

Low back pain is one of the most common reasons for physician visits. Low back pain is experienced by up to 90 percent of the population at some time. Fortunately, in many cases acute back pain resolves with simple interventions. Treatment within the acute phase is very important as progression to subacute or chronic makes treatment more difficult and often less effective.

Back Pain often returns with 50 percent of the back pain population having a repeat episode within one year. Back pain progresses to chronic involvement in 10 percent of back pain patients. Chronic back pain is the most common cause of disability in patients younger than 45 years. In the working population back pain accounted for approximately \$33 billion because of loss of revenue and health dollars spent last year. Chronic back pain is difficult to treat because oftentimes there are associated psychogenic factors with depression, anxiety, change in activities performed, potential for increasingly strong pain medications and possible abuse potential.

The differential diagnosis is extensive but most often, in approximately 80 percent of cases, it is secondary to mechanical causes. There is usually a combination of overuse and muscle strain and injury to the spinal supporting ligaments. Over time this strain can also lead to an imbalance in the structures of the spine with constant tension on the muscles, supporting ligaments and disks.

Back pain may be related to mechanical causes including musculoligamentous injury, rheumatologic disease, discogenic etiology, spondylosis, (including degeneration of facet joints or spinal stenosis, spondylolisthesis). Nonmechanical causes may include aortic aneurysm, peptic ulcer disease, pancreatitis, cardiac disease, metabolic disease, cancer, infections, ankylosing spondylitis.

Risk factors for back pain include lack of exercising, jobs requiring long periods of sitting, heavy lifting or repetitive movements especially bending, twisting and vibration. Poor posture is a risk factor. Also smokers and obesity are significant risk factors. Emotional and psychological factors including depression and stress play a role. Respiratory illness, especially with chronic coughing, is a significant factor and worsened with long-term steroid use. Nonmodifiable risk factors include age, osteoporosis, and history of back pain including previous back surgery or familial history of back pain.

A thorough history and physical of the low back is always performed. History will include questioning of the pattern, intensity, and duration, aggravating or alleviating factors. Patients are given a pain drawing with descriptors. Questioning also is conducted with regard to previous episodes of low back pain and treatment performed. Information is obtained with regard to work history, social history including sports and leisure activities, family history of low back pain. Information is also obtained regarding history of other medical or concomitant illnesses, unexplained weight loss, smoking and steroid use.

A complete physical examination is performed including assessment of movement sitting, standing, and lying down. Assessment of posture and spinal curvature is performed. Measurements of spinal range of motion in various planes can be performed with inclinometers. Inspection is performed for skin lesions, discoloration, curvature or masses. Palpation and percussion of bone and soft tissues is performed. Evaluation for paraspinal muscle spasm/trigger points is performed. Examination is also performed of the pelvis and lower extremities, as this may be a factor in the back pain.

Detailed manual muscle testing is performed as well as assessment of deep tendon reflexes, sensory examination, provocative test such as straight leg raising and femoral stretch test.

In the majority of cases diagnosis can be made based on history and physical examination. If there is still no obvious etiology or there is an unexplained or questionable finding further diagnostic workup is performed. This oftentimes may include radiographic testing. Radiographs have low specificity and sensitivity for most of these cases. In younger patients plain films show clinically relevant problem in less than one percent of cases. (There is a concern with unneeded and possibly significant radiation exposure as well as expense and false positive results leading to unnecessary diagnoses or treatment).

For persistent problems CT scan or more often MRI testing is performed. MRI shows soft tissue abnormalities including discogenic disease. CT scan is preferred for osseous pathology. Bone scan may be useful for evaluation of infection, occult fracture, and tumor. EMG testing is often utilized for evaluation of suspected radiculopathy, lumbosacral plexopathy or neuropathy. This testing can isolate a neurological problem, give information as to severity and prognosis, and may also help follow the course of the disease.

Most cases of back pain resolves quickly with simple conservative treatment measures. It is important to treat all cases as quickly as possible. Fewer than 50 percent of work-related back pain patients that are out of work for six months return to work again. Greater than 75 percent out of work for a year ever return to work

Back pain patients are cautioned to avoid bed rest. Only one or two days at the most of relative bed rest are recommended before beginning a rehabilitation program.

Modalities such as heat and cold can be used to assist with pain relief. Electric stimulation techniques include TENS unit or interferential.

Exercising is important both to avoid and reduce back pain. Exercises include stretching and flexibility exercises, strengthening exercises (with involvement of lumbar extensors, abdominal muscles as well as pelvic and lower extremity strengthening), and aerobics. Weight-bearing exercises are usually preferred unless there is specific contraindication. Patients often require a supervised physical therapy program.

Alternative treatments such as manipulation, massage, relaxation program, acupuncture, and biofeedback occasionally have a role, usually are safe and have been helpful in acute pain relief.

Reversing the modifiable risk factors is also important such as reducing stress/anxiety, weight reduction, cessation of smoking, preventing osteoporosis, etc. Patients are often given instructions in physical therapy or back school type setting including exercising, weight reduction, smoking cessation programs, lifting technique instruction, review of ergonomics such as with household activities, work activities, sitting or sleeping positions.

Medications should be prescribed initially on a fixed schedule rather than as needed. Patients oftentimes respond to over-the-counter medications such as acetaminophen or ibuprofen. If these are not efficacious then prescription strength nonsteroidal anti-inflammatory medications are used. Oftentimes NSAIDS in combination with muscle relaxants offer much greater analgesia. (Caution is used anytime these medications are being used, especially in combination or in the elderly patient. Many of these medications have anticholinergic effects and may cause drowsiness or other side effects.)

In some cases in the short-term management of pain opiate medications such as hydrocodone or oxycodone may be used. Tramadol is a fairly effective nonopiate analgesic. Tricyclic antidepressants or SSRIs often help with both pain and related sleep and/or mood disturbances. Neurologic medications such as gabapentin are used for back pain with radicular or neuropathic components. Other adjunct medications may include antihistamines or topical agents such as capsaicin or lidocaine patches.

Various injection techniques also are utilized. Trigger point injections often prove effective for pain relief. Local anesthetics, and sometimes steroids, are used into spinal musculature. Injections under fluoroscopic guidance are very successful for specific disease states. In facet joint arthropathy steroids injected specifically into involved zygapophyseal joints or median branch blocks give many months of relief. For radiculopathy corticosteroids injected as an epidural injection or selective nerve root block give effective pain relief.

In the majority of cases back pain responds very well to an aggressive but nonsurgical management. Neurosurgical treatments are reserved for a very specific minority of patients, such as those with acute disc herniation with significant or deteriorating neurologic status, bowel or bladder involvement as with caudad equina syndrome.