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Spontaneous Onset of Back Pain

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Abstract:

Objectives: To assess the frequency with which patients attribute low back pain to spontaneous onset.

Design: A consecutive sample of two distinct groups of patients seeking treatment for back pain: those without need to identify cause (study group, $n = 4,689$) and those required to report a specific event to qualify for benefits paid for by a third party (compensated group, $n = 6,687$).

Setting: Active exercise-based back pain rehabilitation clinics.

Summary of Background Data: Research on the natural history of back pain has revealed frequent reports of spontaneous recovery, usually within 8–12 weeks after onset. There is little comparable literature pertaining to the report of spontaneous onset.

Methods: Data were collected for two groups of consecutive patients who attended for initial assessments of their back pain at 16 Canadian Back Institute locations, between May 1, 1994 and February 28, 1995. Patient responses were collected using a standardized, professionally administered questionnaire.

Results: In the group without need to identify cause, 66.7% of patients could not identify an event producing their symptoms. For those required to report a specific event, only 9.8% of patients failed to attribute cause. Multivariate logistic regression revealed that the required-to-report group was approximately 15 times more likely to report an event (odds ratio = 14.95; 95% confidence interval = 13.44, 16.65) than the study group; those pursuing litigation were more than 2.5 times more likely to report a causative event (odds ratio = 2.68; 95% confidence interval = 2.09, 3.49).

Conclusions: Back pain occurred spontaneously in approximately 67% of patients seeking treatment in the study group. The authors consider spontaneous onset to be part of the natural history of back pain for this group.

Key Words: Spontaneous onset—Back pain—Natural history.

The clinical decisions regarding back pain, whether therapeutic, ergonomic, or legal, are frequently based on a presumption of cause. The identification of cause is of limited significance without the corresponding determination of spontaneous onset. In epidemiology, the term *cause* has various connotations. For this study, the term refers specifically to the event or incident that precipitated the back pain. Determining the precipitating event is a central part of most back pain histories. The rate of spontaneous onset is uninvestigated and likely underestimated.

Research on the natural history of back pain has revealed frequent reports of spontaneous recovery, usually within 8–12 weeks after onset.[1–3] There is an unfounded belief among treating professionals that the frequency of reported spontaneous onset is also well-established. This "common knowledge" is based on intuition and anecdote. A review of the scientific literature reveals a striking paucity of published research documenting the incidence of back pain presenting without a perceived causal event.

The few reports in the medical literature pertaining to spontaneous onset involve relatively small case series that may not be representative of the larger population of

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patients seeking treatment. In 1966, Dillane et al.[4] published their statistics on the incidence of acute back pain of unknown origin. Of the 470 patients consulting their general practice in Southeast London, England, back pain occurred without specific cause in 79.3% of males and 88.8% of females.

In an unpublished review, McKenzie[5] pursued the question of spontaneous onset retrospectively by analyzing data from his physiotherapy clinic before and after the New Zealand Accident Compensation legislation was enacted in 1974. This legislation guaranteed all citizens free medical treatment and 80% wage replacement after being injured in an accident of any description. From 1962 to 1973, prior to the legislation, 67% of all low back patients treated at McKenzie's facility developed symptoms for no apparent reason. By 1977, this figure had dropped to 35%, and by 1981 only 21% of back pain patients were reporting spontaneous onset. McKenzie concluded that the compensation rules requiring patients to identify a specific precipitating event had altered the perception of injury.

Often spontaneous onset is mentioned only as an incidental finding. Cox and Feller,[6] analyzing chiropractic care, noted that 45% of their sample of 423 consecutive low back patients failed to identify any particular activity that had triggered their pain. During a review of occupational back pain at the Ford Motor Company, Manning et al.[7] observed that 41.2% of the 401 workers who had missed at least 1 day of work due to back pain in 1980 were unable to ascribe any cause to their symptoms.

Calin et al.[8] explored the use of the clinical history to screen for patients with ankylosing spondylitis. Their 17-question survey included the question, "Was the discomfort caused by an injury?" The authors did not define the term *injury*. In the group of patients known to have ankylosing spondylitis, 83% failed to attribute their discomfort to an injury. Among a control group with mechanical or nonspecific back pain, 24% considered their symptoms to be unrelated to an injury.

