PAPERS AND SHORT REPORTS

Prevalence of excessive or problem drinkers among patients attending somatic outpatient clinics: a study of alcohol related medical care

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Abstract

The prevalence of alcohol related morbidity was studied among 2038 patients attending somatic outpatient clinics. A further 76 patients had refused the study, giving an overall drop out rate of 3.6%. Several methods were combined so as to detect as many patients with problem drinking as possible. According to the criteria and definitions employed 17% of men (confidence interval 15% to 19%) and 4% of women (confidence interval 3% to 5%) were excessive consumers of alcohol or problem drinkers. The highest proportion of such patients—that is, 17%—was noted in the emergency rooms (27% of men, 8% of women). At other clinics the proportions varied from 11% to 17% of men and from 2% to 4% of women. The strongest relations between overconsumption of alcohol and consultation at the clinic were among patients attending the medical outpatient clinic and the emergency rooms; in 86% (confidence interval 75% to 97%) and 88% (confidence interval 81% to 95%) of problem drinkers attending these clinics, respectively, alcohol was related to the consultation. Consultations were related to alcohol in 82% of women with excessive or problem drinking and 73% of men defined in this way. There was a tendency to a higher proportion of men with excessive or problem drinking in the age group 40-49 years.

These findings show that among patients classified as excessive

or problem drinkers attending somatic outpatient clinics there was a close relation between alcohol consumption and utilisation of medical resources, especially in women.

Introduction

People who consume excessive amounts of alcohol or have problems associated with drinking have an increased need for medical care.¹⁻⁴ Hospital inpatients contain a larger proportion of problem drinkers and alcoholics than does the general population.⁵ This is true in both psychiatric and other wards and has been noted both in Sweden⁶⁻¹² and in other countries.^{5 13-17} There is also a high proportion of people with underlying alcohol related problems among patients who attend somatic and psychiatric emergency rooms.¹⁸⁻²³ Studies from general practice are few and inconclusive, though a tendency towards overrepresentation of patients with excessive alcohol consumption or alcohol abuse, or both, has been reported.^{2 24-27}

It is not only alcoholics who have an alcohol related need for medical care. This need may also be found in people with occasional intoxication or excessive consumption without signs of alcohol abuse and patients who consume alcohol during the course of certain diseases or while receiving drug treatment. Calculating the number of alcoholics among patients therefore underestimates the problem of alcohol related medical care. On the other hand, excessive alcohol consumption may be an incidental finding, not associated with the disorder for which a patient is seeking medical care.

The results of different studies of the alcohol related need for medical care have varied considerably. McIntosh made a critical assessment of 31 publications containing estimates of the prevalence of alcohol related problems within general hospitals²⁸ and found many deficiencies and differences in the survey techniques, definitions, and methods used. Most studies had not analysed whether alcohol was or was not the underlying cause of the admissions and McIntosh could not derive valid or reliable estimates of the extent of the problem on the basis of the studies.

The purpose of our investigation was to calculate the number of excessive consumers of alcohol or problem drinkers, defined

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according to strict criteria, among patients attending somatic outpatient clinics. An attempt was made not only to count these patients but also to estimate the degree of alcohol related utilisation of medical care in the population concerned.

Subjects and methods

The study was carried out in November and December 1982 at the Karlstad Central Hospital, a medium sized hospital in central Sweden, and at a district health centre situated in Skoghall, a small community about 10 km outside Karlstad. Skoghall has a population of about 13 000. The main industry is a paper factory with about 1800 employees. The study group consisted of patients attending by appointment the district health centre in Skoghall and the surgical, medical, and orthopaedic outpatient clinics at the hospital. Patients attending the emergency rooms at the hospital were also studied.

A total of 2114 patients (1000 men, 1114 women) were invited to participate. Selection was according to a prearranged plan for each department (see below) aimed at obtaining an even sex and age distribution of subjects over and under age 50. In this way roughly the same number of male and female patients in each 10 year age group could be obtained, except for the age group 15-20, in which there were comparatively few patients. Patients under 15 and over 70 were excluded. The actual number of patients attending each clinic was also noted and subsequently a correction for actual numbers made.

