

Low Back Pain Diagnostic Approach _____

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Abstract

Low back pain is one of the leading causes of primary care and emergency room visits and job-related disability in many countries [1]. Back pain is sorted into three categories, differentiated by the duration of symptoms. Acute back pain, which is the focus of this article, is classified as pain lasting 6 weeks or less, subacute back pain is pain that has been present between 6 and 12 weeks, and chronic back pain is pain that persists longer than 12 weeks. Etiologies of low back pain include (but are certainly not limited to) mechanical injury (e.g., muscle sprain or spasm, ligament strain, facet joint disruption), arthritis, sciatica (lumbar radiculopathy), spinal fracture, malignancy, connective tissue disease, infection (e.g., vertebral osteomyelitis, epidural abscess), cauda equina syndrome, metabolic causes (e.g., hyperparathyroidism), abdominal or retroperitoneal visceral or vascular processes, psychogenic pain, and malingering. Careful history-taking and physical examination are crucial to diagnosing the etiology of back pain. This review presents the current state of science regarding the diagnosis and treatment of low back pain.

Key words: low back pain, etiology, diagnosis, treatment

Introduction

The patient in with low back pain is experiencing sciatica, pain that originates in the lower back and radiates down the lateral or posterior thigh and occasionally to the ankle or foot (1,2). It may be associated with weakness, numbness and/or tingling in the affected leg. It is caused by injury to or compression of the sciatic nerve, which is formed by the nerve roots of L4, L5, S1, S2, and S3 (3-7). It is important to understand that sciatica is a symptom, not a medical condition in its own right. Common causes of sciatica include herniated discs, degenerative disc disease, spinal stenosis, piriformis syndrome, pelvic injury or fracture, and tumors.

How is it diagnosed?

The diagnostic process is mainly focused on the triage of patients with specific or non-specific low back pain. Specific low back pain is defined as symptoms caused by a specific pathophysiological mechanism, such as hernia nuclei pulposi, infection, osteoporosis, rheumatoid arthritis, fracture, or tumour.

During history taking and physical examination for lower back pain and particularly sciatica, it is important to look for clues to the cause. Red flags in the patient's history include past cancer, fever, unexplained weight loss, immunosuppression, extended use of steroids, intravenous drug use, urinary tract symptoms, trauma, and bowel or bladder incontinence or retention. Physical findings that are cause for concern include decreased or loss of anal sphincter tone, saddle anesthesia, significant motor weakness, vertebral tenderness, and persistent or worsening neurological symptoms (8). The presence or absence of these red flags dictate whether further workup is warranted. Three types of imaging modalities can be used to further elucidate the diagnosis of back pain: plain radiographs (x-rays), computed tomography (CT), and magnetic resonance imaging (MRI). Plain radiographs consist of anteroposterior and lateral lumbosacral spine views. Pelvic and hip x-rays may be considered if it is felt the pain may be referred from the hip or pelvis. Plain films can show evidence of fracture, malignancy, spondylolisthesis, degenerative changes, disc space narrowing, infection, and prior surgery. They do not assess discs, ligaments, nerve roots, epidural fat, or the spinal canal. Also, the sensitivity of plain films for detecting malignancies and infections is subpar (9). Use of plain films is generally limited to cases of recent significant trauma, recent mild trauma in a patient over age 50, a history of prolonged glucocorticoid use or osteoporosis, or cases in which the patient is more than 70 years old. CT and MRI scans of the lumbosacral spine are more sensitive than plain films but are

only indicated for patients with acute back pain if clinical findings suggest possible emergent conditions affecting the spine, including cauda equina syndrome, infection, fracture with neurologic compression, acute radiculopathy with progressive neurologic deficits, and tumors. CT is superior to MRI for revealing bony abnormalities (e.g., sacroiliac joint disease, fractures) and may be particularly useful for further elucidation when plain films are abnormal or inconclusive in the setting of recent trauma. However, MRI is preferred to CT because it provides better visualization of nonbony structures (e.g., discs, nerves) and does not subject patients to radiation (the radiation exposure from a lumbosacral CT can be more than 10 times as high as that from a plain film) (10). Choice of imaging modality may also be affected by contraindications to MRI (e.g., metal implants) and MRI availability.

