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Back pain and risk of fatal ischaemic heart disease: 13 year follow up of Finnish farmers

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In the early 1980s some authors found an association between cardiovascular risk factors, especially smoking, and back pain.[1] Quite recently Kauppila and Tollroth reported an association between history of back pain and atherosclerotic lesions of lumbar arteries in cadavers. They suggested that back pain could be an early symptom of atherosclerosis.[2] Prospective studies concerning mortality related to back pain have not been published previously. My purpose was to find out whether patients reporting back pain have an increased risk of dying of ischaemic heart disease when compared with those who have no back symptoms.

Subjects, methods, and results

The basic population consisted of 8816 Finnish farmers who participated in a postal survey in November 1979 to January 1980. Those 3842 women and 3648 men who did not report any cardiovascular disease in the questionnaire (except haemorrhoids or varices) and who were 30-66 years old in 1980 were selected for the follow up study.

I included back pain and sciatica in the year before follow up as dichotomous variables. Sciatic pain was included only if the subject had had back pain. Smoking was included as one of three categories (current smoker, former smoker, and never smoked), body mass index (weight (kg)/(height (m)^2)) as a continuous variable, and social status as one of three categories on the basis of the size of the farm. Mortality between 1 February 1980 and 31 January 1993 was determined from the register of the Social Insurance Institution of Finland. Copies of death certificates were obtained from the Finnish Statistics Bureau. The code numbers 410-414 of the *International Classification of Diseases*, ninth revision (ICD-9), were used for ischaemic heart disease as a cause of death. Other cardiovascular causes included the ICD-9 codes 390-459, excluding 410-414. I carried out cross tabulation analysis using the χ^2 test or Fisher's exact test. The adjusted relative risk was calculated by logistic regression analysis (EGRET).

The cross tabulation showed that men who were 30-49 years old and reported back pain during the preceding year at the beginning of follow up had a significantly increased risk of dying of ischaemic heart disease during the 13 years of follow up when compared with those of the same age with no symptoms (table). This result remained after adjustment for age, smoking, body mass index, and social status. The relative risk was 4·6 (P=0·04, 95% confidence interval 1·06 to 19·6) in the logistic model. The association between back pain and death from ischaemic heart disease was similar in those with and without sciatica. The risk of dying of other cardiovascular diseases was no higher in the group with back pain. For men aged 50 and over back pain did not precede death from ischaemic heart disease or any other particular disease during follow up. Smoking was significantly related to risk of death from ischaemic heart disease in men of every age. Body mass index or social status did not correlate with ischaemic heart disease at any age. In women no association between back pain and any vascular disease was found.

Age specific mortality (per 1000 people and 13 years) of men according to history of back pain

	Age (years) at beginning of follow up					
	30-49			50-66		
Cause of death	Back pain (n=1274)	No back pain (n=586)	P value*	Back pain (n=1212)	No back pain (n=576)	P value*
Ischaemic heart disease	18·1	3·4	0·02	54·5	72·5	0·15
Stroke	0·8	0·0	0·68	7·4	8·1	0·99
Other cardiovascular disease	3·9	5·1	0·49	22·3	26·2	0·74
All causes	56·5	44·4	0·32	169·6	203·6	0·10

*χ^2 test or Fisher's exact test.

Comment

Mechanical reasons and disc degeneration have been proposed as the main causes of back pain. My results support the hypothesis that back pain in some cases may be an early manifestation of atherosclerosis. Anything causing or worsening local ischaemia of the lumbar region may cause back pain. In a recent study of fire fighters in New York a strong association between smoke and first episode of back pain was found.[3] So called unspecific back pain may often have a vascular basis, which may be atherosclerosis or any other defect causing temporary ischaemia.

According to a recent study back pain may be related to work in the same sense as angina pectoris is. The association between smoking and back pain has been found to depend on the job of the subject. There seems to be an association between smoking and back pain, however, only in physically demanding jobs.[4] One should, however, be cautious in interpreting the observed association between smoking and back pain because, for example, pain in the extremities is more clearly associated with smoking than back pain.[4]

I found no relation between back pain and death from ischaemic heart disease in older men. One

possible explanation is that people with chronic back pain tend to retire earlier from physically demanding work. According to former observations the risk of back pain increases until the age of 50 years and then decreases.[5]

To my knowledge, this is the first prospective study on the association between back pain and mortality. More research is needed to determine the validity of these results and to find out the character and mechanism of vascular back pain. If vascular reasons prove to be the usual causes of back pain, the diagnosis and care of chronic back pain will change drastically.