The investigation was presented to the patients as a study of how environmental factors such as stress, solvents, smoking, and alcohol consumption may influence health. Patients were reassured that the information would be treated as confidential and would be completely anonymous to all but the investigators. Questionnaires were collected immediately the patients had completed them so that they could be sure that the treating physician would not see them.

To minimise the drop out rate specially instructed nurses informed the patients about the study and encouraged them to participate. The nurses were in continual contact with the two investigators, one of whom was always available if any problem arose. If a patient hesitated to participate one of us was called to give further information and encouragement.

After blood samples had been taken participants were asked to complete the questionnaire. This consisted of 25 items, including four concerning alcohol—specifically, the frequency of consumption, the amount consumed during a normal week and in the previous week, and the frequency of occasions of high consumption. Blood samples were analysed for serum γ -glutamyltransferase activity, ethanol concentration, and aspartate aminotransferase activity. The patient's treating physician also answered a questionnaire immediately after the consultation. In this questionnaire the doctor gave an opinion on whether the patient definitely or probably had consumed a large amount of alcohol and whether there was a definite or probable relation between alcohol and the disorder for which the patient was attending the clinic. The physician's opinion was based on clinical impression and the records from previous consultations at that clinic. No guideline was given to the physician about what level of alcohol consumption should be regarded as excessive. The physician was also asked whether another inebriated person had caused the patient the disorder in question. Finally, records from the psychiatric clinic, social welfare services, and alcohol ambulatory service (an outpatient clinic for people with problem drinking) were checked for each patient.

CLINICS

The study was conducted in the following five outpatient clinics.

In the *somatic emergency rooms* the study proceeded for three weeks round the clock. All women were examined in the first week, all men in the second week, and patients aged over 50 in the third week. There were 257 women and 255 men.

In the *surgical outpatient clinic* the study period was three weeks. Patients under 50 were examined in the first week, patients of any age in the second week, and all patients except women under 50 in the third week. There were 257 women and 205 men.

In the *medical outpatient clinic* the study proceeded for three weeks. All patients under 50 were examined in the first week and patients of all ages in the second and third weeks. There were 209 women and 201 men.

In the *orthopaedic outpatient clinic* the study proceeded for three weeks. All patients were examined during the first two weeks. During the third week all patients over 50 and men and women under 50 with odd birth dates were examined. There were 176 women and 190 men.

In the *district health centre* the study period was four weeks. All patients

were examined during three weeks, but in order to obtain a more even distribution only men were examined during one week. There were 215 women and 149 men.

DEFINITIONS

A patient was classified as an excessive problem drinker if one or more of the following criteria were fulfilled:

(a) Serum γ -glutamyltransferase activity was over 0.9 μ kat/l due to alcohol. (This limit was chosen because in a study of organised teetotallers the 95th centile of the group was found to have this value.²⁹ Each of our patients with a raised serum γ -glutamyltransferase value was analysed carefully by a physician consulted specially for the purpose to determine the underlying cause. The result of this part of the investigation is described elsewhere.³⁰)

(b) Admission in patient's questionnaire of consumption of over 280 g pure alcohol a week (40 g pure alcohol/day). (This limit has been considered to be high risk consumption in some publications.³¹)

(c) Statement in doctor's questionnaire that patient had definitely consumed an excessive amount of alcohol or that the disorder for which the doctor was being consulted was definitely related to alcohol.

(d) Records from psychiatric clinic showed that patient had been in contact with clinic because of diagnosed alcoholism or other alcohol related problems during past five years.

(e) Patient had been registered with his or her home municipality's ambulatory alcohol service during past five years.

(f) Social welfare registers showed that patient had been in contact with social welfare authorities because of temperance offences during past five years.

(g) Ethanol concentration in blood was over 10.0 mmol/l at time of examination.

(a) to (g) were used as indicators to calculate the number of excessive or problem drinkers. Nevertheless, though (g) identified a patient with alcohol in the blood, this did not necessarily mean that the patient was an excessive or problem drinker; alcohol may, however, have been relevant to the consultation. A patient who satisfied (a), (b), (c), or (g) but not (d), (e), or (f) was regarded as having a previously hidden alcohol problem.

