/0
Liver disease	6	3/3
Haematemesis	4	4/0
Collapse	2	1/1
Gout	1	1/0

TABLE V

Alcohol consumption in those patients whose alcohol ingestion contributed to admission.

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Safe	6	3	9
Hazardous	4	2	6
Dangerous	15	6	21

DISCUSSION

A questionnaire approach had been used extensively to assess alcohol dependence.^{8,9,11,12} Hesselbrock et al¹¹ obtained corroborative evidence from relatives of patients admitted to an alcoholism unit and suggested that the information obtained from patients was accurate. In a study of patients attending a liver clinic however a personal interview was found to be less reliable.¹³ If some of our patients denied an alcohol problem they may have underestimated their consumption. Our results show that a large proportion of our medical patients drink more alcohol than is considered safe. In a random sample of the Belfast population 27% of men and 12% of women of a similar age group (n=4598) drink more than is safe (Prof. A E Evans, Belfast Monica project, personal communication). A higher proportion of heavy drinkers (48% of men, 22% of women) was found in our inpatient survey. This difference between hospital and general populations has been noted elsewhere¹⁴ and may imply an aetiological role for alcohol in admission to hospital. It also may reflect differing alcohol intakes in groups more susceptible to medical illness because of socio-economic reasons for example.⁶

We found that alcohol ingestion contributed to 34% of admissions but was excessive in only 75% of this group during their last drinking week. We have used a cut-off of 21 units for men and 14 units for women during the last drinking week to predict potential alcohol problems.¹⁰ This seems justified as 77% of the 35 patients in our total study who would drink more than this had an alcohol related admission. By contrast alcohol contributed to the admission of only 13% of patients drinking less. Other studies have reported alcohol related illness as causing 16-27% of admissions to different units.^{6,15,16,17,18} The higher percentage of alcohol related illness in our study may be due in part to the large number of cases of overdose. We were careful to include only those patients whose admissions were alcohol related. Many other patients were admitted with drug overdose but alcohol was not felt to contribute to their admission. Other patients admitted to hospital with alcohol related overdose also may have been observed overnight in the accident and emergency department. The overall spectrum of alcohol related diagnoses reported here, however, is similar to that previous publications.^{6,15}

Mean cell volume and GGT correlated with weekly alcohol consumption. This has been noted previously^{19,20} and might further support the accuracy of our questionnaire. The sensitivity of GGT in detecting alcoholism has been reported to range from 54-85%.²¹ The sensitivity and specificity of GGT in our inpatient population, in which there is a high prevalence of excessive drinkers make it a useful test in this group, but it may be of less use in general population screening²¹ where there is a lower prevalence of alcoholism.

It has been suggested that multiple discriminant analysis of a number of markers of alcohol ingestion might improve the specificity of biochemical testing.²² The specificity of 86% is good and would be improved further if patients with other obvious causes of elevated GGT, eg obstructive jaundice had been excluded. We did not exclude any available GGT result from analysis.

The low sensitivity of GGT has led to the search for other markers for alcohol consumption such as carbohydrate deficient transferrin,²³ though technical problems with this assay must be overcome¹⁹ before it is more widely available. The other major method for screening for alcohol problems is by questionnaire. Our CAGE enquiry and simple questions about withdrawal symptoms had a very similar sensitivity and specificity to GGT.

Screening tests are useful in alerting a doctor to potential alcohol abusers, and may stimulate further history-taking. There is however, no substitute for the alert doctor with a high degree of suspicion, and yet sufficient tact to be able to take a good drinking history without alienating the patient.²⁴

In conclusions we have found a high prevalence of alcohol related problems in general medical inpatients. Some are aware of the problem while others, particularly the young, do not admit to any difficulty. A simple counselling session may benefit these patients,²⁵ but follow-up can be difficult.²⁶ Identification of the problem has important implications for health promotion. If effective therapy is to be achieved strong links must be developed between hospital and community services.

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