

Low Back Pain

Low Back Disorders

If you are experiencing low back pain, you are not alone. More than 65 million Americans suffer from low back pain every year. Back aches are the most common reason for doctor visits, after cold and flu symptoms. Fifty percent of all patients who suffer from an episode of low back pain will have another occurrence within one year.

In the vast majority of cases back pain is caused by the irritation of a nerve root near the spine, not by problems with the muscles, ligament or bone. A nerve that travels from the spinal cord through the openings between the bones of the spine gets pinched or irritated, the surrounding muscles tense up and the patient experiences low back pain.

Low back pain is widespread in our society, but the good news is that in most instances the pain ends within a few days. More serious cases of back pain are treated with anti-inflammatory medication, physical therapy and muscle relaxants. Surgery, a common treatment a generation ago, is now considered necessary for only a very small percentage of back pain patients.

How Low Back Pain Occurs

A basic understanding of the spine is needed to understand back pain. The spine or spinal column is the body's backbone, a column of cylindrical bones known as vertebrae. The spine protects the spinal cord, which begins in the brain and runs most of the way down the back. The spinal cord controls every movement and function of the body. Motor nerves leading out of the spinal cord are responsible for controlling movement in the body, while sensory nerves entering into the spinal cord are responsible for communicating messages from the body back to the brain. Together, the motor and sensory nerves form more than 50 nerve roots, which run through holes (foramina or windows) between the bones of the spine. Irritation of these nerve roots causes back pain.

Low Back Pain Conditions

Herniated Disc (Slipped Disc)

A herniated or slipped disc is a frequent cause of mild or moderate low back or leg pain. Soft flexible discs separate the bones in the spine. The discs, which have a rigid outside rim and a soft, gel-like center, act as shock absorbers and protect the spinal cord. Activity, stress, or a mechanical problem in the spine can cause a disc to bulge and become misshapen. The damaged or bulging disc may pinch or irritate a nerve root, causing pain.

Disc degeneration (osteoarthritis in the spine)

Another common disorder of the lower spine is disc degeneration, or osteoarthritis in the spine. As the body ages, the discs in the spine dehydrate or dry out, and lose their ability to act as shock absorbers. The bones and ligaments that make up the spine also become less flexible and thicken. Degeneration in the discs is normal and is not in itself a problem. But pain occurs when these discs or bone spurs begin to pinch and put pressure on the nearby nerve roots or spinal cord.

Sciatica The sciatic nerve, composed of several lumbar nerve roots, is one of the nerves most likely to become irritated, usually by a herniated disc. Each of the major branches of sciatic nerve travels through the pelvis and deep in the buttocks, then down the hip and along the back of the thigh to the foot. The pain of sciatica ranges from a mild tingling to a sharp ache severe enough to cause immobility.

Lumbar spinal stenosis

Degeneration of the spine also can result in lumbar spinal stenosis (LSS). This disease involves a narrowing of the canal that houses the spinal cord and nerve roots. A narrowed spinal canal may compress nerve roots in the lower back, resulting in pain and weakness in the legs and a dull pain in the lower back. Patients often find relief by sitting or standing in a hunched over position, as if leaning on a shopping cart. Symptoms of LSS usually do not occur until after the age of 50.

Spondylolisthesis

Degeneration in the spine also can lead to spondylolistheses, a condition characterized by the slippage of a vertebra in the spine. One vertebra slips forward over another, stretching or pinching the sciatic nerve and causing pain.

Causes of Back Pain

The causes of more than 80 percent of back pain cases are unknown. Some people have damaged or bulging discs but feel fine. Researchers do know that back pain often begins with an injury, after lifting a heavy object or moving suddenly. People who do not exercise regularly face an increased risk for back pain, as do obese people.

Sciatica can be caused by blood clots, tumors and abscesses. Arthritic back pain can be the result of infections such as Lyme disease and viral arthritis. Atherosclerosis (hardening of the arteries) can cause back pain when arteries in the legs are clogged.

Wait and See

If low back pain occurs with a fever or occurs after a recent injury, such as a car accident, a fall or sports injury, patients should call their primary care physician immediately or visit the emergency room. A doctor needs to determine if a spinal fracture, infection, tumor or other serious condition is present.

Patients suffering from low back pain without a fever or without recent trauma can wait to see if the pain improves for a few days before calling a physician. Patients should restrict strenuous activities, take anti-inflammatory medications such as ibuprofen (not aspirin or acetaminophen), take hot showers and try massage. Because a nerve root is often being irritated, relief comes when pressure on the nerve is relieved. Usually, a patient can find a comfortable position that relieves the pain.

If the low back pain gets worse or does not improve after two or three days of home treatment, contact a primary care physician.

Diagnosing Low Back Pain

Physicians evaluate low back pain through a medical history, a physical exam and diagnostic tests. The physical exam includes an assessment of sensation, strength and reflexes in various parts of the body to help pinpoint which nerves or parts of the spinal cord are affected. Patients are asked to sit, stand and walk on their toes, heels and flat-footed. They also are asked to bend forward, backward and sideways and to lift their legs while lying down.