The evolution of clinical judgment and the rehabilitation process are subtly driven by the perceived necessity of determining the origin of the back pain episode. The weight currently given to the relevance of causation, combined with the inadequacy of reliable research that directly addresses the issue of ascribing spontaneous onset motivated the present study.

Compensation issues complicate the clinical picture. Because it is difficult to claim a compensation injury without identifying a specific event responsible for the pain, for the purposes of this study it is assumed that the reports of these patients with respect to causation would be significantly different than for a group who had no need to establish cause. The purpose of this study was to determine the incidence of perceived spontaneous onset (could not identify a precipitating event) among back pain patients. It was theorized that this would be established most accurately by investigating patients for whom the presence or absence of a causative event was inconsequential.

METHODS

This observational study uses a large patient cohort to examine histories given by consecutive patients during initial assessments for back pain. The majority of patients included in this study had a chief complaint of neck or low back pain with or without distal referral. Fewer than 10% had arm or leg dominant symptoms. Sixteen Canadian Back Institute (CBI) clinics across Canada, from Halifax to Vancouver, were selected on the basis of their past performance in information retrieval to participate in the study. Data were collected between May 1, 1994 and February 28, 1995 from patient responses to a standardized questionnaire completed by the treating physiotherapist. All information was entered into a computerized database at each site and downloaded to a central processing location. Preset inclusion criteria specified that patients were between 18 and 65 years and that the party responsible for payment was clearly identified.

The CBI deals with mechanical spinal pain of musculoskeletal origin. It is a primary access rehabilitation facility that focuses on pain control in acute, subacute, and chronic ambulatory populations. Patients with suspected systemic disease and cases sustaining trauma sufficient to produce severe bony injury or major neurologic sequelae are referred elsewhere.

Two distinct groups were examined. The study population consisted of 4,689 consecutive patients with no financial inducement to attach a specific causative event to the experience of back pain. Males constituted 47% of this group; ages ranged from 18 to 65 (in accordance with study inclusion criteria), and the mean age was 40.9 years with a standard deviation of 10.6. The employment rate at time of assessment was 86.2%, and the mean time between onset of pain and the start of treatment was 141.3 days.

A second independent group consisted of 6,687 consecutive patients who were receiving or anticipating financial indemnity for their injuries. This group included patients whose treatment was covered by an insurance company or the Workers' Compensation Board. The compensation system customarily stipulates that remuneration is paid only if the individual can attach a precipitating event to the occurrence of back pain. Males constituted 56% of this group; ages ranged from 18 to 65, and the mean age was 37.3 years with a standard deviation of 10.5. The employment rate at time of assessment for this group was 82.1%, and the mean time between onset of pain and the start of treatment was 153.6 days. Table 1 summarizes these data.

TABLE 1. *Characteristics of patients*

	Required to report an event (compensated group)	No need to establish cause (study group)
Age[a]		
Mean	37.3	40.9
SD	10.5	10.6
Gender[b]		
%Male	55.9 (3,737/6,687)	47 (2,205/4,689)
%Female	44.1 (2,950/6,687)	53 (2,484/4,689)
Employment rate (%) at assessment[c]	82.1	86.2
Lag time between injury and first assessment (in days)[c]	153.6	141.3

[a] Significant difference ($t = 18.1, p < .001$).
[b] Significant difference ($\chi^2 = 86.7, p < .0001$).
[c] Not significant.

The material presented in this study is a segment of the routine interview conducted with every patient initiating treatment at CBI. The study focuses on the patients' response to a question regarding a precipitating event initiating the painful episode for which they were seeking treatment. Table 2 presents the sections of the therapist-administered questionnaire used to gather the required information.

The interviewer was instructed to accept as an event any episode that was both memorable to the patient and had transpired within a circumscribed period of time. Patients who stated clearly that there was no episode, who were unable to recall a specific incident, or who described a prolonged situation lasting for days or weeks were determined to have had no specific event. The inquiring therapist was not allowed to make a judgment on the validity of a patient's statement. Any attribution of cause was accepted without question.

