



*Dynamic Chiropractic* – January 12, 1999, Vol. 17, Issue 02

## **The Back Pain Revolution, Part II: Evaluation**

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In part one of this three-part series, the biomechanical and biopsychosocial aspects of the low back problem were introduced. This paper discusses key components of the diagnosis and assessment process in the context of the emerging revolution in how back pain problems are addressed.

### **Diagnosis of the Anatomical Site of Pain Generation**

One of the main problems from a cost-containment standpoint is overutilization of diagnostic testing. In an attempt to diagnose pathoanatomy, imaging tests are routinely ordered for back pain patients. Unfortunately, less than 20 percent of the time can relevant pathoanatomy be found, which is correlated with our patients' symptoms. Fortunately, history and physical examination are sufficient for the vast majority of patients.

According to the Mercy guidelines, "The main focus for prevention of complications resulting from chiropractic treatment is the recognition of well-known and established "red flags" signs and symptoms."<sup>1</sup> Diagnostic triage is a necessary first step providing reassurance that no "sinister" diseases are present. A recent study found that 43 percent of patients need reassurance about the absence of serious disease.<sup>2</sup>

According to Deyo, the first visit responsibility begins with diagnostic triage to rule out sinister causes of back pain. In other words, look for the "needle in the haystack." History and examination alone can reduce the likelihood of malignancy to .1 or .01 percent.<sup>3</sup> Triage progresses to include identification of nerve root compression patients. History and physical examination is very sensitive and specific for making this diagnosis. In the absence of cauda equina symptoms, widespread neurological loss, progressive neurologic loss (i.e., atrophy), unremitting disabling symptoms in spite of a trial of conservative care, imaging is unnecessary. Why is this? For the simple reason that once the anatomical images of pathology are uncovered, it is very seductive for doctor and patient alike to falsely conclude that the pathology is responsible for the symptoms. A recent study found that disc bulges are present in 52 percent and protrusions are present in 27 percent of asymptomatics.<sup>4</sup> For many patients prone to chronicity, this will

only promote the development of abnormal illness behavior and the deconditioning syndrome.

For most patients, it is hard to pinpoint the exact cause of symptoms, although we are confident they have mechanical back pain. Certainly it is valuable to provide a working diagnosis of sacroiliac, facet, disc or myofascial pain so a plan can be made of how to help the patient. In fact, it has been shown that this improves patient satisfaction significantly. It is possible with the use of double anaesthetic block techniques to prove which structure is the pain generator.<sup>5,6,7</sup> However, in general, since the prognosis for back pain is that most acute episodes resolve speedily with manipulative therapy, such tests are often unnecessary except in chronic cases.

### **Biomechanical Evaluation**

It is not enough to simply identify the tissue specific diagnosis. We are interested in the biomechanical source of tissue overload. For this reason, a history of the patient's job demands and activities of daily living, along with a biomechanical evaluation of the relevant kinetic chain, must be undertaken. This includes tests of an individual's activity intolerances, mechanical sensitivity and pathomechanics.

Activity intolerances can be assessed by simple questions about sitting, standing or walking intolerances. Questionnaires such as the Oswestry or Roland-Morris are excellent tools. Mechanical sensitivity is very important to assess as it will inform the clinician and patient about the function of their symptoms.

According to McKenzie, "If you adopt certain positions or perform certain movements that cause your back to 'go out,' then if we understand the problem fully, we can identify other movements and other positions that, if practiced and adopted, can reverse the process. You put it out -- you put it back in."<sup>8</sup>

Instructors of the Folsom physical therapy spinal stabilization program in the San Francisco Bay area have emphasized performing a rigorous examination of the mechanical behavior of the patient's symptoms.

"People with low back disorders present with special sensitivities to position, weightbearing, and constrained postures and pressure ... Traditional methods of patient evaluation directed toward diagnosis and work capacity assessment do not thoroughly address these special areas of functional loss."<sup>9</sup>

A key to finding the underlying cause of a low back injury is in identifying the functional integrity of the kinetic chain which the lumbar spine is involved in for that individual. This requires knowledge of the patient's job demands or recreational activities. Kibler says, "Function can be described in many different ways, but the framework for restoration of function should include restoration of anatomy plus

normalization of physiology and biomechanics. The normal physiological patterns are very well developed in skilled athletes. However, they are also very fragile and tend to be altered quickly in the injury sequence. Restoration of normal patterns throughout the entire linkage system has to be accomplished for normal function."<sup>10</sup>

Key dysfunctions typically involve movements performed with poor proximal stability, coordination, endurance, synergist substitution for a movement agonist and poor co-contraction of agonists and antagonists. Evidence correlating pathophysiology with spine pain includes studies such as Edgerton's, which showed altered muscle activation ratios of synergist spinal muscles during a variety of motor tasks. Underactivity of agonists and overactivity of synergists was able to discriminate pain patients with 88 percent accuracy.<sup>11</sup> Other studies have shown that poor static trunk endurance is predictive of recurrent low back pain and first-time episodes.<sup>12,13</sup>

The North American Spine Society concluded that physical deconditioning is a major factor associated with low back disability. "A major factor underlying disability is an actual physical inability to perform certain tasks because of lost muscle strength, lowered endurance and aerobic capacity, or decreased mobility and coordination."<sup>14</sup>

## **Summary**

This paper presented a summary of the importance of thorough diagnosis and evaluation of our patients. Diagnosis of the anatomical site of pain is an important starting point. Since the vast majority of patients have pain of mechanical origin, the biomechanical evaluation of the activity intolerances, mechanical sensitivity and pathomechanical behavior is essential to guide the conservative treatment approach. Generic treatment unguided by specific findings from the history and examination is not adequate in spite of just such a recommendation by the AHCPR.<sup>15</sup> Studies have already begun to report that there are significant differences between conservative care that is delivered in a generic fashion versus that guided by a classification system based on biomechanical evaluation.<sup>16</sup> The final paper in this series will discuss treatment approaches consistent with the emerging biopsychosocial and biomechanical models.

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