Case One: Management of Back Pain

A 35-year-old janitor at the local hospital presents with a three-week history of back pain that started radiating down his left leg one week before he came to your office. The patient sustained a twisting injury to his back when he slipped on spilled water. He tried to work the following day, but he had to stop due to unbearable lower-back pain. The patient rested at home and took some acetaminophen that his wife used for headaches; he felt a slight improvement in his symptoms, but when his back pain disappeared, he developed an excruciating pain in his left leg. When this man tried to rest, the pain became progressively more severe. The patient did not experience any bladder or bowel dysfunction. He said he had pain down the back of his leg that radiated to the outside of his left foot, and that the pain was aggravated with coughing and sneezing.

The patient was tall and slim, his body mass index (BMI) was 23 and he walked with a left antalgic gait. He had a scoliosis convex to the right. When sitting, a straight-leg raising (SLR) maneuver with the left leg caused the patient to lean backwards and balance himself on his arms. When supine, passive straight-leg raising maneuver to 30° caused leg pain. This man had a positive Lasague maneuver and a positive bowstring test. Ankle reflex was absent, but there was no motor deficit. There was decreased sensation on the lateral border of his left foot.

**Question:** Will this patient require surgery?
Lower-Back Pain

Case Two:
Management of Acute Onset of Lower-Back Pain

A 43-year-old woman comes to your office complaining of severe lower-back pain. When her “deep-freeze” freezer had stopped working and her frozen food started to thaw, this patient placed most of the frozen food in a large box to take to her neighbor’s house. The woman bent down to pick up the box with her knees extended, bending at the hips, and developed acute onset of lower-back pain. When the patient finished bringing the food to a friend’s freezer, she was in severe pain. Despite her pain, this woman continued to slowly ambulate, and she avoided lying down during the day until she went to bed that night. The next morning, the pain was severe upon rising. The patient’s husband helped her get up and get dressed. She says the pain is worst when she gets up in the morning and when she stands up after sitting for a long period of time. There is pain relief while lying in bed or sitting, although the woman says it hurts to turn around in bed at night. No bowel or bladder dysfunction is reported. The patient is still working at her job as an office manager. She didn’t have any leg pain.

Physical examination revealed limited spinal movement due to pain. Spasm was noted in the paraspinal muscle. There was no evidence of any neurologic deficit and there was no sign of tension with SLR. SLR caused lower-back pain only.

Question: What is the best management strategy?

Patients with lower-back pain regularly present to a physician’s office. Treatment of these patients remains one of the greatest challenges in health care today. Lower-back pain affects people of all ages and is expensive in terms of costs related to lost time from work and treatment modalities. Many treatment modalities are available for back pain, including physiotherapy, chiropractic manipulation, massage therapy, acupuncture and many forms of spinal surgery.

When dealing with patients who experience lower-back pain, physicians must remember that there are only two emergencies. One such emergency is cauda equina syndrome, which is caused by a large extrusion of the intervertebral disc material into the spinal canal, impinging the cauda equina. In this case, the patient has progressive bowel and bladder dysfunction, with progressive loss of peripheral motor function to the lower extremities. This case is a surgical emergency, requiring investigations to confirm the problem, and, subsequently, spinal surgery. The second emergency is a progressive loss of motor power from a nerve-root impingement due to a disc herniation. There is a difference between “drop foot” and weakness of extension.
of the big toe in regards to doing emergency surgery.

Anatomy of the Back

The spinal column consists of 33 vertebral segments. These segments consist of seven cervical, 12 thoracic, five lumbar, five sacral (fused into one) and four coccygeal vertebrae (often fused into one). The mobile areas consist of a disc lying between two vertebral bodies anteriorly, and articulation of the facet joints posteriorly. The intervertebral disc consists of an outer layer (the annulus fibrosis) and an inner layer (the nucleus pulposis).