ANALYSIS OF RELATION BETWEEN ALCOHOL AND VISIT FOR MEDICAL CARE

Information from hospital records was analysed for all patients classified as excessive or problem drinkers to see if there was any relation between alcohol and the consultation in question. Results were expressed as (a) alcohol dominant factor underlying the consultation, (b) alcohol contributory factor to the consultation, and (c) alcohol not relevant in the consultation.

The analyses were based on a comprehensive evaluation of each consultation and not on a preformed list of the various possibly alcohol related disorders—for example, fractures may have many different causes; lumbago or "gastritis" may be related to alcohol in a varying degree. In studies of hospital inpatients no significant differences in diagnoses were found between problem drinkers and other patients.^{5,11}

Though the analyses were not based on a fixed schedule, some diagnoses or disorders were considered to have varying degrees of relation to alcohol consumption. Thus alcohol was considered to be a dominant factor in the following conditions, which were therefore categorised as alcohol related: alcohol psychosis, abstinence epilepsy, alcohol intoxication, cirrhosis of the liver and pancreatitis due to alcohol, injuries and accidents when the patient was under the influence of alcohol, and injuries or accidents when another drunken person had caused the patient's injury.

In the following conditions careful analysis of the circumstances of the excessive or problem drinker's consultation was carried out before alcohol was considered to be a contributory factor. Potentially alcohol related conditions were therefore hypertension, diabetes mellitus, gastritis and peptic ulcer, neurological disorders, digestive disorders, neurotic and psychosomatic complaints, cardiomyopathy, atrial fibrillation, chest pain, bronchitis, lumbago, lumbago-ischiolgia, unfavourable influence of drugs, minor and major injuries, distortions, fractures, cerebral concussion, and burns.

To increase validity the analyses were performed separately and independently by two physicians with experience of alcohol related disorders. In cases of disagreement the hospital case records were re-examined by the two physicians together and a joint evaluation made.

STATISTICS

95% Confidence intervals were calculated for the different frequencies of patients identified as excessive consumers of alcohol or problem drinkers.

Results

Of the 2114 patients invited to participate in the study (1000 men, 1114 women), 76 (3.6%; 49 men, 27 women) refused. The frequency of drop outs was lowest at the medical clinic, highest at the district health centre, and fairly evenly distributed among the other clinics. The study group therefore comprised 2038 patients (table I). In 53 cases (2.6%) the blood samples could not be used because of technical difficulties; 11 patients (0.5%) were unable to fill in the questionnaire (for example, because of acute severe illness or mental retardation); and in 51 cases (2.5%) the doctor's questionnaire was missing.

The number of patients classified as excessive or problem drinkers was calculated by adding the numbers of patients fulfilling the criteria listed above. This was done by gradual exclusion, so that no patient could be counted more than once, regardless of how many indicators had identified the patient. Altogether 208 patients (10.2%) were classified as excessive or problem drinkers. Of these, 163 were men (17.1%; confidence interval 15% to 19%) and 45 women (4.1%; confidence interval 3% to 5%). The emergency rooms had the highest frequency of these patients (17%; confidence interval 14% to 20%). Frequencies were fairly evenly distributed among the other clinics but with a tendency to higher frequencies in the orthopaedic and medical clinics (table II).

TABLE I—Composition of study group and proportions of participants for whom questionnaires or blood samples were missing. Figures are numbers (percentages) of subjects

	Men	Women	Total
Invited to participate	1000	1114	2114
Refused study	49 (4.9)	27 (2.4)	76 (3.6)
Agreed to study	951 (95.1)	1087 (97.6)	2038 (96.4)
Patient's questionnaires missing	7 (0.7)	4 (0.4)	11 (0.5)
Doctor's questionnaires missing	34 (3.6)	17 (1.6)	51 (2.5)
Blood samples missing	24 (2.5)	29 (2.7)	53 (2.6)

TABLE II—Percentage distribution of men and women classified as excessive or problem drinkers seen at different outpatient clinics. (95% Confidence intervals given in parentheses)

