PROGNOSIS 2

Prognostic indicators in low back pain

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SUMMARY. Nearly four per cent of the population over the age of 15 years in a Danish general practice reported episodes of low back pain at least once a year. A one-year follow-up of 72 patients provided data regarding symptoms, length of absence from work, use of analgesics and bed rest. An indication of the prognosis was reached by relating these data to the history (including occupation), symptoms and signs noted at the initial interview. The following factors indicated a long or relapsing course:

1. More than three previous episodes of low back pain.
2. Gradual onset of symptoms.
3. Pain referred distal to the femur.
4. More than four weeks' delay in reporting symptoms.

Other factors of prognostic significance were difficulty in moving, onset in relation to work, absence from work, positive straight leg raising test and unilateral pain in the loin.

Introduction

MANAGEMENT of low back pain in general practice involves determining the prognosis early on in episodes of the condition. Previous studies of the prognosis of low back pain in general practice have selected patients by certain kinds of work (Bergquist-Ullman and Larsson, 1977), by method of investigation (Sims-Williams *et al.*, 1978), or by certain types of pain (Dillane *et al.*, 1966). Dillane and colleagues found that, among patients suffering from acute low back pain severe enough to seek medical advice, positive signs of nerve root pressure indicated a duration of two weeks or more. Duration was measured by the time from first contact to last consultation (though the last consultation is no valid indication of the end of symptoms). Sims-Williams and colleagues found that recovery was more frequent if the pain had lasted less than one month. No other prognostic indicators were found. The patients in the latter study were those referred for x-ray examination. However, only a minority of general practice cases are referred for x-ray.

Aims

The aim of this study was to investigate, by clinical means alone, prognostic indicators in unselected patients reporting new episodes of low back pain by relating clinical features at the initial contact to the subsequent course in the following year. If this could be done, then more refined procedures might be superfluous.

Method

I defined low back pain as pain located within an area limited by a horizontal line through the third lumbar spine, the lateral edges of the quadrati lumborum, the iliac crests and the upper edge of the sacrum. Diseases of the skin, the subcutaneous tissues or abdomen were excluded.

All patients aged 16 or over who reported a new episode of low back pain were included in the study (Table 1). I made a standardized initial assessment; follow-up was performed by questionnaires after one, three and six months, and by interview after 12 months.

The study practice is single-handed, suburban and located 10 kilometres outside Copenhagen. The practice population comprises more skilled and unskilled workers than the standard Danish population.

On 1 October 1976, there were 2,188 people aged 16 or more in the practice (males 1,070, females 1,118). Of these, 83 reported low back pain at least once during the year starting 8 September 1976. Five patients were excluded since follow-up would not have been possible (two were non-nationals, two were leaving the practice and one was suffering from a psychiatric disorder). This left 78 patients who were admitted to the study. One observer (P.A.P.) collected information on a standard questionnaire about the previous history of the patients

Table 1. Patients reporting new episodes of low back pain at least once in one year.

Age	Men		Women		Total	
	Number	Percentage of practice	Number	Percentage of practice	Number	Percentage of practice
16-24	10	*4.1*	4	*1.6*	14	*2.8*
25-34	11	*4.9*	11	*3.4*	22	*4.0*
35-44	18	*4.9*	12	*3.5*	30	*4.2*
45-54	7	*4.4*	4	*3.4*	11	*4.0*
55-64	1	*2.0*	1	*1.9*	2	*1.9*
65-74	1	*4.2*	3	*16.7*	4	*9.5*
Total	48	*4.5 (3.3-5.9)**	35	*3.1 (2.2-4.3)**	83	*3.8 (3.1-4.7)**

*95 per cent confidence limits.

Table 2. Clinical information* at initial contact (N = 78).

