J Rehab Med 2001; 33: 21–25

LOCALIZED LOW BACK PAIN AND LOW BACK PAIN AS PART OF WIDESPREAD MUSCULOSKELETAL PAIN: TWO DIFFERENT DISORDERS? A CROSS-SECTIONAL POPULATION STUDY

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In a cross-sectional postal questionnaire study we compared individuals with localized low back pain (LBP) with individuals with LBP as part of widespread musculoskeletal pain, according to demographic and lifestyle characteristics and functional ability. All the inhabitants in Ullensaker county born 1918–20, 1928–30, 1938–40, 1948–50, 1958–60 and 1968–70 were sent a questionnaire in 1994. The study population comprised 2893 responders. LBP as part of widespread pain indicated reduced functional ability, and the groups differed in several demographic and lifestyle characteristics.

Key words: musculoskeletal symptoms, population, survey, low back pain, widespread pain, function, rehabilitation, COOP/WONCA-charts, prognosis.

J Rehab Med 2001; 33: 21–25

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(Accepted February 23, 2000)

INTRODUCTION

Low back pain (LBP) is a non-specific symptom (1, 2). Most episodes of acute LBP are self-limiting, but new episodes are frequent, and over time LBP has a persistent and recurrent nature for a large group of the population, with major consequences for individuals and society (3–5). Clinically relevant subgroups of LBP should be identified in the search for its causes (6).

LBP is sometimes part of widespread musculoskeletal pain (7, 8). In a recent Norwegian study in 40–42-year-old Norwegians with chronic LBP, only 1/3 of the men and 1/6 of the women had localized LBP; the rest reported pain from at least one additional body area (9). Pain drawings by individuals with LBP show different locations, not just as in radiating LBP, but often on both anterior and posterior sites of the body image (10).

Widespread pain before an episode of LBP is strongly predictive of development of chronic LBP (11, 12). This could indicate that localized LBP and LBP in individuals with widespread pain can represent two different disorders with different functional consequences. However, acute attacks of LBP can evolve gradually into widespread chronic pain conditions (13), indicating that localized LBP and LBP in individuals with widespread pain can be two stages of one disorder.

The natural history of localized LBP and LBP in persons with widespread pain calls for prospective population-based studies. However, the characteristics of individuals with LBP as part of chronic, widespread pain, compared with the characteristics of those with localized LBP, have not been properly described.

The present study aimed to establish how often LBP is combined with widespread pain, and to compare between individuals with localized LBP and those with LBP as part of widespread musculoskeletal pain, according to demography, pain, lifestyle, working ability and functional status.

MATERIAL AND METHODS

Sample and setting

Ullensaker is a municipality with 18,000 inhabitants, 40 km northeast of Oslo, Norway. It is a rural community, and many of the inhabitants commute to jobs in Oslo. There are no major differences between the population of Ullensaker and the population of Norway with respect to demographic characteristics.

In 1994 we sent a questionnaire about musculoskeletal complaints to all inhabitants in six birth cohorts, 1918–20, 1928–30, 1938–40, 1948–50, 1958–60 and 1968–70. After one reminder 2893 persons responded (participation rate 63.2%). The non-responders were younger and more often males than the responders (data not shown).

Variables

Musculoskeletal symptoms were registered using a standard Nordic questionnaire (14). The respondents were asked to report whether they had experienced any pain or discomfort from the following 10 areas during the previous week: head, neck, shoulder, elbow, hand/wrist, upper back, lower back, hip, knee or ankle/foot. The check-list was supplemented by a "pain-region drawing".

The category "localized LBP" was defined as LBP reported as the only localization of musculoskeletal pain. The category "LBP as part of widespread pain" was defined as LBP and in addition symptoms from four or more other areas of the body.

The duration of pain was registered in two questions: "How long have you had your pain?" (optional answers: less than a year, 1–5 years, 6–10 years, more than 10 years), and "During the previous year, for how long time have you had your pain?" (optional answers: no pain, less than a week, 1–8 weeks, more than 8 weeks, every day). In this study the categories less than a year and 1–5 years, and less than a week and 1–8 weeks were analysed together.

