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.

This study was supported by the Farmers' Social Insurance

Institution of Finland. I thank Pentti Mäkelä for his data processing work.

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(Accepted 16 June 1994)

Audit of secondary prophylaxis after myocardial infarction

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BMJ 1994;309:1268-9

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 anti-coagulants, 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, $P=0.2$; β blockers, $P=0.53$).

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 under-prescribing 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.

We thank Carol Orr for data collection, and our standard setting group: Drs S Baillie, A Bates, S Furniss, and W

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

Treatment group	On hospital discharge (n=191)		In community (n=121)	
	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)

Tapsfield. This study was supported by a grant from the Northern Regional Health Authority.

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(Accepted 22 June 1994)

Association between non-insulin dependent diabetes mellitus and non-Hodgkin's lymphoma

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BMJ 1994;309:1269

Nodal and extranodal lymphomas are considered to be distinct entities on the basis of histological distribution, response to chemotherapy, and prognosis.¹ The risk of non-Hodgkin's lymphoma is significantly increased in patients in an immunosuppressive state,² and diabetes mellitus impairs the immune response to bacterial infections.³ We therefore retrospectively investigated the prevalence of diabetes mellitus in patients with nodal and extranodal lymphomas to determine whether the risk of lymphoma is increased in patients with diabetes.

Patients, methods, and results

From 1986 to 1993, 160 patients with nodal and extranodal lymphoma, excluding those who were positive for human T cell leukaemia/lymphoma virus type I antibody, were treated at Kobe University School of Medicine Hospital. No patients were positive for HIV-1 antibody. We excluded 27 patients (21 with nodal lymphoma, six with extranodal lymphoma) because adequate data were not documented. Thus 133 patients (74 with nodal lymphoma and 59 with extranodal lymphoma) remained in the study. The median age at diagnosis was 62 in patients with nodal lymphoma and 60 in patients with extranodal lymphoma. The distributions of age, sex, and histological findings were not significantly different between the group of patients with nodal lymphoma and the group with extranodal lymphoma except that the prevalence of patients with a follicular-type lymphoma was higher in the first group. The body mass index (weight (kg)/(height (m)²)) was 21.8 (SD 2.90) in the group of patients with nodal lymphoma and 22.6 (3.58) in the group with extranodal lymphoma.

We calculated the number of patients in each group expected to have diabetes, using the age and sex specific prevalence of diabetes reported by the ministry of health and welfare. We calculated the confidence intervals of the ratios of observed to expected cases and we tested the equality of the numbers observed and the numbers expected by assuming that the observed numbers had a normal distribution. A two sided test was used.

Diabetes was diagnosed in eight of the 74 patients with nodal lymphoma and in 18 of the 59 patients with extranodal lymphoma. In the first group no increase occurred in the ratio of observed to expected cases of diabetes, while the ratio of observed to expected cases

of diabetes in the second group was significantly increased (table). The prevalence of diabetes in patients with extranodal lymphoma in the head, nose and sinuses, central nervous system, and orbit was particularly increased, with a ratio of observed to expected cases of diabetes of 7.3 (95% confidence interval 3.51 to 11.2, $P < 0.0001$). In contrast, the correlation coefficients between diabetes and other factors were 0.001 (-0.0029 to 0.0049) for age, 0.006 (-0.016 to 0.028) for body mass index, and -0.057 (-0.19 to 0.078) for sex.

Cases of diabetes mellitus observed in 133 patients with lymphoma compared with those expected in general population

Lymphoma	No of cases		Ratio of (95% confidence interval) of observed cases to expected cases	P value
	Observed	Expected		
Nodal (n=74)	8	7.03	1.14 (0.35 to 1.92)	0.74
Extranodal (n=59)	18	5.52	3.26 (1.75 to 4.77)	<0.0001

The onset of diabetes in all 26 cases was in adulthood. All cases were type II non-insulin dependent diabetes mellitus, 23 of which were controllable with diet alone.

Comment

The association between diabetes mellitus and lymphoma was first suggested by Stowens.⁴ This association, however, was not confirmed by another study.⁵ Few studies have been published on the differences in characteristics or prognostic factors between patients with nodal lymphoma and those with extranodal lymphoma, and the findings of these were not clear.¹ The present study found that the prevalence of diabetes was high in patients with extranodal lymphoma, especially lymphoma in the head, nose and sinuses, central nervous system, and orbit.

We cannot clearly explain why diabetes is often found in patients with extranodal lymphoma, but a genetic association may exist between the extranodal lymphoma and the locus of type II non-insulin diabetes mellitus. Further study of genetic markers may show further differences between extranodal lymphoma and nodal lymphoma.

We thank Dr Y Nakao for his suggestions during this study; Professors M Amatsu, M Ichihashi, and N Tamaki and Dr M Inoue for permission to include their patients; and Dr Y Hayashi for his comments on pathology.

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(Accepted 25 July 1994)