Item	Number *(percentage)*
Previous low back pain	
No episodes	16 *(21)*
More than three episodes	40 *(53)*
Onset	
Sudden	34 *(44)*
Gradual	43 *(55)*
Duration prior to contact	
Less than one week	42 *(54)*
More than four weeks	20 *(26)*
Pain constant	33 *(42)*
Radiation from loin	38 *(49)*
Straight leg raising test positive	10 *(13)*
Scoliosis caused by muscular spasm	26 *(33)*
Tenderness	61 *(78)*
Bilateral/unilateral	56/21 *(72/27)*
Difficulty in moving	40 *(51)*
Unequal leg length	8 *(10)*
Fit for work	50 *(64)*
Previous absence from work caused by low back pain	29 *(37)*
Onset related to work	22 *(28)*
Hard work	25 *(32)*
Previous operation	2 *(3)*
Muscular weakness	1 *(1)*
Achilles tendon reflex diminished	2 *(3)*

*Definitions of these items of clinical information are available from the author.

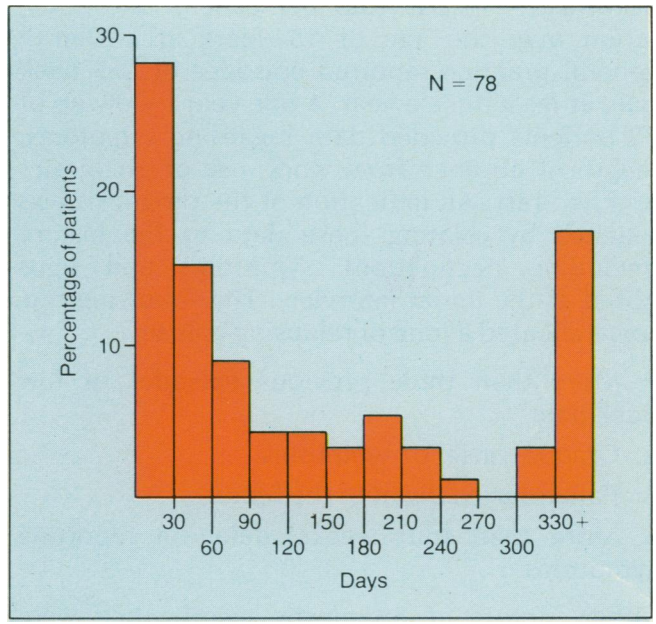


Figure 1. *Total number of days with symptoms during follow-up year.*

and their symptoms, signs and work conditions. This questionnaire covered location, radiation, onset, constancy and previous history of back pain, the relation of pain to work, time off work, and a number of signs including mobility, scoliosis, unequal leg length, tenderness of loin muscles, muscular weakness, ankle jerk and straight leg raising. These parameters were defined prior to onset of the survey. In order not to increase the workload excessively the questionnaire was completed within about 10 minutes at the initial consultation.

The follow-up covered the total number of days with:

1. Symptoms present.
2. Absence from work.
3. Rest in bed part of or all day.
4. Use of analgesics.

Ninety-five per cent of the patients were followed for six months, 92 per cent for one year.

Results

Initial clinical information

The clinical data obtained at first attendance are presented in Table 2. Twenty-one per cent (16) of the patients had had no previous attack. This gave an annual incidence of seven per thousand (95 per cent confidence limits: 4 to 12).

