



A DIFFERENT APPROACH TO BACK PAIN DIAGNOSIS: IDENTIFYING A PATTERN OF PAIN

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Abstract

An early, clearly defined, clinically relevant diagnosis of back pain benefits both the patient and the practitioner. A relevant and effective diagnosis is possible based not on anatomic location or pathologic description but rather on the clinical picture. The key is recognizing and identifying a typical pattern of pain. This dominant pattern then determines the appropriate therapy.

Physicians are trained to seek a definitive pathological diagnosis for the patient with low back pain. At the same time, patients want reassurance that their pain is the result of an identifiable medical condition which is attributable to a specific cause.

Unfortunately, this is rarely possible, leaving both parties frustrated. The doctor's unsuccessful search for a precise diagnosis heightens the patient's distress and illness behaviour. Dealing with these emotional responses may become more difficult than the management of the actual physical disorder¹.

People like certainty. The patient and the clinician both avoid the stress of uncertainty when a diagnosis is made. DeRosa and Porterfield believe clinicians often are

compelled to give a diagnosis in the absence of pathology or an anatomic source of low back pain². Significant advances in technology have failed to produce diagnostic accuracy. Despite the advantages of sophisticated imaging, the origin of back pain often remains speculative.

An alternative strategy is required to satisfy the patient, obtain clinical relevance for the physician and suggest a treatment protocol. When assessing a patient initially, we believe the precise physical or pathological problem is less important than recognition of the patient's pattern of pain. Emphasis on a precise history and confirmatory physical examination allows the construction of a clinical picture sufficient to initiate therapy. The determination of a typical pattern of pain allows the clinician to offer a nonthreatening diagnosis. The patient understands that the problem has been recognized, understood and can be helped. Hall and Icton found that patients who accepted a nonthreatening diagnosis returned to normal activity more readily than those who either have not accepted a diagnosis or who believe their problem was more serious.³ Fear interferes with effective communication and treatment.

Failure of Diagnosis

Clinical Diagnosis. Several studies question the ability to make accurate diagnosis of back pain. Specific diagnosis can be made only in a minority of cases.^{2,4,5} The precise diagnosis is unknown in almost 90% of patients. Despite the fact that the diagnosis is rarely accurate, the prognosis for recovery from low back pain is excellent. Nachemson suggests that we have neither the pathologic nor biomechanical understanding to identify the anatomic source of pain.⁴ The patient's emotional reaction to back injury further impedes the clinician's ability to obtain a purely anatomic diagnosis.⁶ Waddell states that patients and physicians are most comfortable with a normal diagnosis.⁷ Spangfort reports, however, that treatment based on this type of diagnosis usually fails.⁸ The Quebec Task Force on Spinal Disorders (QTFSD) concluded that the acceptance of any diagnosis is complicated for patients with low back pain because they often receive several diagnoses from different sources.⁹ Many patients believe something must be seriously wrong to warrant such a range of opinions.² The recognition of symptom patterns is the most reliable measure of low back morbidity. The appropriate initial focus should be to determine the mechanical stresses that provoke the typical pattern of pain.

Radiologic diagnosis. Patients with back pain can have normal imaging studies. Conversley, individuals with no back problem can show worn facets or bulging discs. Deya and Diehl emphasize that the diagnostic yield from radiographs of the lumbar spine is low and that many radiographic abnormalities are asymptomatic.¹⁰ Magnetic resonance images (MRIs) of early dehydration and degeneration of lumbar discs are not necessarily associated with clinical findings.¹¹ Witt et al studied roentgenograms of low back patients with sciatica, and roentgenograms of patients without low back pain.¹² The authors concluded there was no difference in the incidence of spondylosis and disc degeneration between the two groups. Phillips listed five reasons why the chiropractic physician uses x-rays for the management of back pain.¹³

- To rule out pathology
- To perform a biomechanical evaluation
- To protect against medical legal action
- To obtain financial gain
- Out of habit

The author concluded that on any of these grounds, the literature neither supports nor justifies the use of x-rays in the management of acute low back pain.

Kaplan concluded that selected patients can be managed properly and receive adequate initial medical care without imaging studies.¹⁴ Myelography, computerized tomography and MRI should be used as part of a presurgical examination.