	Emergency rooms		Surgical		Medical		Orthopaedic		District health centre	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total No of patients	243	250	194	250	197	207	182	173	135	207
% Classified as excessive or problem drinkers	27 (21 to 33)	8 (5 to 11)	11 (7 to 15)	2 (0 to 4)	15 (10 to 20)	4 (1 to 7)	17 (12 to 22)	4 (1 to 7)	13 (7 to 19)	2 (0 to 4)

TABLE III—Percentage distribution of men and women in various age groups classified as excessive or problem drinkers

	Age group (years)												Total	
	≤19		20-29		30-39		40-49		50-59		≥60			
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total No of patients	65	60	158	188	162	171	154	185	174	242	238	241	951	1087
% Classified as excessive or problem drinkers	14	2	22	5	15	4	25	6	17	4	11	3	17	4

TABLE IV—Relation between alcohol and reason for seeking medical care at different outpatient clinics in patients classified as excessive or problem drinkers. (95% Confidence intervals given in parentheses)

	Emergency rooms	Surgical	Medical	Orthopaedic	District health centre	Total
Total No of patients	78	27	39	37	23	204
% Whose consultations were related to alcohol	88 (81 to 95)	59 (40 to 78)	87 (76 to 98)	62 (46 to 78)	61 (41 to 81)	77 (71 to 83)
% Whose consultations were not related to alcohol	12 (5 to 19)	41 (22 to 60)	13 (2 to 24)	38 (22 to 54)	39 (19 to 59)	23 (17 to 29)

Analysis of the age distribution of patients with excessive or problem drinking showed the largest concentration (14%) in the age group 40-49 years (table III). Among patients seen in the emergency rooms 38% of the men and 24% of women aged 40-49 were excessive or problem drinkers. At the surgical outpatient clinic most patients with excessive or problem drinking were young, 78% being under 50. There was also a tendency to overrepresentation of these patients in younger age groups in the district health centre, especially among men; thus nine of 17 male excessive or problem drinkers were under 30. In the medical outpatient clinic most patients with excessive or problem drinking were between the ages of 40 and 49, 72% of the men and 67% of the women being under 50.

Ninety eight patients classified as excessive or problem drinkers (47%) were identified by more than one indicator. In 56 (34%) of all 163 male patients identified their excessive or problem drinking was considered to have been previously hidden—that is, there was no record of their having sought help for their problem from the psychiatric clinic, social welfare services, or alcohol ambulatory service. The corresponding figure for women was 36% (16 of 45 cases). Analysis of the non-participants showed no obvious overrepresentation in the records of patients who had sought help for an alcohol problem or in the proportion with obvious clinical signs of alcoholism—for example, drunkenness.

RELATION BETWEEN ALCOHOL AND CONSULTATION

We analysed 204 of the visits to outpatient clinics by patients classified as excessive or problem drinkers and by those whose disorders were reported by the doctor as having been caused by another intoxicated person. Nine hospital records of the visits could not be traced. Among the consultations made by these patients alcohol was found to be relevant in 77% (confidence interval 71% to 83%; table IV). In the outpatient clinics studied alcohol was the dominant or a contributory factor in 7.7% of all consultations—that is, in 12.5% of those made by men and 3.4% of those made by women. The highest proportion of alcohol related consultations occurred in the emergency department and the next highest at the medical outpatient clinic (table V). Among the alcohol related consultations made by patients classified as excessive or problem drinkers alcohol was more often the dominant reason for the visit in the emergency rooms and surgical outpatient clinic. This relation was less strong at the other clinics (tables IV and V). Figure 1 shows the proportions of men and women with excessive or problem drinking attending the clinics and the proportions of consultations related to alcohol. A higher proportion of alcohol related consultations was found among the women (82%) than among the men (73%).

Visits made by excessive or problem drinkers plus those of patients whose visit was necessitated by another intoxicated person were analysed separately by two physicians independently of each other. Primary concordance between the evaluations regarding the relation between alcohol and the consultation was noted for 177 of the 204 visits (87%).

