The evolution of chronic pain among patients with musculoskeletal problems: a pilot study in primary care

RICHARD G POTTER

J MARY JONES

SUMMARY. Little is known about the evolution of chronic pain in primary care. Forty five patients with a four week history of musculoskeletal pain were assessed and followed up over 26 weeks by a research nurse using a structured interview and formal assessment instruments. Patients aged 18 to 65 years were recruited on presentation at two semi-rural Cheshire general practices and subsequently interviewed on a domiciliary visit. Twenty patients (44%) continued to have pain at 26 weeks and these patients were considered to have chronic pain. Nineteen patients had no pain after 12 weeks and a further six had no pain after 26 weeks; these patients together formed the group with acute pain. Comparing the two groups at entry into the study (pain of four weeks' duration) demonstrated significantly higher visual analogue scale scores for intensity of pain ($P<0.01$) and a higher incidence of depression ($P<0.01$) in the group which subsequently developed chronic pain. In this group, the presence of depression at 12 weeks was associated with higher visual analogue scale scores ($P<0.05$) but at 26 weeks scores were similar in depressed and non-depressed patients. The correlation between visual analogue scale score for intensity of pain and the use of passive coping strategies to cope with pain appeared more strongly positive with duration of pain ($P<0.05$ at 26 weeks). It is suggested that high pain intensity scores, the presence of depression, and the increasing use of passive coping strategies may be identifiable associations with the development of chronic pain. Areas for further research are identified.

Keywords: chronic pain; long term outcome.

Introduction

CHRONIC pain has not been widely recognized as a discrete clinical entity in general practice[1] despite the establishment of pain clinics in most if not all district health authorities and health boards in the United Kingdom. This is surprising as the prevalence of complaints of chronic pain both in the community and in patients consulting their general practitioner is approximately 10%.[2,3] Chronic pain has a poor prognosis: in one study only 20% of patients who had been referred to a pain clinic obtained complete relief.[4] Family doctors are traditionally well experienced in the management of patients with chronic disease. Recently, their training has embodied a biopsychosocial model of care in preference to the biomedical approach. A multidimensional and multidisciplinary approach to assessment and management utilizes the skills present in primary care which are necessary for the care of patients with chronic pain.

Little work has been done on the pathogenesis of chronic pain in primary care and a study was therefore undertaken as a preliminary exploration of the interface between acute and chronic pain. The aims of the study were first, to describe the progress of patients with acute musculoskeletal pain over the first six months, after which it is generally accepted that pain has become chronic. Secondly, the study aimed to compare the assessments during the acute stage of patients who subsequently became sufferers of chronic pain, with those who did not. The identification of factors associated with chronicity may ultimately offer the hope of prevention.

Method

Patients aged 18 to 65 years presenting to their general practitioner with a new episode of musculoskeletal pain of four weeks' duration (plus or minus one week) were recruited over a 10 month period by eight general practitioners working in two Cheshire market towns. Patients were excluded if they had malignancy, history of psychosis or if an immediate curative treatment was in prospect.

Having gained the patient's consent, the research nurse performed a domiciliary visit, collecting baseline data and administering formal assessment instruments. Baseline information comprised age, sex, social class, history of injury precipitating the pain, and past personal or family history of a problem of chronic pain. The number of consultations since onset of pain was also recorded. Patients were asked to use any three words to describe their pain; the number of emotive terms used, as defined by the research nurse, was recorded.

The tool used to assess the intensity of the patient's pain was the 10 cm linear visual analogue scale.[5] Scoring on a visual analogue scale is normally used to assess pain intensity at the moment of assessment. However, for patients with ongoing pain it was also considered appropriate to ask the patient to mark a score indicating the average level of pain over the last seven days.

The qualitative elements of a patient's pain experience have been incorporated in the McGill pain questionnaire.[6] This study employed the second part of the questionnaire, offering a selection of pain descriptors, yielding scores for sensory, affective and evaluative words based on number of words chosen. Patients were screened for anxiety and depression using Goldberg's brief questionnaire[7] modified from the general health questionnaire which has been developed for use in primary care patients. In order to assess patients' behaviour in relation to their pain, Brown and Nicassio produced a questionnaire scoring the use of active and passive coping strategies, the pain management inventory.[8] This instrument comprises 18 statements suggesting possible actions to cope with an exacerbation of pain, seven of which are active measures yielding a score of 0–35 depending on frequency of use, and 11 statements referring to passive coping strategies, scoring 0–55.

Patients were followed up by the research nurse by telephone at 12 and 26 weeks after onset of pain. If the pain had resolved

R G Potter, BS, MRCGP, research fellow, Centre for Epidemiology, Public Health Medicine and Primary Health Care, University of Keele. J M Jones, BSc, PhD, lecturer in medical statistics, Mathematics Department, University of Keele.

Submitted: 7 October 1991; accepted: 11 March 1992.

they were considered to have completed the study. If the pain persisted, a further domiciliary visit was arranged and the assessment instruments administered.