Changing the perception of the value of x-rays among physicians is a difficult task. Altering this same perception for patients is a monumental assignment. Kaplan et al concluded that patients who are given a diagnostic label based on radiography were more likely to express satisfaction with medical care and less likely to seek help elsewhere compared to patients who were given non-specific diagnoses.¹⁵

The success of many paramedical treatment programs rests upon their ability to impart confidence and initiate rapid pain control. Patients respond best to a practitioner who carries an aura of confidence and offers immediate benefit. With our present level of knowledge, the early treatment of back pain—a non-threatening, self-limiting condition—requires more of the art than the science of medicine.¹⁶

Identifying A Pattern Of Pain

A relevant and effective diagnosis is possible based not on anatomic location or pathologic description but rather on the clinical picture. The key is recognizing and identifying a typical pattern of pain (Table). The QTFSD developed an 11-category classification system of activity-related spinal disorders based on anatomic diagnoses that are descriptors of a pattern of pain.⁹ Their purpose was to help streamline or clarify low back pain diagnoses. DeRosa and Porterfield modified the QTFSD classification, making it more appropriate for physical therapy.² McKenzie has categorized mechanical back pain into seven possible derangements based upon the clinical presentation.¹⁷ The Canadian Back Institute bases initial treatment direction on five distinct patterns of pain. In this system, recognizing the dominant pattern determines the appropriate therapy.

History and examination. In addition to the general medical enquiries, the history includes nine specific questions designed to identify the precise pattern of pain, define the aggravating and relieving factors and determine the level of disability. The physical examination serves as a confirmation of the history and is designed to support or refute the presumptive pain pattern diagnosis.¹⁸

A careful structured examination puts particular emphasis on repetitive test movements, a focused neurological screen and the elimination of systemic or significant organic disease. More than 98% of patients presenting with uncomplicated back problems will have an identifiable pattern.¹⁸ The identification and initiation of treatment, in the overwhelming majority of instances where the history and physical examination fit a recognizable pattern, is a straightforward process. Those few patients whose discordant signs and symptoms suggest a more ominous source of pain are worthy of immediate referral and early ancillary investigation. Screening patients who show a typical pattern and who respond rapidly in a predictable fashion allows the clinician to focus on the small group remaining. It is this small group that merits further medical consultation and additional investigation.

The first four patterns are physical, the fifth is a pattern of abnormal, pain-focused behavior. Two of the physical patterns are back-dominant which means, regardless of any peripheral referral, the pain is most severe in the back and/or buttocks.¹⁹ We believe this reflects an origin in the structural elements of the spine, probably the intervertebral discs or the apophysial joints. The pain is mechanical, responsive to movement or position and typically intermittent.

Patterns I and II and their variants account for 90% of pattern recognition. The remaining 10%, Patterns III and IV, have leg-dominant pain.²⁰ We consider this to indicate symptoms arising from direct interference with the nerves within the spine. Leg-dominant pain with signs of root irritation and/or a conduction deficit is indicative of disc protrusion with nerve root compromise. Leg pain produced rapidly by walking, relieved rapidly by rest and altered spinal posture points to chronic nerve compression, typically from bony entrapment, sufficient to interfere with the vascular supply. Pattern V has no significant physical basis and is nonmechanical. As it lacks the characteristics of a structural or neurogenic problem, the site of the dominant pain is variable and is associated with a number of characteristic complaints.

To facilitate recognition, the five patterns are considered separately. Furthermore, primary treatment is directed at the dominant pain pattern. In reality, a combination of two, three or more patterns can coexist. This is particularly apparent in the patient who shifts from Pattern I (mechanical back-dominant pain) to Pattern III (leg-dominant pain with nerve root irritation) presumably with the progression of disc herniation. A pattern combination is also noted commonly in patients with Pattern V (pain-focused behavior). Although the major clinical problem is not physical, typical mechanical pain which is aggravated by posture and movement often is present and, when identified, may serve as a means of establishing rapport through a rapid abatement of symptoms.

Pattern I is a pain distribution felt most significantly in the back and/or buttocks. The symptoms are aggravated by lumbar flexion and intensify with repeated forward bending or a sustained forward flexed posture. There can be pain radiation to the leg, occasionally as far as the ankle, but the site of the chief complaint remains the back or buttocks.

Pattern I generally has a slow onset over hours to days and lasts for an extended period measured from weeks to months. In a few cases, Pattern I can have a sudden onset and run the brief episodic course more consistent with Pattern II. In this Pattern I variant, the location of the dominant pain and the aggravating effect of lumbar flexion are unchanged.

Pattern II. The dominant pain in Pattern II is again in the back and/or buttocks. Leg symptoms are common but are the secondary complaint. Symptoms are aggravated by the lumbar extension and in contrast to the discomfort associated with joint stiffness the pain increases when the extensions are repeated. Each episode begins suddenly, within minutes or hours, and lasts only for one to two weeks. There is an uncommon variation of Pattern II which is more chronic in nature, developing slowly over several days and lasting for weeks or months, a chronology more typical of Pattern I. The principle features of Pattern II, the pain location and the aggravating movement remain constant.

Pattern III. Leg-dominant pain is the hallmark of Pattern III. While associated back pain is unusual, the leg symptoms clearly are predominant. As with Pattern I, the onset is gradual, measured in hours to days and the duration extends for weeks or months. There is often, although not always, a shift in the dominant pain site from the back to the leg some time after the onset of symptoms. The pain is intensified with lumbar flexion or a flexed position.

