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.

Financial support was received from the Delegation for Social Research (DSF) of the Swedish Ministry of Health and Social Affairs. We thank Åke Nilsson and Hanne Prytz for their help and advice in this research.

References

- 1 Waern U. Findings at a health survey of 60-year-old men and recorded disease during their preceding 10 years of life. University of Uppsala, 1977. (MD thesis.)
- 2 Romelsjö A. Alcohol related problems in Olofström. *Alkohol Och Narkotika* 1983;4:11-5. (In Swedish.)
- 3 Kristenson H, Peterson B, Trell E, Hood B. Hospitalization and alcohol-related morbidity within three years after screening in middle-aged men. *Drug Alcohol Depend* 1982;9:325-33.
- 4 Damström-Takker K, Olsson L, Idström CM. The consumption by alcohol abusers of in-patient health care and social welfare. *Lakartidningen* 1981;78:434-7. (In Swedish.)
- 5 Jarman CNB, Kellett JM. Alcoholism in the general hospital. *Br Med J* 1979;iii:469-72.
- 6 Alevård R, Borg S, Eklund S-O, Keiland V, Östman O. Psychiatric care caused by alcohol consumption. *Lakartidningen* 1980;77:282-5. (In Swedish.)
- 7 Bunketorp O, Jönsson D, Stakeberg H. Experiences from a medical intensive care unit at the Sahlgrenska Hospital. *Lakartidningen* 1976;73:1720-2. (Summary in English.)
- 8 Borg S, Delin A, Granberg P-O, Gunve'n P. Abuse of alcoholic drinks, narcotics and psychopharmacological drugs among patients in a department of general surgery. *Lakartidningen* 1979;76:3897-900. (Summary in English.)
- 9 Ahlm C, Norman L, Hägg E. Alcoholism in a medical ward. *Opuscula Medica* 1982;27:63-5. (In Swedish.)
- 10 Brismar B, Engström A, Rydberg U. Head-injury and intoxication: a diagnostic and therapeutic dilemma. *Acta Chir Scand* 1983;149:11-4.
- 11 Wallerstedt S, Kristensson-Aas A, Sandström J, Westin J. Every fourth man admitted to general hospital is an alcohol abuser. *Lakartidningen* 1986;83:1670-9. (In Swedish.)
- 12 Johnell O, Kristenson H, Redlund-Johnell I. Lower limb fractures and registration for alcoholism. *Scand J Soc Med* 1985;13:95-7.
- 13 Gomborg ES. Prevalence of alcoholism among ward patients in a Veterans Administration hospital. *J Stud Alcohol* 1975;36:1458-67.
- 14 Bariety M, Choubrak P, Acar J. Influence de l'alcoolisme sur la morbidité et la mortalité dans un service de médecine générale. *Bull Acad Natl Med* 1957;141:334-8.
- 15 Green JR. The incidence of alcoholism in patients admitted to medical wards of a public hospital. *Med J Aust* 1965;ii:465-6.
- 16 Nolan JP. Alcohol as a factor in the illness of university service patients. *Am J Med Sci* 1965;249:135-42.
- 17 Williams AT, Harding Burns F, Morey S. Prevalence of alcoholism in a Sydney teaching hospital. *Med J Aust* 1978;ii:608-11.
- 18 Idström CM. Abusers of drugs and alcohol among psychiatric emergency cases in the Karolinska Hospital. *Lakartidningen* 1974;71:1837-8. (In Swedish.)
- 19 Rydberg U, Björver K, Goldberg L. The alcohol factor in a surgical emergency unit. *Acta Med Leg Soc (Liege)* 1973;22:71-82.
- 20 Allgulander C, Lundman T, Myrheide M. Alcohol intoxication among patients in medical and surgical emergency rooms. *Lakartidningen* 1971;68:5308-14. (In Swedish.)
- 21 Almersjö O, Westin J. The alcohol problem in somatic emergency rooms. *Lakartidningen* 1972;71:1839-43.
- 22 Kristensson-Aas A, Sandström J, Starmark J-E, Wallerstedt S, Westin J. The emergency department—the alcoholic's encounter with acute care. *Lakartidningen* 1981;79:437-40. (Summary in English.)
- 23 Wistedt B, Östman Å. The emergency unit at a psychiatric clinic. *Social Medicinsk Tidskrift* 1985;5:246-50. (In Swedish.)
- 24 Bruusgaard D, Rutle O, Asland OG. Alcohol problems in general practice. *Tidsskr Nor Lægeforen* 1984;104:1431-5. (Summary in English.)
- 25 Nöjd BI. *Prevention and treatment of alcohol abuse*. Stockholm: SPRI, 1984. (In Swedish.)
- 26 Wallace P, Haines A. Use of a questionnaire in general practice to increase the recognition of patients with excessive alcohol consumption. *Br Med J* 1985;290:1949-52.
- 27 Christensen O. Alcoholism in general practice. *Ugeskr Laeger* 1978;12:785-7. (Summary in English.)
- 28 McIntosh ID. Alcohol-related disabilities in general hospital patients: a critical assessment of the evidence. *Int J Addict* 1982;17:609-39.
- 29 Persson J. Serum gamma-glutamyltransferase (s-GT) in a group of organized teetotallers. In: Borg S, Magnusson PH, Lassenius B, Persson J, Wennermark, Östman O, eds. *Alkohol-betingad sjukvård och tidigdiagnostik*. Stockholm: Socialstyrelsens, 1985. Appendix 2, 122-8. (PM-serie 106/85.) (In Swedish.)
- 30 Persson J, Magnusson P-H. Causes of elevated serum gamma glutamyltransferase in patients attending outpatient somatic clinics and a district health centre. *Scandinavian Journal of Primary Health Care* 1987;5:13-23.
- 31 Pequignot G, Tuyns AJ, Berta JL. Ascitic cirrhosis in relation to alcohol consumption. *Int J Epidemiol* 1978;7:113-20.
- 32 Bruun K, Edwards G, Lumio M, et al. Alcohol control policies in public health perspective. *Forssa: Finnish Foundation for Alcohol Studies* 1975;25.
- 33 Romelsjö A, Agren G. Has mortality related to alcohol decreased in Sweden? *Br Med J* 1985;291:167-70.
- 34 Albinsson L. *Health care resources and the use of care in psychiatry*. Stockholm: Socialstyrelsen Redovisat, 1984:6. (Summary in English.)
- 35 Tuyns AJ, Pequignot G. Greater risk of ascitic cirrhosis in females in relation to alcohol consumption. *Int J Epidemiol* 1978;7:113-20.
- 36 Hibell B, Isaksson HO, eds. *Rapport 84*. Stockholm, Sweden: Central Association for Alcohol and Narcotic Information, 1987.