Of the patients classified as excessive or problem drinkers, 48% were registered at the psychiatric clinic because of alcohol problems and 40% had a serum γ -glutamyltransferase activity of over 0.9 μ kat/l, whereas only a few of these patients admitted excessive consumption (16%), had a blood ethanol concentration exceeding 10.0 mmol/l (16%), or were registered at the ambulatory alcohol service (13%). Among the patients detected by means of the doctor's questionnaire 94% of consultations were related to alcohol. In the group of 33 patients with a blood ethanol concentration above 10.0 mmol/l alcohol was considered to be relevant in 85% of consultations (table VI); 28 of these patients could be considered to have a drink problem or to have excessive consumption, as they were also detected by other indicators. Thus in five of these patients the alcohol consumption may have been occasional. In three of the inebriated patients, however, another intoxicated person had caused the injury leading to the consultation—for example, in a fight or accident between two drunken people—and thus a strong relation between alcohol consumption and the consultation was noted

FIG 1—Proportions of male and female excessive or problem drinkers attending different clinics (open columns) and proportions of alcohol related consultations (shaded columns). Bars are 95% confidence intervals.

TABLE V—Percentage distribution of patients in whom alcohol was dominant or contributory reason for consultation at different outpatient clinics

	Emergency rooms	Surgical	Medical	Orthopaedic	District health centre
Total No of patients	493	444	404	355	342
% In whom alcohol was dominant factor	7.3	2.0	2.7	2.0	0.6
% In whom alcohol was contributory factor	6.7	1.6	5.7	4.5	3.5

TABLE VI—Numbers of patients with excessive or problem drinking detected by each indicator and proportion of alcohol related consultations among patients positive for each indicator. (Some patients were positive for several indicators)

	Patients classified as excessive or problem drinkers (n=208)	No (%) of patients with consultations related to alcohol
Serum γ -glutamyltransferase >0.9 μ kat/l due to alcohol	84	67 (80)
Patient's questionnaire	33	17 (52)
Doctor's questionnaire	52	49 (94)
Psychiatric records	99	81 (82)
Ambulatory alcohol service	26	22 (85)
Social welfare registers	67	51 (76)
Ethanol >10.0 mmol/l	33	28 (85)

for these patients. Only 15% of patients with an ethanol concentration in the blood exceeding 10.0 mmol/l admitted overconsumption.

Discussion

Our study differs in three important respects from most other studies of the prevalence of problem drinkers in medical care. Firstly, the type of population investigated—that is, patients attending somatic outpatient clinics—has not been extensively studied before for alcohol consumption. Secondly, we used a combination of several methods of detecting excessive or problem drinking. Thirdly, the consultation in question was analysed for each patient classified as an excessive or problem drinker.

Previous studies based on patients attending somatic emergency rooms detected problem drinking in 20-30% of men and 2-11% of women.¹⁹⁻²² These studies, however, were performed in large city hospitals, and the criteria and methods employed differed from one study to another. Nevertheless, our findings in the emergency rooms of a medium sized hospital were similar—that is, 27% of men and 8% of women were classified as excessive or problem drinkers and alcohol was relevant in 88% of consultations.

Only few studies have been published concerning patients with excessive alcohol consumption in primary health care. One study at a district health centre, based on data from registers of various kinds, found that 13% of male patients had an underlying alcohol problem.² Another study based on data from the records of a district

health centre alone showed that 1.4% of all patients recorded were problem drinkers.²⁵ Neither study examined whether alcohol was causally related to the patients' medical problems or was only an incidental finding. A study based on questionnaires answered by 3500 patients and their doctors showed that in 6.9% of cases alcohol was definitely or possibly related to the consultation.²⁴ This figure is not reliable, however, because of the high drop out rate (21%) and the uncertainty of subjective assessments. In our study alcohol was a definite or contributory factor underlying 4.1% of visits to the district health centre.

There are no comparable studies from hospital outpatient clinics. Among the clinics in our study the orthopaedic clinic had the highest frequency of patients classified as excessive or problem drinkers (17% of men, 4% of women), whereas such patients attending the medical outpatient clinic showed the strongest relation between alcohol and the disorder for which medical care was being sought (alcohol relevant in 87% of consultations).