Subjective severity was registered by the question: "How bad has your pain been?" (no pain, not so bad, moderate, bad and very bad). The level of physical leisure activity was registered by the question: "How strenuously do you use your body (so much that you sweat and/or breathe heavily) in your leisure time?" (none, less than 2 hours a week, 2–4 hours a week, more than 4 hours a week). Sleep problems were measured by a general question: "How do you usually sleep?" (well, fairly well, badly).

Functional status was registered on the COOP/WONCA chart (15, 16)

Table I. *Demographic characteristics in population-based localized low back pain, and low back pain as part of widespread pain*

	Localized low back pain ($n = 222$)	Low back pain as part of widespread pain ($n = 281$)	p
Female	100	192	<0.001
Male	122	89	
Age			
24–36 years	82	80	
44–56 years	93	143	0.086
64–76 years	47	58	
Single or divorced	50	61	0.827
Married or cohabiting	172	220	

using the official Norwegian translation (17). As we had no interventions, we replaced the standard COOP/WONCA chart "change in health", with an optional pain chart (18). The respondents were asked to rate their functional ability during the previous 2 weeks on a five-point scale. Each level was illustrated pictorially, numerically and verbally. A score of 1 indicated no functional limitation, and 5 a maximum functional limitation.

Statistical analysis

The two groups were compared with respect to gender, age, civil status, duration of pain, time with symptoms during the previous year, subjective severity of pain, self-reported overall health, level of physical leisure activity, sleep problems, Body Mass Index (BMI) and functional ability. In the analysis of differences between groups we used Pearson's chi-square test.

In a multivariate analysis we used a forward stepwise logistic regression model to explore the associations between the variables mentioned above and widespread pain as part of LBP. The analyses were performed with the SPSS 7.5 Statistical Package.

RESULTS

In the Ullensaker population sample, 893 persons (31%) reported LBP during the previous week in 1994. Of these, 222 had LBP as their only musculoskeletal problem, while 281 had LBP along with symptoms from at least four other areas.

Individuals with localized LBP were more often male than those with LBP as part of widespread pain (Table I). LBP as part of widespread pain was most often reported by the middle-aged. We found no differences in civil state between the groups.

Persons with LBP as part of widespread pain had more constant and more chronic pain than those with localized LBP (Table II). Most persons with LBP as part of widespread pain regarded their pain as bad or very bad. In localized LBP the majority rated their pain as not so bad or moderate. Persons with LBP as part of widespread pain reported overall poorer health than persons with localized LBP.

There were no differences between the groups with respect to the level of leisure physical activity. Persons with localized LBP had fewer sleep problems, while LBP as part of widespread pain was strongly associated with sleep problems (Table III). Persons with localized LBP more often had normal BMI, while those with LBP as part of widespread pain more often had high as well as low BMI values.

The functional ability measured by the COOP/WONCA charts was best in persons with localized LBP for all six dimensions measured (Table IV).

In the logistic regression analysis, having widespread pain as part of LBP was associated with being a woman (OR 3.71, 95% CI 2.29–5.98), pain intensity, emotional problems, reduced self-rated general health and chronicity of symptoms (Table V).

Persons with LBP as well as pain from some (1–3) additional

Table II. *Pain characteristics and self-rated general health in population-based localized low back pain and low back pain as part of widespread pain*

		Localized low back pain ($n = 222$)	%	Low back pain as part of widespread pain ($n = 281$)	%	p
Duration of pain	<5 years	92	43	63	23	
	6–10 years	58	27	71	26	<0.001
	>10 years	66	31	144	52	
Time with pain previous year	<8 weeks	97	45	31	11	
	>8 weeks, but not every day	67	31	78	28	<0.001
	every day	53	24	166	60	
Subjective severity of pain	not so bad	42	19	7	3	
	moderate	88	40	76	28	<0.001
	bad or very bad	91	41	193	70	
How is your health today?	very good	14	6	5	2	
	good	129	59	58	21	
	not so good	66	30	165	60	<0.001
	poor	11	5	46	17	

There are some missing values; percentages are calculated against the actual n in each variable.

