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Association between alcohol consumption and mortality, myocardial infarction, and stroke in 25 year follow up of 49 618 young Swedish men

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Several epidemiological studies have shown that moderate alcohol consumption is associated with reduced mortality from cardiovascular diseases in middle aged and elderly subjects,[1] but its effect in younger people is unknown. High alcohol consumption is associated with increased total mortality, but the findings for stroke have varied.[1] [2] We analysed the association between alcohol consumption and the incidence of myocardial infarction, stroke, and mortality in a 25 year follow up of military conscripts.

Subjects, methods, and results

This study is based on 49 618 Swedish men conscripted between 1 July 1969 and 30 June 1970 and born between 1949 and 1952.[2] At conscription, all men were given two questionnaires with questions covering social background, behaviour, and use of alcohol and tobacco, and all met with a psychologist for assessment. The percentage of non-responders was between 1% and 2%.

From questions about quantity and frequency of consumption of different alcoholic beverages, we calculated usual consumption in terms of grams of 100% ethanol a day and categorised subjects into different consumption groups.[1] Social, psychosocial, and behavioural variables were included as confounders, based on earlier studies and on bivariate analyses of the data in this study (see table).[2] Using the Swedish personal identification number, we linked the questionnaire data to the Swedish register of causes of deaths and to the new national inpatient care register for 1970-95. We estimated unadjusted and adjusted relative risks in logistic regression analyses and calculated attributable proportions.[3] Outcomes were total mortality (n = 1473) and incidences of myocardial infarction (n = 279, 38 fatal) and stroke (n = 233, 30 fatal) as underlying causes of death or as main diagnoses at hospitalisation.

Compared with abstainers, alcohol consumers had higher unadjusted relative risks for all three outcomes, and the risks increased with increasing alcohol consumption, being significantly higher for consumers of ⩾15 g ethanol/day. Adjusted analyses showed an increasing risk of death (significant) and stroke (non-significant) with increasing alcohol consumption but a decreasing risk of myocardial infarction (non-significant) (table). To a considerable extent, the increased mortality with high alcohol consumption was due to the strong association between drinking and smoking and the high risk associated with smoking: compared with not smoking, the relative risk of death was 3.02 for smoking 1-10 cigarettes a day and 5.20 for smoking ⩾11 cigarettes a day. Consuming ⩾15 g ethanol/day was associated with a relative risk of death of 1.37 (95% confidence interval 1.01 to 1.85). The attributable proportion in multivariate analysis for alcohol consumption, relative to abstention, was 14% for mortality (alcohol use caused 205 deaths) and 37% for stroke (causing 86 cases), while alcohol prevented 44 (16%) myocardial infarctions.

Comment

The validity of self reported alcohol consumption at conscription and as a measure of consumption during the follow up period can be questioned.[3] Both non-differential underreporting at conscription and

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Relative risks (95% confidence intervals)* of death, myocardial infarction, and stroke in relation to alcohol consumption in a 25 year follow up of 49 618 military conscripts

Alcohol consumption (g 100% ethanol/day)	Death (n=1473)	Myocardial infarction (n=279)	Stroke (n=223)
0	1	1	1
0.1-14.9	1.13 (0.85 to 1.50)	0.90 (0.45 to 1.80)	1.59 (0.64 to 3.92)
15-30	1.32 (0.98 to 1.79)	0.77 (0.37 to 1.63)	1.52 (0.57 to 4.00)
⩾30	1.53 (1.08 to 2.16)	0.61 (0.26 to 1.44)	2.30 (0.81 to 6.43)
⩾15	1.37 (1.01 to 1.85)	0.73 (0.35 to 1.52)	1.70 (0.66 to 4.40)

*Calculated from logistic regression analysis with adjustments for blood pressure at conscription (continuous), body mass index (weight (kg)/(height (m))²), father's social class, running away from home, poor school wellbeing, parental divorce, poor emotional control, few (0-1) friends, unemployment for >3 months during life, poor health, and smoking as reported at conscription.

change in alcohol use over time lead to underestimation of an elevated relative risk.[4] However, we found a clear association between level of alcohol use at conscription and risk of subsequent hospitalisation or death with a diagnosis of alcoholism, alcohol psychosis, or alcohol intoxication, with a significant relative risk of 5.71 for consumers of ≥ 15 g ethanol/day, indicating a stability over time. The results also indicate a cardioprotective effect of alcohol use in relatively young men, in whom myocardial infarction is rare. Possible biological mechanisms include an increase in high density lipoprotein cholesterol, a decrease in platelet coagulability, and a decrease in plasma fibrinogen associated with alcohol intake.[1]

Calculation of the attributable proportions clearly indicated that alcohol consumption had a negative net effect on the subjects' health up to the age of 45. The results support a restrictive alcohol policy and recommendations for little or no alcohol consumption by young men.[5]

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Helicobacter pylori and childhood recurrent abdominal pain: community based case-control study

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Recurrent abdominal pain (at least three discrete episodes of abdominal pain over a period of three or more months, and of sufficient severity to interrupt normal activities) is a common childhood complaint. We set out to determine the association, if any, between *Helicobacter pylori* infection and childhood recurrent abdominal pain.

Participants, methods, and results

Cases and controls were drawn consecutively from the practice populations of six primary care paediatricians in Toronto. (Convenience sampling was used to select paediatricians; they were chosen because of their interest in the study.) Cases were children aged 5-15 years presenting with recurrent abdominal pain; controls were healthy children undergoing a routine check-up or vaccination. Excluded were children with concurrent disease, suspected organic disease, aged under five years, or who had used bismuth in the previous month. All families approached consented to participate.

Serum IgG antibodies to *H pylori* were measured by using a flow microsphere immunofluorescent assay (FMIA) and a commercial immunoassay kit (Bio-Rad Laboratories, Hercules, CA). The FMIA method has been validated in children (100% sensitivity, 97% specificity) against a gold standard of culture and histology.[1] Infection was also diagnosed by using a ^{13}C-urea breath test (99% sensitivity, 98% specificity).[2] A standardised questionnaire was used to gather social, demographic, and clinical information on each participant.

One hundred children with recurrent abdominal pain and 100 healthy controls participated in the study. The groups did not differ in age, height, weight, history of colic, previous admissions to hospital, seasonal allergies, or antibiotic use in the previous month (table). The two groups were also similar with respect to socio-economic status, country of birth of the parents, number of siblings, smokers in the home, household pets, and family history of recurrent abdominal pain, peptic ulcer, and migraine. Children with recurrent abdominal pain, however, were more likely to be girls, to have symptoms of chronic headache or chronic limb pain, and to have more frequent school absences than control children.

Results of serology were available for 174 children (87%). Only five had positive results (3/93 cases *v* 2/81 controls). Breath test results were available for 193 children (97%). Nine were positive (4/97 (4%) cases *v* 5/96 (5%) controls; crude odds ratio 0.78 (95% confidence interval 0.20 to 3.01); odds ratio adjusted by logistic regression 0.65 (0.08 to 2.56)).

Comment

This community based case-control study found no association between *H pylori* infection and recurrent abdominal pain in childhood. Strengths of the study included the primary care setting, the use of incident cases of recurrent abdominal pain, and the use of healthy children as controls. Information bias was minimised by using a standardised questionnaire, with the research nurse blind to the serology and breath test results. *H pylori* infection was measured by two