Studies in somatic inpatient clinics in Sweden have found high frequencies of problem drinkers, especially among patients in intensive medical care units⁷ and surgical⁸ and orthopaedic wards.¹² Many investigations have been carried out in general hospitals in other countries. In a critical assessment of most of these publications McIntosh pointed out that a valid estimate of the extent of the problem was rendered impossible by deficiencies and differences in methods, definitions, and survey techniques.²⁸

It has been claimed that the health of a population is inversely related to the consumption of alcohol per head in that population.³²

Thus according to this so called total consumption model countries with a higher mean alcohol consumption than Sweden should have a higher rate of alcohol related morbidity and mortality. Figure 2 shows the official alcohol consumption per head in various countries for 1982, when our study was performed. In Sweden the mean

FIG 2—Consumption of 100% alcohol per head of population in different countries, 1982. (Reprinted from *Rapport 84* with permission from the Central Association for Alcohol and Narcotic Information, Sweden (CAN).³⁶)

*Information lacking.

alcohol intake in 1982 was 5.4 l of 100% alcohol, which may be compared with, for example, the 13.3 l of pure alcohol consumed per head in France. Changes in mortality due to cirrhosis of the liver follow the changes in alcohol consumption in any one country. In 1982 the mortality from liver cirrhosis per 100 000 population in Sweden was 12.2. Corresponding figures for the high consuming countries France, Italy, Spain, and Hungary were 30.8, 34.2, 22.5, and 23.1, respectively. In England the mean alcohol consumption was 6.6 l of 100% alcohol and the mortality from cirrhosis of the liver 3.9/100 000. The validity of figures concerning deaths from cirrhosis of the liver also depends on the extent of postmortem investigations done in a country. It has recently been shown that the mortality from liver cirrhosis in Sweden has decreased in recent years in parallel with a decline in alcohol consumption since 1976.³³ Our results concerning alcohol related medical care should be considered in the light of these data on consumption in different countries.

In this study we tried to overcome some of the methodological difficulties which are inherent in this type of investigation. We

defined precisely the term excessive or problem drinker based on certain criteria. Several methods for detecting underlying alcohol problems were employed in order to minimise the number of unidentified patients with excessive or problem drinking and thus obtain a reasonably valid figure. The best methods of identifying these patients were to scrutinise the records of the psychiatric clinic and measure the serum γ -glutamyltransferase activity. All patients who in the view of the treating physician and investigators may have had a background of excessive alcohol consumption were identified and had their consultations analysed to see whether their drinking was an incidental finding or related to the visit. The possibility was also considered that another person's drinking may have led to the patient's need for medical care.

There are difficulties in defining conditions that are "related" to alcohol. It is common to use lists of diseases that are found more frequently in heavy drinkers than light drinkers or non-drinkers.^{3,12} These, however, provide no information on the extent to which alcohol use may have contributed to the disorder in question in the individual patient. Though some conditions (alcohol intoxication, cirrhosis of the liver due to alcohol) may be said to be directly related to alcohol, in the individual patient most diseases have a varying degree of relation to the use of alcohol—for example, fractures, accidents, gastritis, neurotic disorders, epilepsy. Hence it seems more appropriate to analyse the consultation in question in each case. This procedure, however, has obvious limitations, as the analysis is dependent on the observer's judgment and therefore inevitably will have some degree of subjectiveness. In this study in an attempt to increase reliability two physicians with experience of alcohol related diseases made separate analyses. This was done on the basis of common agreement about the disorders in which alcohol should be considered to be a dominant or contributory factor. There was good concordance between the findings of the two physicians. The results thus depended on what conditions were considered to be alcohol related at the time. Other conditions which in future may be shown to be alcohol related were not included; this is also a methodological limitation, though unavoidable.

Another source of error is a high drop out rate; but in our study the drop out rate was only 3.6%, which is exceedingly low.

Patients were selected according to a prearranged plan in order to obtain an adequate number of patients of both sexes in each age group. The results were subsequently corrected for the actual age and sex distribution of the patients in each clinic. The corrected figures did not influence the results substantially.