Table III. *Lifestyle characteristics in population-based localized low back pain and low back pain as part of widespread pain*

		Localized low back pain ($n = 222$)	%	Low back pain as part of widespread pain ($n = 281$)	%	p
Level of physical leisure activity	No activity	32	15	45	17	
	<2 hours a week	82	38	103	38	
	2–4 hours a week	77	36	85	32	0.714
	>4 hours a week	24	11	36	13	
How do you usually sleep?	Well	131	59	67	24	
	Medium	73	33	134	48	<0.001
	Badly	17	8	79	28	
Body Mass Index	< 20	9	4	25	9	
	20–24.99	125	57	123	45	
	25–30	73	33	100	36	0.010
	>30	12	6	27	10	

There are some missing values; percentages are calculated against the actual n in each variable.

areas ($n = 390$) had results between those of localized LBP and LBP as part of widespread pain for most variables (data not shown).

DISCUSSION

Methodological considerations

Selection bias may have influenced the results in the present study. The non-responders were younger and more often males, and this might reflect a tendency towards a higher response rate in persons with musculoskeletal symptoms, because musculoskeletal symptoms are more prevalent in women and elderly people. However, it is unlikely that selection bias can explain the study results involving different subgroups of LBP.

The Nordic questionnaire used in the study to measure musculoskeletal symptoms was designed to obtain reports about minor symptoms too, with no lower limit for complaint severity (6). As a consequence, symptoms were included that had a good prognosis and minor effect on functional status.

The cut-off point for LBP as part of widespread pain, four or more painful areas in addition to the LBP, was based on experience. In another study (18), five areas or more (including LBP) as cut-off point for widespread pain included most members of a local fibromyalgia association, and only a modest fraction of the general population. In addition, the results in this study were almost the same if we used one area with pain more or less as alternative cut-offs.

The present study does not distinguish between symptoms from the lower extremities connected to the LBP and other symptoms from the lower extremities. The often used classification of LBP with and without radiation (19, 20) cannot be applied to our material. However, our group with localized LBP had LBP without radiation, while persons with LBP with radiation but no other musculoskeletal symptoms would be classified in the intermediate group, not in the group with LBP as part of widespread pain.

Low back pain—often part of widespread pain

Of 893 persons in our population who reported LBP during the previous week, only 222 (25%) had localized LBP. LBP along with widespread pain was more common in the population (281 persons, 31%). One explanation is that localized LBP is more often episodic and of short duration, while LBP as part of widespread pain is mostly chronic. When pain is registered for a short period, e.g. a week, a larger fraction of the individuals with widespread pain will be found compared with persons who occasionally suffer from localized pain.

However, the problem of treatment and rehabilitation of LBP, in both primary and secondary care, mostly relates to persons with chronic LBP. Our study indicates that people with chronic,

Table IV. *Problems with functional ability in persons with localized low back pain and low back pain as part of widespread pain*

	Localized low back pain ($n = 222$)	%	Low back pain as part of widespread pain ($n = 281$)	%	p
Moderate or low physical fitness	91	42	156	58	<0.001
Moderately or severely troubled by emotional problems	59	27	141	52	<0.001
Moderate or severe limitations of social activities	39	18	102	38	<0.001
Difficulties in performing daily activities	70	32	173	63	<0.001
Moderate or severe pain	75	34	211	74	<0.001
Not good overall health	25	12	97	36	<0.001

Functional ability measured using the COOP/WONCA charts.
There are some missing values; percentages are calculated against the actual n in each variable.