Analysis

Characteristics recorded at the initial assessment of the patients who subsequently developed acute pain and those who subsequently developed chronic pain were analysed using the chi square and Mann Whitney *U* tests. The two groups were first compared with respect to all 19 variables recorded at initial assessment. With such multiple significance testing there is a danger that almost all the comparisons reported as significant have arisen by chance. To correct for this problem the significance level for each comparison was set to 0.0027, which gave an overall significance level of $P < 0.05$. Examination of the results from these preliminary comparisons generated further hypotheses which were tested with the significance levels set to $P < 0.05$.

Results

Forty five patients completed the study, three patients having been lost to follow up. Twenty patients (44%) continued to have pain 26 weeks after its onset and were thus considered to be suffering from chronic pain. The group of 25 patients with acute pain consisted of 19 patients who had had their pain for less than 12 weeks and six patients who had had the pain for less than 26 weeks.

Patients with acute and chronic pain were compared with regard to the baseline data collected at entry into the study (after four weeks' duration of pain) (Table 1). The female to male ratio was approximately 2:1 in both groups and there were no significant differences in social class, age, the presence of a personal or family history of chronic pain, a history of injury, number of consultations, or number of patients using emotive words. The average pain score on the visual analogue scale was significantly higher among patients who subsequently developed chronic pain compared with patients with acute pain (median scores of 59.0 and 34.0 respectively). A higher score was also found on the present pain score among patients with chronic pain and the scatter for this measure was far greater. There was no difference detected between patients with acute and chronic pain in their responses to the qualitative section of the McGill pain questionnaire.

There was no significant difference in the prevalence of anxiety between the two groups. The prevalence of depression on screening in all 45 patients on entry into the study was 58%; 85% of the patients who subsequently developed chronic pain and 36% of the patients who had acute pain had a score indicating depression at four weeks. No other variable measured using formal assessment techniques reached statistical significance at the 0.05 level.

The median visual analogue scale scores measuring present pain at four, 12 and 26 weeks for patients with chronic pain were 37.5, 20.0 and 10.0 respectively. The median score measuring the intensity of pain over the past seven days (average pain score) at four, 12 and 26 weeks for the same group of patients was 59.0, 41.5 and 27.5, respectively. These latter scores were higher than the present pain scores, but both sets of scores decreased over time.

The Mann Whitney *U* test was used to determine the relationship between the score on the visual analogue scale indicating intensity of pain over the past seven days and depression for patients with chronic pain. At 12 weeks, for the nine patients who were not depressed the median score was 30.0 and for those 11 patients with depression the score was 45.0 ($P<0.05$). At 26 weeks, however, the eight patients who were not depressed had a median score of 27.5 while the 12 depressed patients had a median score of 29.5.

Table 1. Characteristics of patients subsequently suffering from acute pain and chronic pain, from data gathered at entry into the study (after musculoskeletal pain of four weeks' duration).

	Patients with:	
	Acute pain ($n=25$)	Chronic pain ($n=20$)
No. of male patients	8	6
Median age (years)	45.0	52.5
No. of patients in social class:[a]		
1 and 2	13	7
3N and 3M	7	7
4 and 5	5	6
No. of patients with past history of chronic pain	9	13
No. of patients with family history of musculoskeletal problems	11	11
No. of patients with history of injury	6	9
No. of patients using emotive words	9	12
Median no. of consultations since onset of pain	1	2
Visual analogue scale (median)		
Present pain score	13.0	37.5**
Average pain score[b]	34.0	59.0**
Pain management inventory (median)		
Active coping score	19.0	16.5
Passive coping score	24.0	30.0**
McGill pain questionnaire[c]		
Sensory	5	6
Affective	1	2
Evaluative	2	3
No. of patients who are anxious	11	12
No. of patients who are depressed	9	17 **

n = number of patients in group. [a]Registrar general's classification. [b]Over past seven days. [c]Median scores for number of words chosen. **$P<0.01$.

Further analysis of data from the patients with chronic pain centred on the relationship between average pain score measured on the visual analogue scale and passive coping score over time, at four, 12 and 26 weeks. The two variables were positively correlated and this association became stronger with time, reaching statistical significance at 26 weeks (correlation coefficient 0.48, $P<0.05$).

Discussion

The purpose of the study was to explore the transition phase as patients pass from acute to chronic pain, to gain understanding of the pathogenesis of chronic pain. Chronic pain has a poor prognosis and general practice has both the opportunity to intervene therapeutically before the condition becomes established, and the structure and the skills to manage patients with chronic pain. This pilot study, being essentially descriptive in nature, lays the ground for further definitive research.