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Audit of secondary prophylaxis after myocardial infarction

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The effectiveness of aspirin and β blockers in reducing morbidity and mortality after myocardial infarction is now established.[1,2] Nevertheless, a study in the Northern region in 1991 showed that only 41% of patients with myocardial infarction were discharged taking the optimal drugs.[3] We therefore evaluated the use of these drugs in North Tyneside.

Patients, methods, and results

Standards were set locally for the use of aspirin and β blockers after myocardial infarction by agreement between general practitioners and physicians. Aspirin should be given to all patients except those with hypersensitivity, active peptic ulcer, or taking anticoagulants, and treatment should be continued indefinitely in the community. β Blockers should be given to all patients except those with active reversible airways disease, heart block, or heart failure, and treatment should be continued for at least one year and up to six years in the community.

A 50% random sample was taken of patients living in North Tyneside who had had a myocardial infarction between April 1991 and March 1992. We checked hospital notes to determine treatment on discharge and any contraindications to β blockers or aspirin. Of the 272 patients sampled, 77 had died and four had no hospital notes available, leaving 191 patients in the study. A questionnaire was sent to 186 patients one year after their myocardial infarction, five patients having died in the time between data collection and posting the questionnaires. The questionnaire asked for details of patients' continuing drug treatment; 121 were returned completed (65% response rate).

The table shows the use of secondary prophylactic drugs on discharge from hospital and one year later in the community. There was no significant difference between the three local hospitals in the use of secondary prophylactic drugs (Fisher's exact two tailed test: aspirin, $P=0{\cdot}2$; β blockers, $P=0{\cdot}53$).

Secondary prophylaxis for myocardial infarction on discharge from hospital and one year later in community. Values are numbers (percentages) of patients

	On hospital discharge (n=191)		In community (n=121)	
Treatment group	Aspirin	β Blocker	Aspirin	β Blocker
Treated, no contraindication	162 (85)	91 (48)	99 (82)	51 (42)
Not treated:				
No contraindication	8 (4)	15 (8)	14 (12)	27 (22)
Contraindication	21 (11)	85 (45)	8 (7)	43 (36)
Treated, excluding those with contraindication	162/170 (95)	91/106 (86)	99/113 (88)	51/78 (65)

Comment

On discharge from hospital 16% of patients were treated suboptimally in that they did not receive a secondary prophylactic drug to which they had no contraindication. Thus 84% of patients were discharged from hospital taking appropriate secondary prophylactic drugs after myocardial infarction. The use of these drugs had decreased in the community one year later.

The standards we set were not reached in this retrospective audit, largely because of the underprescribing of β blockers, already well documented.[3,4] Additionally, we found that β blockers were contraindicated in many patients (45%). About half of these patients may have been able to take them had a therapeutic trial in hospital or in the community been undertaken. We suggest that guidelines on therapeutic trials of β blockers in such patients be included in protocols on the use of secondary prophylaxis.

There was no evidence from the study that patients who were not prescribed these drugs in hospital later started taking them in the community. The follow up of patients after myocardial infarction in primary care should include a review of prophylactic drugs, and general practitioners should be more proactive in starting treatment when appropriate.

Our results are better than those of Eccles and Bradshaw in relation to discharge of patients taking aspirin and β blockers.[3] This may be partly due to the impact of their work over time. There were methodological differences, however. We collected our data from hospitals rather than through general practitioners, so their study may have audited communication between hospital and general practice as much as treatment on discharge. Additionally, in contrast with their study, our standards were set by local agreement between general practitioners and physicians. This led to differences in agreed contraindications (particularly to β blockers) between the two studies, which may have further contributed to the discrepancy between our results. Audit is more likely to effect change when its development, dissemination, and implementation are as local as possible,[5] and we suggest that external audit may even yield misleading results.

In conclusion, we emphasise the need to start secondary prophylactic drugs in hospital in all eligible patients after myocardial infarction and the importance of continuing treatment in the community. Our study suggests that this message is getting through but that there is still room for improvement.

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