Table V. *Factors associated with widespread pain in persons with low back pain. A forward stepwise logistic regression model (*n = *436).*

		Odds ratios	95% CI
Gender	Men (ref. cat.)	1.00	
	Women	3.71	2.29–5.98
How is your health today?	Very good/good (ref.cat)	1.00	
	Not so good	3.14	1.86–5.31
	Poor	3.59	1.45–8.85
Time with pain previous year	Less than 8 weeks (ref. cat.)	1.00	
	More than 8 weeks, but not every day	1.67	0.88–3.15
	Every day	3.22	1.66–6.23
Pain (COOP/Wonca Pain Chart)	No pain/very mild pain (ref. cat.)	1.00	
	More than mild pain?	6.03	2.31–15.79
Emotional problems (COOP/Wonca)	Less than moderate problems (ref. cat.)	1.00	
	More than moderate problems	1.88	1.14–3.10

Variables also entered in the initial regression model: age, Body Mass Index, civil status, duration of pain in years, level of leisure physical activity, quality of sleep, subjective severity, and the four COOP/WONCA charts not shown in this table.

severe, LBP have LBP along with widespread pain as a rule more than as an exception.

Characteristics associated with widespread pain in people with LBP

People with localized LBP differed markedly in most characteristics from those with LBP along with widespread pain. Persons with LBP as part of widespread pain were more often female and middle-aged. This is probably because widespread pain occurs most commonly in middle-aged women (21). Persons with LBP as part of widespread pain had more severe and long-lasting pain, more sleep problems, lower self-reported general health and more problems with functional ability. This indicates that the consequences of LBP as part of widespread pain are greater for each individual, as well as for society, than the consequences of localized LBP.

In the logistic regression the characteristics of the persons with widespread pain as part of LBP were female gender, intense, chronic pain, low self-reported general health and emotional problems. However, these associations do not need to be causal; the emotional problems might for instance be a consequence rather than a cause of widespread pain (21).

Why do localized LBP and LBP as part of widespread pain differ?

There are several possible explanations for the differences between the two groups. First, localized LBP and LBP together with widespread pain can be entirely different disorders. This possibility is supported in the data from a prospective study in general practice, in which widespread pain was the strongest predictor for the development of chronic LBP in persons consulting for a LBP episode (12).

Second, it is possible that the group with localized LBP was dominated by persons with minor LBP symptoms. As severe LBP might be accompanied by secondary symptoms—for example, increased muscular tension in other areas of the body—widespread pain could act as a marker of severity for LBP.

Third, it is possible that chronic pain involves the spread of symptoms to other areas of the body, not just as in radiating LBP, but to all areas of the body (10, 12). When LBP becomes chronic it might cause more widespread bodily pain; or pain from other areas, such as neck, shoulder or arm, may spread to the low back area. This process could include an increase in symptoms such as tiredness, dizziness, sleeplessness or problems with concentration (22, 23). The functional problems might be linked to this combination of symptoms following chronic, widespread pain.

Finally, there may be underlying factors of importance for which we have not been able to control. These could include lifestyle factors other than smoking, sleeping or physical leisure activity; work place factors; genetic factors; or psychological factors other than emotional problems as measured by the COOP/WONCA chart.

It is a well-known paradox that during the same period in which modern life at work and at home has reduced the physical strain people suffer in the lower back, the disability of LBP has increased rapidly. Dionne (4), in the work of preventing chronic disability related to LBP, calls for a set of markers that would allow early identification of patients who are at higher risk of chronicity. The present study indicates that widespread pain in LBP might be an important indicator in treatment, rehabilitation and preventive efforts.

Clinical implications

Our results support the idea that localized LBP and LBP as part of widespread pain should be regarded as different problems, with different functional consequences. Perhaps one reason for the limited success in treatment and rehabilitation of LBP is that many patients treated for localized LBP in fact suffer from widespread pain. Integrated group rehabilitation for chronic LBP promoting self-control and behaviour change through educational measures has better long-term results than the traditional individual approach of physiotherapy and physical procedures (24). The group rehabilitation model is perhaps more relevant, especially in LBP along with widespread pain.

The present study indicates that many people with LBP also have widespread pain, and that they have stable, chronic pain and markedly reduced function. An important challenge in future LBP management will be development of effective treatment and rehabilitation of LBP as part of widespread pain.

ACKNOWLEDGEMENTS

Olav Rutle, who died unexpectedly in autumn 1996, initiated this article. We remember with thanks his inspiration and friendship. The study was financed by the Norwegian Research Council, the University of Oslo and the Trygve Gythfeldt fund.

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