A physician may order diagnostic studies. These studies may include:

X-rays

An x-ray will show the bones of the spine and determine if there is significant wear and tear or disease of the bone. It will also show whether the bones are lined up properly.

Computed Tomography (CT)

A CT (also known as a CAT scan) uses an x-ray and a computer to generate images of the spine in slices. The CT shows the anatomy of the spine in great detail. It also clarifies the relationship of the disc or bone spurs to the spinal cord and nerves.

Magnetic Resonance Imaging (MRI): The MRI uses a powerful magnetic field rather than x-rays to produce a detailed anatomical picture of the spine and the structures within. It is probably the best test to see herniated discs since they are soft tissue that are invisible to x-rays.

Myelogram

A myelogram is an x-ray picture taken with a special dye injected into the spinal sac to highlight the spinal cord and nerves. The dye is usually injected into the spine with a needle and then the x-rays are obtained. Myelograms have largely been replaced by CT and MRI scans.

Electromyogram and Nerve Conduction Studies (EMG/NCS)

Unlike the other tests, which help reveal anatomy and structure, these tests primarily study how the nerve and muscles are actually working together. They test for the impulse coming from the brain and/or spinal cord. If the impulse is blocked somewhere, it may be delayed or diminished enroute to its final destination (i.e., muscle, skin, toe, finger-tips). This information can assist in determining which nerves or muscles are functioning abnormally.

Discography

This is a special x-ray test that may help identify which discs are damaged and if they are a source of pain. It uses a contrast dye injected into the disc space to image the disc.

Treatment Options

Conservative treatment is the most likely course of action for back pain. Although back pain can be debilitating, the pain improves without surgery in most cases. Physicians usually recommend 6 to 12 weeks of conservative therapy before considering surgery.

Treatment usually involves relieving the inflammation around the nerve. Mild cases of back pain often respond well to rest or anti-inflammatory medication such as ibuprofen. Other conservative treatments include physical therapy, steroid injections, traction, ultrasound, electrical stimulation, acupuncture, heat/ice, massage and whirlpool.

Patients often are advised to change their lifestyle. They should lose weight, walk 30 minutes a day and do stomach-strengthening exercises such as sit-ups. Smokers need to quit. Smoking damages the structure of the spine.

Patients also need to be alert as to how they stand, sit and sleep. They should maintain good posture, avoid standing for long periods, use chairs with straight backs or low back support and sleep on a firm mattress.

If these treatment options do not provide relief within two to three months, then surgery may be needed.

When Surgery is Necessary?

Surgery may be the correct course of action if conservative treatment does not work. Signs that indicate the possible need for surgery:

- * Leg or back pain limits normal activity, resulting in an unacceptable quality of life.
- * Weakness or numbness in the legs.
- * Difficulty walking or standing.
- * Medication and physical therapy are ineffective.

If a patient is in reasonably good health, neurosurgeons have a variety of surgical options available to help relieve pressure on the nerve. The most common procedure is a discectomy, which involves removing the soft gel-like material in the disc. This procedure returns the disc to a more normal shape, thereby relieving pressure on the nerve.

Neurosurgeons will sometimes remove a small piece of bone near the disc and irritated nerve to gain access to the disc or to give the area more space to expand and swell. If the nerve is being pinched as it goes through the opening between the bones on the way to or from the spinal cord, the neurosurgeon can also perform a foraminotomy, a procedure designed to expand the opening through which the nerve travels.

If several nerves and discs are causing the pain or the spinal column is unstable or degenerating, the neurosurgeon may opt to fuse the bones together with bone grafts and stabilize the vertebra with instrumentation, including metal plates, screws, rods or cages. Fusion will usually prevent the disc from bulging or herniating again.

Recovery After Surgery

A patient is usually released from a hospital two to five days after surgery and can resume physical activities such as walking almost immediately. Normal postsurgical pain will occur for a few weeks.

Physical therapy may be recommended to help strengthen the muscles of the lower back and abdomen. Total recovery takes anywhere from six weeks to six months, depending on how advanced the condition was at the time of surgery and the patient's preoperative neurological condition. Healthier patients tend to heal faster. Physical therapy may be recommended to speed healing.

The Role of Neurosurgeons

Neurosurgeons are the only physicians who routinely treat the entire spine. They can deal with problems of the spinal cord itself, nerve roots and the supporting structures of the spine. Neurosurgeons undergo six to eight years of specialized training following medical school, one of the longest training periods of any medical specialties.

Because neurosurgeons spend about 70 percent of their time treating spine problems and have been extensively trained on diseases of the spine, they are familiar with all of the treatment options and can determine which option is likely to be the most effective for each patient. Surgery is one of many possible solutions the neurosurgeon may identify. A neurosurgeon will diagnose what is wrong and work with the patient to develop the optimal treatment plan.