There are reasons to think twice before performing any imaging on a patient who has acute low back pain and no red flags. First, and most importantly, the vast majority of cases of acute low back pain are mechanical or nonpathological; less than 5 percent of acute low back pain cases are due to serious systemic pathology (11). Secondly, up to 90 percent of patients with acute lower back pain recover within 2 weeks (12). Given the rapid resolution of most back pain cases, early imaging may expose patients to unwarranted radiation and risk of malignancy.

Thirdly, radiographic findings do not necessarily correlate with patients' symptoms or presentation. Treating patients based on the radiographic findings alone may lead to unnecessary interventions, health care expenses, and patient anxiety. For example, research has shown that as many as 60 percent of people without back symptoms have disk bulges and protrusions on MRI (13). Lastly, early imaging in cases of acute low back pain where no sign of serious etiology is present has not been shown to improve outcome or patient satisfaction. One study showed that depiction of stenosis, nerve root compression, or both on MRI in the first 48 hours after onset of acute radicular back pain did not affect the outcome after 6 weeks of conservative management (14). Other research has shown that MRI evaluation to provide reassurance does not lead to better prognosis (15) and that patient awareness of imaging findings does not affect the outcome and is associated with a reduced sense of well-being for the patient (16). A review of predictive studies of acute low back pain revealed that psychosocial variables (e.g., coping behaviors, psychiatric comorbidities) are much stronger predictors of long-term disability than radiographic findings (17). The bottom line is that 80 percent of adults seek care at some point for acute low back pain (18) and, in the large majority of cases, the pain typically resolves with conservative management. To order MRIs (or other imaging) for every patient who comes in with acute back pain is a superfluous use of precious health care resources and money. The most reasonable approach, in the absence of red flags, is conservative management;

imaging should only be considered if the patient does not improve as expected or if red flags subsequently appear. It is also extremely important to take the time to explain the diagnosis, treatment, and expected management plan to patients. Studies have shown that patients who feel that they have been given a sufficient explanation for the etiology of their problem are less likely to request diagnostic tests and more likely to be satisfied with the visit (19, 20). Reassurance is key.

What is the prognosis?

In general, the clinical course of an episode of acute low back pain seems favourable, and most pain and related disability will resolve within a couple of weeks (21) This is also illustrated by the finding that about 90% of patients with low back pain in primary care will have

stopped consulting their doctor within three months. Researchers suggested that in many patients low back pain symptoms fluctuate over time (22). Most patients with back pain will have experienced a previous episode, and acute attacks often occur as exacerbations of chronic low back pain. So recurrences are common. Also, researchers have estimated the cumulative risk of at least one recurrence within a 12 month period to be 73% (95% confidence interval 59% to 88%) (23). The severity of these recurrences, however, is usually less and does not always lead to a new visit to the general practitioner. Only a small proportion (5%) of people with an acute episode of low back pain develop chronic low back pain and related disability.

How effective are treatments in acute low back pain?

The evidence that non-steroidal anti-inflammatory drugs relieve pain better than placebo is strong. Advice to stay active speeds up recovery and reduces chronic disability. Muscle relaxants relieve pain more than placebo, strong evidence also shows, but side effects such

as drowsiness may occur. Conversely, strong evidence shows that bed rest and specific back exercises (strengthening, flexibility, stretching, flexion, and extension exercises) are not effective. These interventions mentioned were equally as effective as a variety of placebo, sham, or as no treatment at all. Moderate evidence shows that spinal manipulation, behavioural

treatment, and multidisciplinary treatment (for subacute low back pain) are effective for pain relief. Finally, no evidence shows that other interventions (for example, lumbar supports, traction, massage, or acupuncture) are effective for acute low back pain (24).

Concluding remarks

LBP is one of the most common symptoms and conditions motivating individuals to seek medical consultation. The effects of back pain on society are significant, both epidemiologically

and economically, and this is likely to only further increase owing to a combination of shifting attitudes and expectations, medical management techniques, and social provision. Hence, LBP must always be addressed as a complex disease in which it is mandatory that an accurate diagnosis of pain generators is determined before starting any treatment. All the guidelines currently available stress the importance of a multimodal and

multidisciplinary approach in order to determine a strategy to solve the problem and not simply alleviate symptomatic pain. Finally, a careful follow up is important to adapt our therapeutic strategies to dynamic clinical manifestations of CLBP.

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