Key messages

- There was no increase in mortality in the population of an industrialised region of western Siberia as the temperature fell to 0°C; in western Europe the same fall in temperature is associated with large increases in mortality
- Warm clothing and physical activity prevented cold stress outdoors and warm housing prevented cold stress indoors
- These results suggest that the high excess winter mortality in western Europe could be prevented by people wearing sufficient clothing and engaging in physical activity outdoors, and by adequately heating houses

population of Yekaterinburg have lowered mortality in winter to rates below what they would otherwise be.

Relation between cold stress and mortality

The general cold stress and mortality related to cold seen at temperatures below 0°C in Yekaterinburg, and their absence at temperatures above 0°C, can be most easily explained by a causal relation between mortality and cold stress. These results reinforce those of our earlier study, which showed an association between cold stress and mortality among different populations in western Europe[9]; they also support the findings of a time series analysis which showed close temporal associations between cold weather and cause-specific mortalities in England.[4] The results of this study suggest that most of the increase in mortality associated with cold weather in western Europe—which occurs mainly at temperatures above 0°C—could be prevented by a combination of simple protective measures against outdoor cold and ensuring that houses are warm.

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Conflict of interest: None.

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Relation of vagotomy to subsequent risk of lung cancer: population based cohort study

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Smoking increases the risk of peptic ulcer disease and also adversely affects its course.[1] Both pharmacological and surgical treatments will lead to a relief from the symptoms of the disease.[2 3] We analysed to what extent such potential relief would affect the subsequent risk of lung cancer in patients who had had a vagotomy for peptic ulcer disease, compared with patients with the disease who were treated without surgery.

Subject, methods, and results

Through the inpatient registry, which in 1983 covered 85% of the Swedish population, we identified 67 812 patients admitted to hospital between 1965 and 1983 for peptic ulcer disease but who did not have a vagotomy. Through the same registry we also identified 7198 patients who had a vagotomy between 1971 and 1979. Through linkage with the Swedish death and emigration registry as well as the Swedish cancer registry, all new cases of lung cancer in the two cohorts were identified until the end of 1989. Expected numbers of new cases were estimated from age specific and period specific population rates.

After we excluded the first year after vagotomy, the ratio of observed to expected cases up to the end of the follow up was 2.20 (95% confidence interval = 1.82 to 2.63), with an increase in the ratio from 1.86 (one to five years after operation) to 2.52 (10 years or more after operation). Among the patients with peptic ulcer disease who had not had a vagotomy the ratio of

Standardised incidence ratios (95% confidence intervals) for and number of observed cases of lung cancer in patients who had had vagotomy and in those who had been admitted for peptic ulcer disease but not had vagotomy, by duration of follow up

	1-4 years		5-9 years		≥10 years		All	
Patients with peptic ulcer disease	No of observed cases	Standardised incidence ratio	No of observed cases	Standardised incidence ratio	No of observed cases	Standardised incidence ratio	No of observed cases	Standardised incidence ratio
Patients who had vagotomy	33	1.86 (1.28 to 2.60)	48	2.26 (1.67 to 3.00)	36	2.52 (1.77 to 3.50)	117	2.20 (1.82 to 2.63)
Patients who did not have vagotomy:	237	1.73 (1.52 to 1.97)	281	1.50 (1.33 to 1.690)	235	1.47 (1.29 to 1.67)	753	1.56 (1.49 to 1.67)
Stomach ulcer	141	2.05 (1.73 to 2.42)	151	1.69 (1.43 to 1.98)	118	1.72 (1.42 to 2.06)	410	1.81 (1.64 to 1.99)
Duodenal ulcer	79	1.38 (1.09 to 1.72)	105	1.26 (1.03 to 1.53)	97	1.24 (1.01 to 1.52)	281	1.29 (1.14 to 1.45)
Stomach and duodenal ulcer	17	1.59 (0.93 to 2.55)	25	1.73 (1.12 to 2.55)	20	1.54 (0.94 to 2.37)	62	1.62 (1.25 to 2.08)

observed to expected cases was 1.56 (1.49 to 3.67), with a slight decrease after the first five years (table).

Comment

We found that, although patients with peptic ulcer disease had an increased risk of lung cancer, the excess risk was substantially lower five years after inclusion in the study among those who had not had a vagotomy than among those who had. This suggests that those who had not had a vagotomy might have reduced their level of smoking, as the risk of lung cancer has a clear dose-response pattern with regard to tobacco use.[4] This reduction in risk may be the result of persisting symptoms and antismoking counselling. In the patients who had had a vagotomy the risk of lung cancer increased, suggesting a continuous or increased exposure to tobacco after the operation. Other underlying biological mechanisms, however, cannot be ruled out (for example, changes in diet as the result of surgery).

The strengths of the study are its population based setting, complete follow up, and the reliable classification of outcomes through the Swedish registries. Limitations, however, include diagnostic misclassification of peptic ulcer disease—more likely among patients who did not have a vagotomy than among those who did—especially during the pre-endoscopic era. Moreover, patients who had a vagotomy probably had a more severe disease. However, the ratios of observed to expected cases of lung cancer were similar (P = 0.70) during the first five years after inclusion in the study, indicating that the percentage of smokers and the magnitude of tobacco consumption were similar. The difference in risk of lung cancer was most evident 10 years or more after inclusion; this result is similar to results from other studies[5] and consistent with a latency period of at least five to 10 years before changes in smoking habits would affect the risk of lung cancer.

As increasingly effective long term drug treatments are developed, less attention might be being paid to the role of smoking in peptic ulcer disease. Extrapolation of our results in Sweden implies that an excess of 50 to 100 lung cancers per 10 000 patients with peptic ulcer disease would occur in a 15 year period in cured patients. If this excess risk had been ascribed directly to the operation or to curative drug treatment these treatment methods would have been ultimately abandoned. Physicians should therefore be urged to include antismoking counselling when treating patients with peptic ulcer disease.

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One hundred years ago

Mr Gladstone and the medical profession

Whatever differences of opinion there may be as to the results of Mr Gladstone's political activity, medical men of all parties must unreservedly admire him as an example of magnificent vitality, prolonged far beyond the normal limits. Carlyle somewhere says that perfect health is in itself so great a thing, that when he met a healthy-looking man in the street he felt inclined to take off his hat. Many years ago a distinguished statesman is reported to have said that what he envied most in Mr Gladstone was not his mind, powerful as that undoubtedly was, but his body, which, like a thoroughbred steed, could do whatever was required of it. Success in climbing to the highest peak of political eminence is largely a matter of survival, as indeed is the case in the medical and other professions. It is strange now to recall the fact that Mr Gladstone's staying power in a physical sense was in his earlier days seriously doubted by some who foresaw for him a brilliant career if his bodily powers should not prove too weak for the strain of the race. Yet in an age remarkable for the predominance in nearly all spheres of activity of men who have exceeded the limit of life laid down by the Psalmist, there has been no such striking instance of the retention in undiminished vigour of physical as well as intellectual power as that of the great man who has just passed away. (*BMJ* 1898;i:1405)