The results obtained in the specialty outpatient clinics (internal medicine, surgery, orthopaedics) are probably representative of similar clinics at several other Swedish middle sized hospitals. The results should not be expected to be valid for large city hospitals or other hospitals in communities with a widely differing social structure. Similarly, different district health centres show great differences in the types of patients seen, depending on the social structure of the community which they serve. Our results should therefore be interpreted with caution. Near the emergency rooms studied is a detoxification unit where people who are drunk may sober up. Without access to such a unit a higher proportion of drunken individuals would probably be found in the emergency rooms. Moreover, differences in psychiatric resources among different health care districts will influence the decision on which clinic will admit a patient with excessive or problem drinking.³⁴ More psychiatric care is utilised by patients with excessive or problem drinking in districts with adequate psychiatric resources, whereas in other districts such patients use somatic short term care to a greater extent.

It is well established that there is a high frequency of alcohol related problems in psychiatry, in medical and surgical wards of general hospitals, and in emergency rooms in large hospitals. Our study shows that the proportion of male patients with such problems is also high in somatic outpatient clinics outside the large city hospital. Women patients with excessive or problem drinking were found to a less degree, except in the emergency rooms. The same criterion of excessive consumption was used for men and women—that is, consumption of over 280 g pure alcohol a week. Alcohol consumption much below this, however, may have a

deleterious effect on the female liver,³⁵ which may justify using a lower threshold for women. In this study, however, only five more women would have been classified as excessive or problem drinkers if the limit had been lowered to 150 g pure alcohol a week. Two of these women were also identified by other indicators. Thus the results were not greatly influenced by the limit chosen for women in this study. Among the patients classified as excessive or problem drinkers there was a close relation between alcohol consumption and the need for medical care, especially in women.

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SHORT REPORTS

Time of separation of the umbilical cord and its relation to infection in infancy

In recent reports of children with severe immunodeficiency because of defective function of polymorphonuclear leucocytes the authors emphasised that in many of the children separation of the umbilical cord had been delayed beyond 10-12 days and in some cases up to six weeks.¹⁻⁴ The abnormalities found were associated with either functional mobility defects in polymorphonuclear leucocytes or a genetically determined lack of surface membrane glycoproteins (important in cell contact and adherence), or both. The prolonged time to separation of the cord has been assumed to reflect a general defect of intracellular contractile proteins. To assess the clinical importance of delayed separation of the cord a community study was made of children born in an urban area in the midlands of England.

Methods and results

The mothers of children in the three general practices in which one of us (WR) worked were visited soon after delivery and a record made of the day after delivery on which the stump of the umbilical cord separated from the child. The children were visited at regular intervals thereafter until they had all reached the age of 2 years. The practice and health visitor's records were then examined and the number of occasions on which the child had been seen and treated for an infection noted. Infections were recorded as periods of ill health for which an antibiotic had been prescribed by the family practitioner.

The records of 56 of the cohort of 64 children seen initially were available at the end of the two year follow up. The mean time to separation of the umbilical cord was 9.4 days (range 2-28). During the two years the total number of infective episodes recorded for these children was 271, with a mean of 4.8 per child. The 27 children whose umbilical cord separated at a time interval less than the mean (nine days or less) had a much lower incidence of infections than the 29 children

whose cords separated after 10 days or more (87 v 184). The mean (SD) number of infections per child was 3.2 (3.1) in the group whose cords separated at nine days or less and 6.3 (5.9) in the other group ($p < 0.02$). There was therefore a trend towards more infections in those children whose umbilical cord separated later, but there was considerable variation: two children whose cords separated at 13 and 16 days, respectively, had no infections recorded, and the child with the longest delay till separation (28 days) had only two infections in two years, although he suffered from failure to thrive and was placed for a time on a gluten free diet, but by 2 years he was developing normally and receiving a normal diet.

The children comprised 22 of immigrant parents (mainly Asians) and 34 of native British parents. The children of immigrant parents tended to have slightly more infective episodes but this was not significant, nor was there a significant difference between the ethnic groups in the number of days after birth that the cord separated.

Comment

Several factors determine whether young children are likely to get infections, such as birth weight, birth order, social class, etc, but none of these have been related to the time after birth when the umbilical cord separates. This study supports the view that children who experience a delay in separation of the umbilical cord are likely to suffer more infective episodes in infancy than those whose cords separate early. The pathophysiological explanation of this remains to be explored.

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