Follow-up data

Figures 1 to 4 show follow-up data about the duration

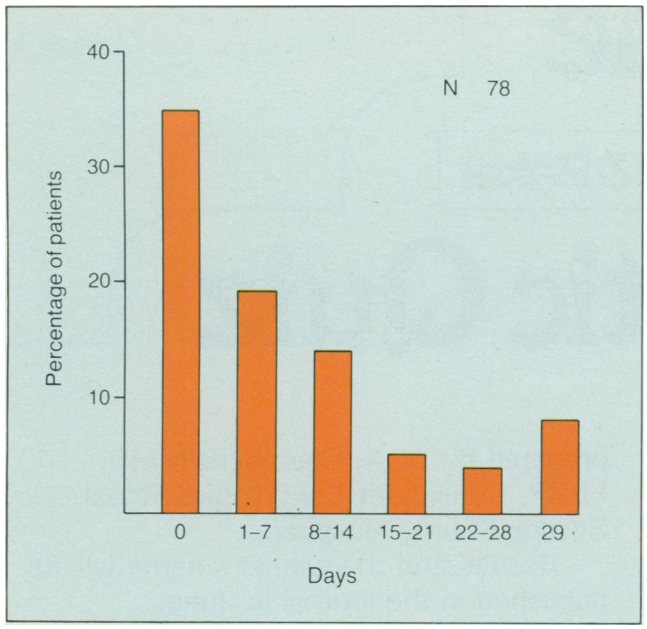


Figure 2. *Total number of days' unfitness for work during follow-up year.*

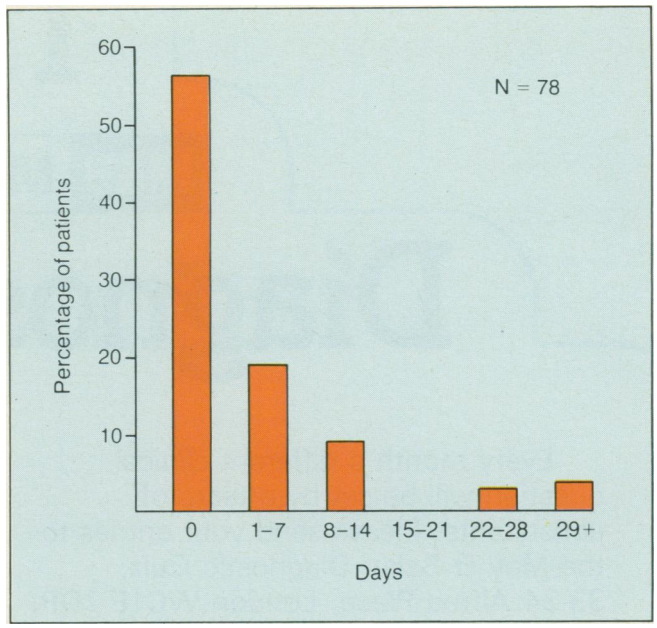
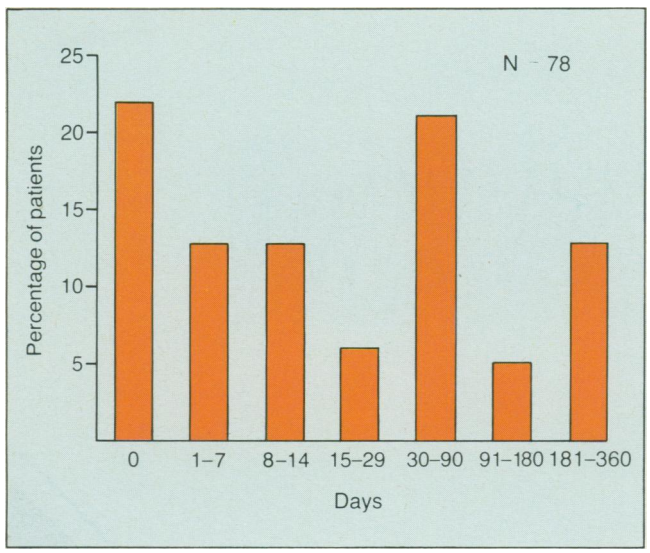


Figure 4. *Total number of days' bed rest during follow-up year.*

Figure 3. *Total number of days using analgesics during follow-up year.*



of symptoms, time off work, use of analgesics and number of days' bed rest.

As the aim of this study was to elicit long-term prognostic indicators, data from the initial assessment and from the follow-up period are not commented on here.

Comparison of initial and follow-up data

The prognostic value of the initial clinical data was analyzed as follows. The patients were divided into groups according to the severity of disability during the observation year. For instance, patients whose symptoms continued only during the first month of the follow-up year comprised one group, and patients with relapsing symptoms throughout the follow-up year comprised a second. A comparison between the two groups was then made by testing to see whether some item of initial information had occurred more often in

Table 3. Duration of symptoms in follow-up year in relation to initial information—radiation distal to the femur, gradual onset, more than four weeks' delay in reporting.

	Symptoms <30 days (N=22)		Symptoms >180 days (N=21)		
	Number	Percentage	Number	Percentage	p-value
Initial information					
Radiation distal to the femur	1	*5*	8	*38*	<0.05
Gradual onset	9	*41*	17	*81*	<0.01
More than four weeks' delay in reporting	0	*0*	8	*38*	<0.01

Table 4. Severity of course in follow-up year in relation to initial clinical information—difficulty in movement.