(Accepted 24 April 1987)

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.

- 1 Hayward AR, Harvey BAM, Leonard J, Greenwood MC, Wood CBS, Soothill JF. Delayed separation of the umbilical cord, widespread infections and defective neutrophil mobility. *Lancet* 1979;ii:1009-11.
- 2 Bissenden JG, Haeney MR, Tarlow MJ, Thompson RA. Delayed separation of the umbilical cord, widespread infections and immunodeficiency. *Arch Dis Child* 1981;56:397-9.
- 3 Thompson RA, Candy DCA, McNeish AS. Familial defect of polymorph neutrophil phagocytosis associated with absence of a surface glycoprotein antigen (OKM1). *Clin Exp Immunol* 1984;58:229-36.

4 Ross GD, Thompson RA, Walport MJ, *et al.* Characterization of patients with an increased susceptibility to bacterial infections, and a genetic deficiency of leukocyte membrane complement receptor type 3 and the related membrane antigen LFA-1. *Blood* 1985;66:882-90.

(Accepted 5 June 1987)

Regional Department of Immunology, East Birmingham Hospital, Birmingham B9 5ST

R A THOMPSON, FRCP, FRCPATH, consultant immunologist

Central Community Unit, Leicester Health Authority

WENDY RENNISON, SRN, SCM, health visitor

Correspondence to: Dr Thompson.

Contamination by hepatitis B surface antigen in dental surgeries

Dental surgeries are believed to be high risk areas for hepatitis B virus infection by virtue of possible contamination by droplets of blood and

Methods and results

Without prior warning we visited the heads of 18 dental surgeries in the Naples area one hour before closing and asked for permission to sample surfaces and equipment for the detection of HBsAg. Fifteen agreed and sampling began immediately. The table lists the surfaces and instruments tested. The procedure permitted judgment of the grades of contamination among the dental surgeries but not identification of individual surgeries.