Pattern IV. Pain or discomfort felt primarily in the legs is also the mark of Pattern IV. Symptoms are produced with activity, classically by walking, and occur within minutes. They are relieved by rest and subside as rapidly as they appear.

In contradistinction to the leg symptoms of the intermittent vascular claudication, the leg pain in Pattern IV often is controlled only when rest is combined with a change in posture, usually the assumption of a flexed position. Symptoms may be precipitated by extreme sustained lumbar extension.

Pattern V reflects an abnormal pattern of behavior. There is unremitting pain focus which makes pain the deciding factor in choosing any activity. Without an organic cause, the location of the dominant pain varies and the array of symptoms expands. Pain usually is present for several months with the conspicuous lack of clear supportable diagnosis. Multiple medical consultations, repetitive inconclusive investigations and a panoply of ineffective treatments are the norm.

Pattern V is almost invariably associated with disrupted sleep. Loss of libido, a deteriorating family situation, unstable employment status, depression and hostility are common. The premorbid physical abilities often are exaggerated unwittingly. There is an obsession to discover the real source of the pain coupled with an unwillingness to consider the possibility of a nonorganic cause.

Making the diagnosis of a primarily behavioural problem requires that the four physical pain patterns and other organic causes of atypical pain are excluded carefully. The diagnosis of Pattern V is made with reluctance by the clinician and resisted by the patient.

Management

Each pattern of pain is not only identifiable on history and physical examination but, with the obvious exception of Pattern V, it is predictable in its initial response to physical treatment. Determining similarities in the pattern of previous attacks allows a judgement on the suitability of repeating previously successful treatment. Defining the aggravating and relieving factors for each physical pattern not only reinforces the diagnosis, but provides the essential elements of the primary management routine. Patients who describe pain in Patterns I or III typically respond to an extension program and correction of sitting posture. Pattern II generally benefits from flexion exercise and abdominal strengthening. Pattern IV also improves with the flexion and a majority of these patients recover sufficient function to avoid more aggressive treatment. The management of Pattern V means altering the pattern of pain behaviour; shifting the focus from pain-induced disability to increased function in spite of pain. Locating mechanical patterns within the group will not only help to eliminate the doctor's inevitable fear of a more ominous diagnosis, but also offer the patient an opportunity for temporary pain reduction.

Conclusion

An early, clearly defined, clinically relevant diagnosis benefits both the patient and the practitioner. The patient must know that the problem has been recognized and understood. Therefore, the clinician's identification of a predictable pain pattern must be translated into nonthreatening terms within the normal vocabulary of the listener. For this purpose only, Pattern I can become a painful disc, Pattern II may be described as worn spinal joints, Pattern III could be a pinched nerve and Pattern IV might be attributed to bony spurs within the spine. The description of Pattern V in lay terms requires a degree of poetic license: "A problem in the body's pain regulating system" is one possibility. Regardless of the chosen terminology, the message is that the pattern of pain has been determined and treatment can begin. For the physician, recognizing a spondylolytic spondylolisthesis on an x-ray is far less relevant than the identification of mechanical back pain which is aggravated with flexion and improved with repetitive extension. For the patient, rapid pain relief and a sense of control is the immediate reward.

TABLE

THE FIVE PATTERNS OF LOW BACK PAIN

Pattern I

Pain distribution felt primarily in the back and/or buttocks but may radiate to the leg as far as the ankle
Symptoms aggravated by lumbar flexion
Symptoms intensify with repeated forward bending or a sustained forward flexed posture
Slow onset (hours to days)
Lasts for an extended period (weeks to months)

Pattern II

Pain distribution felt primarily in the back and/or buttocks
Leg symptoms are common, but are a secondary complaint
Symptoms aggravated by lumbar extension and pain increases when extensions are repeated
Sudden onset (minutes to hours)
Lasts for one to two weeks

Pattern III

Pain distribution felt primarily in the legs
Pain is aggravated by lumbar flexion or a flexed position
Often a shift in the dominant pain site from the back to the leg some time after onset of symptoms
Slow onset (hours to days)
Lasts for an extended period (weeks to months)

Pattern IV

Pain distribution felt primarily in the legs
Symptoms aggravated by activity (e.g., walking) and extreme sustained lumbar extension
Symptoms relieved by rest and subside rapidly
Symptoms often controlled only when rest is combined with a change in posture (usually a flexed position)
Rapid onset (within minutes)

Pattern V

Abnormal pattern of behavior
Unremitting pain focus
Location of the pain varies and symptoms expand
Pain usually present for several months with a conspicuous lack of clear supportable diagnosis
Associated with disrupted sleep, loss of libido, deteriorating family situation, unstable employment status, depression and hostility

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