	Mild course (N = 8)		Severe course* (N = 13)		
	Number	Percentage	Number	Percentage	p-value
Initial information					
Difficulty in movement	1	*13*	10	*77*	<0.02

*Severe defined as unfitness for work for more than 30 days, or use of analgesics for more than 90 days, or bed rest for more than 10 days.

Table 5. Unfitness for work in follow-up year in relation to initial clinical information—onset at work.

	No unfitness (N = 27)		Unfitness for more than one week (N = 28)		
	Number	Percentage	Number	Percentage	p-value
Initial information					
Onset at work	3	*11*	11	*39*	<0.05

Table 6. Bed rest in follow-up year in relation to initial clinical information—absence from work, positive straight leg raising test, unilateral pain

	Bed rest (N = 27)		No bed rest (N = 44)		
	Number	Percentage	Number	Percentage	p-value
Initial information					
Absent from work at first contact	20	*74*	7	*16*	<0.001
Positive straight leg raising test	8	*30*	1	*2*	<0.001
Unilateral pain	13	*48*	7	*16*	<0.01

one group than in the other. The patients were regrouped for each of the four items of follow-up data. In the case of continuing symptoms, the first group consisted of 12 people and the second group of 25. In the first group, only one person had had more than three previous cases of low back pain, but this had occurred in 16 of the second group. This difference was significant by Mann-Whitney's test, $p<0.01$. It follows that a history of more than three previous episodes pointed to a long or relapsing course.

Tables 3 to 6 present further comparisons made by this method. Gradual onset, more than four weeks' delay in reporting and radiation distal to the femur pointed to a long or relapsing course (Table 3). Most of the severe cases had initially had difficulty in movement (Table 4). Where patients subsequently had more than one week off work, this was related to the pain starting at work (Table 5). Having to stay in bed for one day or more during the follow-up year occurred more often in the group of patients who were absent from work at first contact, who had a positive straight leg raising test or whose pain was unilateral (Table 6).

Statistical tests were performed as Fisher's exact test or the chi-square test, depending upon number of observations.

Discussion

This study has shown that the clinical features presented to the general practitioner at the initial contact with patients with low back pain contain important prognostic information. Such prognostic indicators are important because they assist in the management of individual cases, enable the doctor to describe the likely course of the disability to the patient and may have a bearing on prophylactic measures for future patients.

The clinical examination of patients who entered this study did not exceed what may be considered an ordinary, fairly short practice procedure. As rather more refined techniques of medical assessment could easily be adopted, it seems feasible to elicit more prognostic information than that presented in this study.

In this study the duration of ill-effects was arrived at by totalling the number of days these were experienced in the observation year, rather than by recording only the initial period. This method takes into account courses characterized by relapses during the follow-up period as well as courses of a single period. Treatment has not been described; however, conservative treatment was applied to all patients except one. This patient was operated upon and recovered soon afterwards.

In this study it was not possible to test whether occupation was of any prognostic significance.

References

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Physical conditioning augments the fibrinolytic response to venous occlusion in healthy adults

The effects of a 10-week physical conditioning programme on fibrinolytic activity at rest and after stimulation by venous occlusion were studied in 69 healthy adults aged 25 to 69 years. Physical conditioning was documented by treadmill performance and fibrinolysis was measured with a newly developed radio-enzymatic assay. Whereas fibrinolysis declined at rest from $16{\cdot}2 \pm 1{\cdot}3$ to $11{\cdot}4 \pm 0{\cdot}8$ units (mean ± SEM) ($p = 0{\cdot}0017$), the increment in fibrinolysis produced by venous occlusion was increased from $21{\cdot}7 \pm 2{\cdot}9$ to $33{\cdot}8 \pm 4{\cdot}7$ units ($p = 0{\cdot}0037$). This augmentation was most marked in women, persons with low initial levels of stimulated fibrinolysis, and persons with low initial physical fitness.

We conclude that physical conditioning can enhance the augmentation of fibrinolytic activity that occurs in response to venous occlusion. Enhanced fibronolysis in response to thrombotic stimuli could be an important mechanism in the beneficial effect of habitual physical activity on the risk of cardiovascular disease.

Source: Williams, R. S., Logue, E. E. & Lewis, J. L. (1980). Physical conditioning augments the fibrinolytic response to venous occlusion in healthy adults. *New England Journal of Medicine,* **302,** 987-991.