RESULTS

In the study group, containing patients with no requirement to establish cause, 3,129 of 4,689 (66.7%) could not identify a precipitating event. In the second group, those who had a necessity to report, 657 patients of 6,687 (9.8%) failed to attribute cause ($\chi^2 = 4019.7, p < .0001$). There were 1,496 (13.2%) patients, all in the second group, pursuing litigation. There was a significant difference between the reporting of spontaneous onset in this group (69 of 1,496, 4.6%) and the group not pursuing litigation (588 of 5191, 11.3%) ($\chi^2 = 59.1, p < .0001$).

Univariate logistic regression was used to test the relationship between each potential predictor and the dichotomous outcome (event: yes, no). An alpha level of .05 (two-sided) was used as the criterion for statistical significance. In analysis of unadjusted odds ratios, Table 3 shows that the required-to-report group was 18 times more likely to report an event than the study group and more than 12 times more likely to be involved in litigation. The p values for each variable, from the Wald test of significance, were highly significant, indicating that each predictor individually appeared to influence whether a patient reported an event. Thus, multivariate logistic regression was used to control for the effects of each factor.

Multivariate analysis revealed that group allocation was the prime predictor of an event, followed by litigation status; the required-to-report group was approximately 15 times more likely to report an event and more than 2.5 times more likely to be involved in litigation than the group with no requirement to establish cause. Odds ratios for age showed that the likelihood of reporting an event decreased with age. Smoking had little effect, but males were approximately 1.5 times more likely than females to report an event (Table 4).

Because of statistically significant differences in the reporting of an event between males and females (Table 5) and in the mean ages between the groups (see Table 1), two-way interaction terms were used to search for subgroups that may have influenced the likelihood of the reporting of an event. This multivariate logistic procedure showed statistically significant group × age and group × gender interaction effects. This additional modeling had lit-

TABLE 2. *Portions of the structured questionnaire used to gather data*

Was there an event that caused this episode?
☐ Yes ☐ No

Occupation
Your perception of the physical tasks required at your job:
☐ Sedentary/light ☐ Light ☐ Medium
☐ Heavy ☐ Very heavy

Litigation
Is there a lawyer involved with your injury?
☐ Yes ☐ No

TABLE 3. *Unadjusted odds ratios (OR) and chi-square values by patient characteristics*

	OR	p	95% Confidence interval		χ^2
Group (compensated)	18.41	.0001	16.65	20.38	3,203.54
Litigation (yes)	12.47	.0001	9.84	16.08	407.58
Age range (years)					
18–30 (reference)	1.00				—
31–37	0.71	.0001	0.63	0.80	31.38
38–46	0.55	.0001	0.49	0.62	102.62
47–65	0.46	.0001	0.41	0.52	175.94
Smoker (yes)	1.74	.0001	1.59	1.91	141.71
Males	1.53	.0001	1.41	1.65	112.99

TABLE 4. *Odds ratios (OR) and chi-square values by patient characteristics adjusted for all main effects*

	OR	p	95% Confidence interval		χ^2
Group (compensated)	14.95	.0001	13.44	16.65	2,456.97
Litigation (yes)	2.68	.0001	2.09	3.49	56.33
Age range (years)					
18–30 (reference)	1.00				
31–37	0.90	.1766	0.78	1.05	1.83
38–46	0.77	.0003	0.67	0.89	13.03
47–65	0.75	.0001	0.65	0.86	16.24
Smoker (yes)	1.02	.747	0.91	1.14	0.104
Males	1.40	.0001	1.27	1.54	45.02

tle effect on the odds ratios for each of the variables except group (Table 6). The interaction effects of age and gender with group further inflated an already large odds ratio.

The relationship between patients' perception of the physical demands of their jobs and incidence of spontaneous onset was evaluated. The physical demand options were modeled after the taxonomy developed by the United States Department of Labor[9] and ranged from sedentary/light to very heavy. Because of the time constraints imposed on the clinical interview process, there was no objective confirmation of these subjective ratings. In the study group, analysis of causation by job demand revealed that, as the perceived job demands increased from sedentary/light to very heavy, the rate of spontaneous onset declined from 68.8% to 57.1% ($\chi^2 = 6.9, p < .01$). The rate of spontaneous onset for the other group declined significantly from 16.3% to 5.9% as the perceived job demands increased from sedentary/light to very heavy ($\chi^2 = 53.04$, $p < .0001$).