The two variables significantly associated with progression to chronic pain were the average pain score on the visual analogue scale and the presence of depression on screening. The use of visual analogue scales as a measurement of pain intensity has evolved from research based on patients with acute, usually postoperative, pain states. For patients with persisting pain the average score for pain over the past seven days was considered to be more representative and this was supported by the smaller scatter of scores compared with scores given for pain experienced at present. It is unclear why the average scores were consistently higher than the present score and also why in the chronic group, scores all tended to diminish with time, although both may be related to the need for a patient to display his or her distress. A patient endeavouring to indicate an honest representation of their present pain may yet wish to show that their pain is very distressing even if the intensity is not that great at the moment of asking. The fall in the scores over time may reflect a partial response to treatment or be an artefact of the study in that if patients feel that through such detailed assessment the level of their distress is being understood, they may feel able to indicate lower levels on the scale.

Whereas general practitioners are good at detecting depression in patients who present with psychological symptoms, it is also known that patients who present with purely somatic complaints represent a considerable challenge to primary care.[9] It is reasonable to surmise that those patients whose somatization is misdiagnosed may progress to become sufferers of chronic intractable physical symptoms. The screening test used in this study to detect anxiety and depression had the benefit of having had its reliability and validity proven in primary care settings, but suffered from the limitation that at the threshold score there was only a 50% chance of there being a clinically important condition, although the scores in excess of this are associated with much higher prevalences.[7] Furthermore, it was unable to give an indication of the intensity of anxiety or depression. Nevertheless, the prevalence of depression in the patients who subsequently developed chronic pain (85%) was significantly higher than that in patients with acute pain (36%) at four weeks. The interpretation of the high prevalence of depression at this time in the patients who subsequently developed chronic pain is complicatd by the lower prevalence at 12 weeks (55%) than at 26 weeks (60%). However, analysis and interpretation is hampered by the relatively small numbers of patients included in the study.

The significant difference found between average pain score on the visual analogue scale in depressed and non-depressed patients in the group with chronic pain at 12 weeks had disappeared at 26 weeks. It is impossible to draw conclusions regarding cause but it is tempting to hypothesize that if those patients presenting with complaints of pain who are somatizing were treated early with antidepressant drugs, the progression to chronic pain would be halted.

Adaptation to pain in the form of avoidance is entirely appropriate in the acute situation but it has been demonstrated that the use of passive coping strategies is a maladaptive mechanism associated with the development and maintenance of chronic pain.[10] Family and health care professionals may collude with the patient in reinforcing these avoidance behaviours. In this study, it was shown that a high passive coping score was not significantly associated at four weeks with patients who subsequently developed chronic pain. However, there was a positive correlation between passive coping and average pain score at all three assessments and this reached statistical significance at 26 weeks.

The limited numbers in the study preclude more detailed analysis of the relationships between pain score, mood and the use of passive coping strategies. However, further, more definitive, research is planned. This will take the form of a much larger study of patients with pain of between four and 12 weeks' duration. Follow up of all patients will include the three dimensions mentioned above and the design will allow a double blind trial of the effect of antidepressant drug treatment on pain in patients found to have major depression. The involvement of a community based psychiatrist will be essential in this intervention study. Conclusions from this future research should greatly enhance our understanding of the pathogenesis of chronic pain, both by determining the effect and importance of intervening early in somatization, and by further defining the role of behavioural factors.

References

1. Potter RG. Chronic non-malignant pain: time to take on the challenge [editorial]. *J R Coll Gen Pract* 1989; **39:** 486-487.
2. Frolund F, Frolund C. Pain in general practice. *Scand J Prim Health Care* 1986; **4:** 97-100.
3. Potter RG. The frequency of presentation of pain in general practice: an analysis of 1000 consecutive consultations. *The Pain Society* 1990; **8:** 11-14.
4. Bowsher D, Lahuerta J, Lipton S. Pain patients: a retrospective survey of 1056 cases. *The Pain Clinic* 1987; **1:** 163-170.
5. Scott J, Huskisson EC. Graphic representation of pain. *Pain* 1976; **2:** 175.
6. Melzack R. The McGill pain questionnaire: major properties and scoring methods. *Pain* 1975; **1:** 277-299.
7. Goldberg D, Bridges K, Duncan-Jones P, *et al.* Detecting anxiety and depression in general medical settings. *BMJ* 1988; **297:** 897-989.
8. Brown GK, Nicassio PM. Development of a questionnaire for the assessment of active and passive coping strategies in chronic pain patients. *Pain* 1987; **31:** 53-64.
9. Bridges K, Goldberg D. Somatic presentations of DSM-III disorders in primary care. *J Psychosom Res* 1985; **29:** 563-569.
10. Philips HC. Avoidance behaviour and its role in sustaining chronic pain. *Behav Res Ther* 1987; **25:** 273-279.

Acknowledgements

Our thanks to Lesley Miller for her data collection. Thanks also to the general practitioners at Lawton House Surgery, Congleton and South Park Surgery, Macclesfield. The study was supported by a grant from North Staffordshire Medical Institute. We are grateful to J C D Wells for advice and support.

Address for correspondence

Dr R G Potter, Centre of Epidemiology, Public Health Medicine and Primary Health Care, North Staffordshire Hospital Centre, Thornburrow Drive, Hartshill, Stoke-on-Trent ST4 7QB.