

Review Article

Treatment for Low Back Pain Attributed to Underlying Presumptive Etiology

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ABSTRACT

In these days back pain is becoming a serious problem in middle age and old age people. Back pain is not a disease but it is a symptom for specific problem in the body. In this review a detailed discussion was made on the reasons, associated problems and various treatments available for the treatment of back pain.

Keywords: Low back pain, Presumptive etiology, Old age people, Middle age people.

INTRODUCTION

Back pain is an extremely common problem that causes people to seek medical attention. Every one experiences back pain at least one time in their entire life. Generally back pain occurs in the age group of 35-55. There are several reasons for back pain. Various metabolic disorders, autoimmune diseases and physiological conditions present back pain as a symptom. General back pain which have been generated due to stress will resolve on its own without any treatment. Presence of back pain for more than six weeks indicates serious health problem. The back pain which occurs at night time is more dangerous and requires attention. Other symptoms are fever, chills and night sweats.

Musculoskeletal disorders also one of the serious reasons of back pain. Lumbar radiculopathy, also called sciatica, refers to back and leg pain caused by an irritated nerve in the lumbar spine. It is often associated with numbness in the leg. It tends to affect one leg and the pain and numbness can extend below the knee to the calf, foot, and ankle. It tends to affect people age 30 and older. Spinal stenosis is another condition that is related to lumbar degenerative disk disease. This tends to affect people that are 60 and older. It involves a combination of back and leg pain, often with numbness that tends to be worse with standing and walking and is relieved by sitting down or flexing forward at the waist.

Another cause of back pain is an acute vertebral compression fracture. These usually occur in elderly people with osteoporosis.

Function of the low back

The low back serves a number of important functions for the human body. These functions include structural support, movement, and protection of certain body tissues. While standing the lower back is functioning to support the weight of the upper body. In bending, extending lower back is involved in the movement. Therefore, injury to the structures for weight bearing, such as the bony spine, muscles, tendons, and ligaments, often can be detected when the body is standing erect or used in various movements.

Protection of soft tissues of the nervous system and spinal cord as well as nearby organs of the pelvis is a critical function of the lumbar spine and adjacent muscles of the low back.

Risk factors for back pain

Following conditions are highly risk factors for back pain.

- A mentally stressful job
- Pregnancy
- A Sedentary life style
- Age
- Anxiety
- Depression
- Gender- back pain is more common in women than men.
- Obesity
- Physical work

Common causes of low back pain (lumbar backache) include nerve irritation, lumbar strain, lumbar radiculopathy, bony encroachment, and conditions of the bone and joints.

Nerve irritation

The nerves of the lumbar spine can be irritated by mechanical pressure by bone or other tissues from their roots at the spinal cord to the skin surface. These conditions include lumbar disc disease (radiculopathy), bony encroachment, and inflammation of the nerves caused by a viral infection.

Lumbar strain (acute, chronic)

A lumbar strain is a stretch injury to the ligaments, tendons, and/or muscles of the low back. The stretching incident results in microscopic tears of varying degrees in these tissues. Lumbar strain is considered one of the most common causes of low back pain. The injury can occur because of overuse, improper use, or trauma. If the injury to soft tissue is present for more than three months this injury is commonly classified as "acute". If the strain lasts longer than three months, it is referred to as "chronic." Lumbar strain occurs in people in their 40s, but it can happen at any age. The severity of the injury ranges from mild to severe, depending on the degree of strain and resulting spasm of the muscles of the low back. The diagnosis of lumbar strain is based on the history of injury, the location of the pain, and exclusion of nervous system injury. X- ray testing is helpful to determine the bone abnormalities¹.

Lumbar radiculopathy

Lumbar radiculopathy is nerve irritation caused by damage to the discs between the vertebrae. This damage to the disc may be because of degeneration of the outer ring of the disc, traumatic injury, or both. This rupture causes the "sciatica" pain of a herniated disc that shoots from the low back and buttock down the leg. This pain commonly increases with movements at the waist and can increase with coughing or sneezing. In more severe instances, sciatica can be accompanied by incontinence of the

bladder. The sciatica of lumbar radiculopathy typically affects only one side of the body. Lumbar radiculopathy is suspected based on the above symptoms. Nerve testing (EMG/electromyogram and NCV/nerve conduction velocity) of the lower extremities can be used to detect nerve irritation. The actual disc herniation can be detected with imaging tests, such as CAT or MRI scanning. (See figure 1.)

Bony encroachment

Any condition that results in growth of the vertebrae of the lumbar spine can limit the space for the adjacent spinal cord and nerves. Causes of bony encroachment of the spinal nerves include foramina narrowing, spondylolisthesis (slippage of one vertebra relative to another), and spinal stenosis. Spinal-nerve compression in these conditions can lead to sciatica pain that radiates down the lower extremities. Spinal stenosis can cause lower-extremity pains that worsen with walking and are relieved by resting. Treatment of these afflictions varies, depending on their severity, and ranges from rest, and exercises to epidural cortisone injections and surgical decompression by removing the bone that is compressing the nervous tissue. (See figure 2.)