We used the method of Bond *et al* for the detection of HBsAg on environmental surfaces.² A sterile cotton swab moistened with sterile 1% bovine serum albumin in 0.85% sodium chloride (BSAS) was rubbed on about 100 cm² of each environmental surface and forcefully and repeatedly on each instrument. The samples were then eluted in 1 ml BSAS. All samples, including positive controls (blood from HBsAg positive patients) and negative controls (swabs moistened with and eluted in BSAS without contact with environmental surfaces or instruments), were tested for HBsAg by radioimmunoassay (Ausria II; Abbott). The presence of HBsAg in the repeatedly reactive specimens was confirmed by neutralisation by using an Ausria II confirmatory neutralisation test kit.

The table gives the results. Twelve samples (6.3%) were positive out of a total of 190 collected from environmental surfaces. Nineteen samples were positive from a total of 265 (7.2%) collected from forceps, dental mirrors, and burs awaiting disinfection after use. This level of contamination was due to the high prevalence of HBsAg carriers among the patients treated in the dental surgeries investigated. Air and water spray syringes, cup holders, lamp holders, and slow motion handpieces were invariably negative for HBsAg.

Four dental surgeries showed no evidence of environmental contamination; the level of contamination was comparable in the others.

Environmental surfaces and instruments tested for hepatitis B surface antigen (HBsAg) by radioimmunoassay

Environmental surfaces or instruments	No of samples tested	No of samples positive for HBsAg	Counts/min in samples positive for HBsAg* (A)	Mean counts/min in seven negative controls in kit (B)	(A):(B)†
Work benches	19	2	{ 736 1 022	135 172	5.5 5.9
Dental units for instruments	19	3	{ 612 415 902	172 118 135	3.6 3.5 6.7
Dental chair headrest	19	2	{ 504 607	172 135	2.9 4.5
Dental chair arms	19	3	{ 903 661 715	118 135 172	7.7 4.9 4.2
Air turbine handpieces	19	1	1 110	189	5.9
Suction units	19	1	849	118	7.2
Air and water spray syringes	19	0			
Cup holders	19	0			
Lamp holders	19	0			
Slow motion handpieces	19	0			
Forceps‡	42	2	{ 3 112 715	135 172	23.1 4.2
Dental mirrors‡	79	4	{ 1 002 961 4 011 512	172 172 172 135	5.8 5.6 23.3 3.8
Burs‡	144	13	{ 1 080 715 932 874 410 416 1 010 512 713 584 530 961 836	118 118 118 118 118 118 135 135 135 135 135 172 172	9.2 6.1 7.9 7.4 3.5 3.5 7.5 3.8 5.3 4.3 3.9 5.6 4.9
Negative controls§	5	0	165		
Positive controls§	5	5	10 125		

*Mean of three determinations.

†Values above 2.1 considered to be positive.

‡Instruments after use and awaiting disinfection.

§Negative controls were swabs moistened and eluted without contact with environmental surfaces or instruments. Positive controls were samples from patients positive for HBsAg. Data given as mean.

aerosolised saliva and blood from carriers of the disease.¹ Contaminated equipment may remain infective for long periods owing to the long survival of the virus, and high titres of virus may be present in blood.

The degree of environmental contamination in a surgery varies with the prevalence of carriage of hepatitis B surface antigen (HBsAg) in the locality. In Italy the prevalence of HBsAg carriers is 2-3%, but in some regions—for example, the Naples area—it reaches about 4% and in areas of high endemicity in some Naples suburbs carriage rates of up to 13% have been recorded.¹

We therefore decided to investigate the degree of contamination by HBsAg in dental surgeries in our area, as no quantitative data were available.

Comment

We found extensive contamination by HBsAg in the dental surgeries investigated. In our opinion this was related to the high prevalence of carriage of the antigen in the area and to the particular type of procedures performed by dentists, which cause dissemination of microdroplets of blood and saliva and release of aerosolised saliva and blood into the environment. As it is impossible to avoid environmental contamination in dental surgeries, all procedures and handling of potentially infective materials should be performed carefully to minimise the formation of droplets, spatters, and aerosols. Every effort to develop new techniques and devices to achieve this