Effect of beer drinking on risk of myocardial infarction: population based case-control study

Martin Bobak, Zdenka Skodova, Michael Marmot

Many studies have shown an inverse association between alcohol consumption and coronary heart disease, with a possible flattening at higher consumption levels.¹ It remains unclear, however, whether the protective effect is confined to specific beverages (such as red wine) or relates to ethanol. This question is complicated because wine drinkers may differ from people drinking other beverages or have a different drinking pattern. We addressed this issue by conducting a study in the Czech Republic, a predominantly beer drinking country, and by restricting the analyses to people who did not drink wine or spirits.

Participants, methods, and results

We conducted a population based case-control study in five Czech districts. All men aged 25-64 who had a first non-fatal myocardial infarction that fulfilled the diagnostic criteria of the Canadian Cardiovascular Society were eligible to be included. Including only men also possibly excluded women who drink alcohol regularly. The main result was to show that the inverse association between beer drinking and myocardial infarction is consistent with the possibility that wine drinkers are different from beer drinkers. This suggests that future research should focus on the differences between these two groups of drinkers rather than on the overall effect of alcohol consumption.

1 The Diabetes Control and Complications Trial Research Group (DCCT). Lifetime benefits and costs of intensive therapy as practiced in the diabetes control and complications trial. JAMA 1996;276:1469-75.
12 UK Prospective Diabetes Study Group. Quality of life in type 2 diabetic patients is affected by complications but not by intensive policies to improve blood glucose or blood pressure control (UKPDS 37). Diabetes Care 1999;22:1125-36. (Accepted 7 February 2000)
1 (about 18 g of alcohol), including non-drinkers; 0.5-3.9 l (18-144 g of alcohol); 4-8.9 l (145-324 g of alcohol); and ≥ 9 l (325 g of alcohol).

The lowest risk was found among men who drank almost daily or daily (adjusted odds ratio 0.38, 95% confidence interval 0.19 to 0.75) and among men who drank 4-8.9 l of beer a week (0.34, 0.19 to 0.61) (table 1). When beer intake was analysed in narrower categories, the lowest risk was found for weekly consumption of 5-6 l, but because of the small numbers of subjects in each category the confidence intervals were wide (not shown). The results did not change when men with a history of heart disease, stroke, diabetes, or cancer were excluded.

Comment

In this study of beer drinkers, the lowest risk of myocardial infarction was found among men who drank almost daily or daily and who drank 4-9 l of beer a week. There was a suggestion that the protective effect was lost in men who drank twice a day or more. This is similar to results of studies of other beverages.

It is unlikely that our results are due to bias or confounding. This was a population based study with highly complete recruitment of incident cases through a myocardial infarction register in a well defined population and with good response rate in controls randomly selected from the population register.³ Questions on average consumption usually lead to underestimation of the real intake, but the ranking of subjects in terms of long term average intake is reasonably reliable.⁴ Restricting the analysis to exclusive beer drinkers eliminated potential confounding by other beverages. It is unlikely that cases and controls answered questions differently; a cohort study in Bavaria, another beer drinking region, produced similar findings.⁵ These results support the view that the protective effect of alcohol intake is due to ethanol rather than to specific substances present in different types of beverages.⁶

We thank local cardiologists in the participating districts.

### Table 1 Numbers of cases and controls (non-drinkers or only beer drinkers), and odds ratios (95% confidence intervals) of non-fatal myocardial infarction for drinking frequency and average weekly beer consumption

<table>
<thead>
<tr>
<th>Frequency of drinking</th>
<th>No of cases/controls</th>
<th>Odds ratio adjusted for age and district</th>
<th>Fully adjusted odds ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>30/63</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>23/48</td>
<td>0.90 (0.43 to 1.87)</td>
<td>1.14 (0.52 to 2.51)</td>
</tr>
<tr>
<td>Less than once a week</td>
<td>26/81</td>
<td>0.65 (0.32 to 1.29)</td>
<td>0.62 (0.29 to 1.33)</td>
</tr>
<tr>
<td>Several times a week</td>
<td>68/276</td>
<td>0.56 (0.32 to 0.98)</td>
<td>0.60 (0.32 to 1.12)</td>
</tr>
<tr>
<td>Almost daily or daily</td>
<td>37/234</td>
<td>0.37 (0.20 to 0.68)</td>
<td>0.38 (0.19 to 0.74)</td>
</tr>
<tr>
<td>Twice a day or more</td>
<td>15/31</td>
<td>1.04 (0.45 to 2.37)</td>
<td>0.99 (0.41 to 2.28)</td>
</tr>
</tbody>
</table>

*Adjusted for age, district, education, smoking, waist to hip ratio, and personal history of diabetes and high cholesterol concentration.

Contributors: MB, ZS, and MM jointly designed the case-control extension of the Czech MONICA project. MB analysed the data and drafted the paper. ZS coordinated the data collection and participated in the interpretation of the data and writing of the paper. MM initiated the project and participated in data interpretation and writing of the paper. MB will act as guarantor.

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### References


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**Bladders and Brobdingnag**

Generations of children have read abridged versions of Jonathan Swift’s *Gulliver’s Travels* (1767). Sadly, if familiarity prevents rereading then much of the richness in this masterpiece will be missed. For example, few will be aware that Gulliver was a surgeon. Educated at Cambridge, Gulliver studied surgery for four years in London, and then studied medicine for two further years. The story of his adventures is peppered with surgical encounters. A woman with a fungating carcinoma of the breast, a man with a wen (sebaceous cyst) on his neck “the size of five men’s heads”, and ears with an inflated bladder, containing a few calculi, and a servant constantly held their attention by “flapping” their mouths afforded ample opportunity for surreptitious examination. Finally, the easily distracted Laputians could converse only if a threadbare trousers and the Lilliputians’ diminutive stature were writing today few in the public eye would be spared his fascination with our hero’s genitalia: the combination of Gulliver’s rapid escape was required. Swift also recounts the Lilliputians’ undoing; peeing in the palace was tantamount to treason and a royal household. Unfortunately, his undoing proved to be his undoing: pissing in the palace was tantamount to treason and a rapid escape was required. Swift also recounts the Lilliputians’ fascination with our hero’s genitalia: the combination of Gulliver’s threadbare trousers and the Lilliputians’ diminutive stature afforded ample opportunity for surreptitious examination. Finally, the easily distracted Laputians could converse only if a servant constantly held their attention by “flapping” their mouths and ears with an inflated bladder, containing a few calculi, and fastened to a stick. Sixteen years of travel changed Gulliver forever. On his return to England he could not tolerate the company of fellow humans. While not told explicitly, the reader can only conclude that he did not practise surgery again. If Swift were writing today few in the public eye would be spared his brilliant satire. You wonder if his hero would still be a surgeon. Probably. But a urologist? Why not?

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