Bone and joint conditions

Bone and joint conditions that lead to low back pain include those existing from birth (congenital), those that result from wear and tear (degenerative) or injury, and those that are due to inflammation of the joints (arthritis).

Congenital bone conditions

Congenital causes of low back pain include scoliosis and spina bifida. Scoliosis is a sideways (lateral) curvature of the spine that can be caused when one lower extremity is shorter than the other or because of an abnormal architecture of the spine. Children

who are significantly affected by structural scoliosis may require treatment with bracing and/or surgery to the spine. Adults infrequently are treated surgically but often benefit by support bracing. Spina bifida is a birth defect in the bony vertebral arch over the spinal canal, often with absence of the spinous process. This birth defect most commonly affects the lowest lumbar vertebra and the top of the sacrum.

Injury to the bones and joints

Fractures (breakage of bone) of the lumbar spine and sacrum bone most commonly affect elderly people with osteoporosis, especially those who have taken long-term cortisone medication. For these individuals, occasionally even minimal stresses on the spine (such as bending to tie shoes) can lead to bone fracture. In this setting, the vertebra can collapse (vertebral compression fracture). The fracture causes an immediate onset of severe localized pain that can radiate around the waist in a band-like fashion and is made intensely worse with body motions. This pain generally does not radiate down the lower extremities¹².

Degenerative bone and joint conditions

As the age advances, the water and protein content of the body's cartilage changes. This change results in weaker, thinner, and more fragile cartilage. Because both the discs and the joints that stack the vertebrae are partly composed of cartilage, these areas are subject to wear and tear over time. Degeneration of the disc is called spondylosis. Spondylosis can be noted on X-rays of the spine as a narrowing of the normal "disc space" between the vertebrae. It is the deterioration of the disc tissue that predisposes the disc to herniation and localized lumbar pain ("lumbago") in older patients. Degenerative arthritis (osteoarthritis) of the facet joints is also a cause of localized lumbar pain that can be detected with plain X-

ray testing. These causes of degenerative back pain are usually treated conservatively with intermittent heat, rest, rehabilitative exercises, and medications to relieve pain, muscle spasm, and inflammation^{10,11}.

Other causes of lower back pain

Other causes of low back pain include kidney problems, pregnancy, ovary problems, and tumors.

Kidney problems

Kidney infections, stones, and traumatic bleeding of the kidney (hematoma) are frequently associated with low back pain. Diagnosis can involve urine analysis, sound-wave tests (ultrasound), or other imaging studies of the abdomen.

Pregnancy

Pregnancy commonly leads to low back pain by mechanically stressing the lumbar spine and by the positioning of the baby inside of the abdomen. Additionally, the effects of the female hormone estrogen and the ligament-loosening hormone relaxin may contribute to loosening of the ligaments and structures of the back. Pelvic-tilt exercises and stretches are often recommended for relieving this pain.

Ovary problems

Ovarian cysts, uterine fibroids, and endometriosis not infrequently cause low back pain. Precise diagnosis can require gynecologic examination and testing.

Tumors

Low back pain can be caused by tumors, either benign or malignant, that originate in the bone of the spine or pelvis and spinal cord (primary tumors) and those which originate elsewhere and spread to these areas (metastatic tumors). Symptoms range from localized pain to radiating severe pain and loss of nerve and muscle function depending

on whether or not the tumors affect the nervous tissue. Tumors of these areas are detected using imaging tests, such as plain X-rays, nuclear bone scanning, and CAT and MRI scanning.

Other symptoms and signs associated with low back pain^{7,8}

Symptoms that can be associated with low back pain include numbness, tingling of the lower extremities, incontinence of urine or stool, inability to walk without worsening pain, lower extremity weakness, atrophy (decreased in size) of the lower extremity muscles, rash, fever, chills, weight loss, abdominal pains, burning on urination, dizziness, joint pain, and fatigue.

Diagnosis of lower back pain⁹

The diagnosis of low back pain involves a history of the illness and a physical examination. Apart from abdomen and extremity evaluations, rectal and pelvic examinations may eventually be required as well. Further tests for diagnosis of low back pain can be required including blood and urine tests, plain film X-ray tests, CAT scanning, MRI scanning, bone scanning, and tests of the nerves such as electromyograms (EMGs) and nerve conduction velocities (NCVs).¹⁵

Low Back Pain-Medications^{13,14}

Medicine can decrease low back pain and reduce muscle spasms in some people. But medicine alone isn't an effective treatment for low back pain. It should be used along with other treatments, such as walking and using heat or ice.

Medication choices

There are several medicines your doctor may recommend, depending on how long you have had pain, what other symptoms you have, and your medical history.