DISCUSSION

This study is the first epidemiologic examination of the frequency with which spontaneous onset is accepted as the manner of presentation in a large group of patients seeking treatment for mechanical back and neck pain. Two distinct groups, differentiated on the basis of the presence or absence of a need to establish cause, were analyzed. Most patients receiving compensation are able to identify a causative incident. It is not the intent of this study to draw conclusions regarding the effect of compensation status on the rate of cause identification nor does it seek to ascribe motives. From a clinical perspective, however, it is important to distinguish medical validity from actuarial necessity.

TABLE 5. *Reporting of an event that caused back pain, by gender*

	Male	Female
%Not required to report[a] (n = 1,560/4,689)	38.1	28.9
%Required to report[b] (n = 6,030/6,687)	90.7	89.5

[a]Statistically significant difference ($\chi^2 = 44.5, p < .0001$).
[b]Not significant.

TABLE 6. *Adjusted chi-square values and odds ratios (OR) by patient characteristics*

	OR	p	95% Confidence interval		χ^2
Group (compensated)	25.15	.0001	19.52	32.60	679.54
Litigation (yes)	2.59	.0001	2.01	3.37	53.92
Age range (years)					
18–30 (reference)	1.00				
31–37	1.07	.4795	0.88	1.30	0.54
38–46	1.00	.9833	0.83	1.21	0.002
47–65	0.89	.2312	0.74	1.07	1.43
Smoker (yes)	1.03	.6443	0.92	1.15	0.116
Males	1.51	.0001	1.33	1.70	44.09
Group × age 18–30 (reference)	1.00		1.00	1.00	
Group × age 31–37	0.67	.011	0.49	0.91	6.89
Group × age 38–46	0.51	.0001	0.38	0.69	19.66
Group × age 47–65	0.64	.0046	0.47	0.87	8.07
Group × gender	0.801	.0335	0.65	0.98	4.52

It might be argued that the true frequency of attributed spontaneous onset can be obtained only from the general population including those not referred for treatment. But those who make no accommodation for the problem and seek no help in its management do not contribute to the financial drain of low back pain on society. Further, because they do not appear in any medical, chiropractic, or physical therapy statistics, any presumed cause or potential pathology has no impact on prevention strategies or therapeutic paradigms.

The observed spontaneous onset rate of 66.7% in the group for which the identification of cause was immaterial is consistent with the limited previous research[4] and anecdotal experience. McKenzie[5] compared spontaneous onset rates before and after legislative changes to New Zealand's compensation system and used his data to make inferences regarding the inflationary effects of liberal compensation legislation on claim rates. We have shown that attributing back pain to a spontaneous onset is the natural history for two thirds of patients presenting to a back pain rehabilitation center and having no statutory requirement to demonstrate cause.

The literature regarding the correlation between physical demands and back pain is contradictory. Battié and Bigos[10] observed that, whereas many cross-sectional studies have shown a relationship between heavy physical work load and the occurrence of back pain,[11–18] other research,[19–22] including longitudinal studies,[23–25] has refuted this conclusion. The association between sedentary work and back pain is equally inconclusive. Multiple studies have presented evi-

dence for[12,13,26,27] and against[17,21,22,24,28,29] this association. Nachemson[30] stated that low back pain occurs with about the same frequency among those performing heavy labor as those with sedentary occupations.

Although a routine external confirmation of job demands was not carried out, it is apparent from the patient self-report that the two groups described in this study were highly discordant. Unfortunately, there is no basis from which to determine whether this substantial variation reflects actual differences in job demands or alterations in perception. One might conclude that the level of physical demands was the explanatory variable responsible for differences between the two groups in the reported rates of spontaneous onset. The conflicting research cited earlier would not support this conclusion. Also, physical work load alone cannot explain the discrepancy. If the amount of physical work, real or perceived, was a significant independent variable, the variation between the two groups should have remained the same for each job demand classification.

Previous literature[7] has indicated that identifying the cause of back pain will reduce its socioeconomic burden. Although prevention is imperative, the current emphasis on cause, following the accident, is unjustified and encourages unnecessary investigation, delayed treatment, and unwarranted costs. The supposed mechanism of injury can help establish future prevention strategies, but the clinical presentation should direct treatment. Making therapeutic decisions based principally on the precipitating event is usually inappropriate.

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