The medicines recommended most often are:

Acetaminophen (Tylenol) and nonsteroidal anti-inflammatory drugs

Nonsteroidal anti-inflammatory drugs like ibuprofen and naproxen. These medicines can be purchased without prescription. But stronger doses require prescription.

Muscle relaxants

These medicines can help to relieve muscle spasms along with low back pain. Side effects, such as drowsiness, are common.

Opiate pain relievers

These are very strong medicines that are sometimes tried to ease sudden, severe back pain that has not been controlled by other medicines. They are usually taken for only 1 to 2 weeks.

Antidepressants

Some of these medicines, such as amitriptyline and duloxetine, not only treat depression but also may help with chronic pain.

Other medicines sometimes used for low back pain are:

Anesthetic or steroid injections

These have been prescribed for chronic low back pain. They may give short-term relief from leg pain related to a back problem.

Anticonvulsants

These are sometimes used to treat low back pain, even though there isn't strong evidence that they help.

Botox injection

This is a shot into the back muscles. It has not been well tested for chronic low back pain.

Role of Physical exercise in the treatment of back pain^{2,3}

Here are a few stretching exercises, as reported by the Times of India, which can be performed at the working place itself.

Neck stretch

Stand straight with the feet apart. Entwine the fingers and hold the nape of the neck. Look upwards toward the ceiling and stretch your neck to release pressure.

Shoulder shrugs

This exercise helps in releasing stiffness in the neck and shoulders. Inhale deeply, grip the shoulders with the fingers and lift them up to the ears. Hold for five seconds and release.

Arm raises

This exercise will be performed by using a water bottle as a dumbbell, hold it in the right hand. Bend the elbow, raise the arm over the head and repeat with other hand. This exercise can be performed at the working place itself.

Hand circles^{4,5}

Clench both fists and stretch the hands out in front of you. Rotate the wrists, first clockwise and then anti-clockwise for five minutes each. This exercise can be performed at the working place itself.

Back hug

Cross the arms and place the right hand on the left shoulder and the left hand on the right shoulder. Inhale and exhale deeply, hold for five seconds and release.

Leg extension⁶

While sitting, extend the legs straight out in front of you, so they are parallel to the floor. Flex and point the toes downward in front of you. Repeat the exercise five times. Beneficial for the abdomen and legs,

practice leg extensions at work place twice a day.

CONCLUSIONS

In this review detailed discussion was made on the main causes, symptoms and diagnostic procedures for lower back pain. The main reason for low back pain absolutely depends on its precise cause. For example, acute strain injuries generally heal entirely with minimal treatment. On the other hand, bony abnormalities that are irritating the spinal cord can require significant surgical repair and the outlook depends on the surgical result. Different procedures are discussed for the treatment of back pain. Long-term optimal results often involve exercise rehabilitation programs that can involve physical therapists. Physical exercise is always helpful for controlling the different types of back pain.

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Figure 1. Cross-section picture of herniated disc between L4 and L5

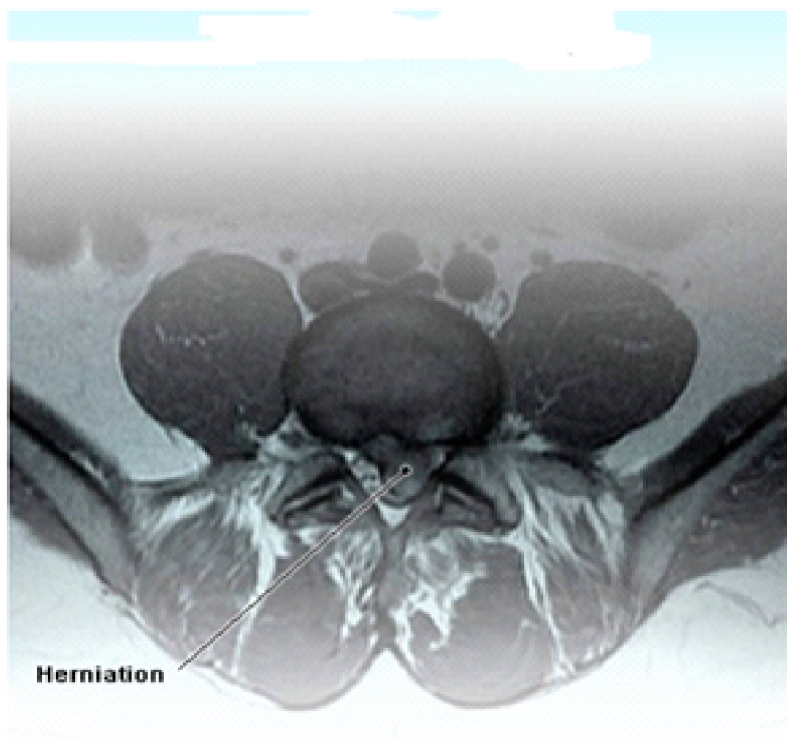


Figure 2. Figure explaining about the disk herniation