The motion segment relies on the support of the surrounding muscles and ligaments. The spinal column protects the spinal cord and allows the passage of nerve roots. The spinal cord ends around the bottom of the L1 vertebrae. The cauda equina is the series of lumbar nerve roots that arise from the inferior cord and exit through the appropriate foramen.

Approach to Patients With Back and/or Leg Pain

Incidence. Up to 80% to 90% of all adults will experience back pain during their lifetime. Back pain is a common problem in people between the ages of 30 and 50, and is the leading cause of disability and cost to Workers’ Compensation.

The vast majority of people with back pain experience pain relief over time. Fifty per cent of people are usually better in one month, while 90% improve in two to three months. Ten per cent of people experience ongoing pain.

Patients who experience ongoing back and leg pain may require investigations to determine if there is disc herniation, spinal stenosis or other spinal pathology. It is important to be aware that other organ systems may cause ongoing back pain. Some of the causes of back pain include duodenal ulcers on the posterior wall, abdominal aortic aneurysms, pancreatitis, kidney stones, cancer, infection and inflammatory arthritis.

Initial history/assessment. When the patient is first assessed, a thorough history and physical examination are mandatory. A detailed patient history includes the location of the pain, how the pain first started and the duration of the symptoms. Other mandatory information includes factors and activities that make the pain feel better or worse, determination of previous attacks of pain and whether this episode is similar and any previous back surgery. If the patient is not able to work, the physician should ask how the pain is preventing him or her from doing so. A function inquiry should help determine if other organ systems are involved.

Physical examination. Once the history is reviewed, a physical examination should be performed. The patient should be appropriately draped to expose the back. The examination may begin with the patient standing, with inspection for any abnormalities and palpation for tender areas. The patient should be observed walking. The physician can observe the patient’s movements and assess whether there are any difficulties. Patients should walk on their heels and toes.

Quick Facts

FACTS ON BACK PAIN

• Up to 90% of adults will experience back pain during their lifetimes.
• Back pain is most common between the ages of 30 and 50 years.
• One-half of back-pain patients will experience relief within one month of onset of symptoms, while 90% improve in three months; the remaining 10% experience chronic pain.
They should rise up and down on their toes while standing on one foot. The flexion of the spine with the knees straight should be assessed next. The fluidity of the patient’s motion on rising from the flexed to the extended position should also be observed.

The physician should assess the sensory and motor function of the L4, L5 and S1 nerve roots. The reflexes for L5 and S1 should be checked. The response to the straight-leg maneuver should also be assessed. This maneuver can be performed when the patient is sitting or lying supine. While the patient is sitting, testing the strength of the patient’s extended knee with the hip flexed effectively allows the patient to perform an SLR maneuver. When the patient is supine, raising the leg with the knee extended will help determine if there is evidence of nerve tension. The Lasague and bowstring test will help determine if there is nerve irritation.

The Babinski response will help determine if there is evidence of spinal-cord pathology. If there is any concern for cauda equina syndrome, the patient should be assessed for “saddle anesthesia,” and a rectal examination is imperative.

An abdominal examination should be performed to ensure that there is no intra-abdominal cause for the back symptoms. The hips should be examined for completeness.

Physicians must be aware that back pain experienced in the buttock and posterior thigh is usually referred pain from the spine. Pain radiating below the knee may be related to nerve irritation, but can also be referred from the spine.

Radiographs. X-rays are usually not required following the initial assessment. Awareness of the fact that 50% of people are better in one month and 90% are better in two to three months should reduce the number of unnecessary x-rays. Physicians may be concerned that they will miss a tumor or some other terrible disease. Generally, the severity of the patient’s initial presentation will help determine if an x-ray is required immediately. The progression of the patient’s pain will also dictate if radiographs are required. Even if a tumor is discovered on the six-week x-rays, it is not too late to arrange treatment. A 20% to 30% reduction in bone mass is required to be detected on radiographs. Many anomalies seen on spinal radiographs are not usually related to the patient’s symptoms. The presence of degenerative changes does not mean that these changes are the cause of pain. Myelograms, a computed tomography (CT)
scan or magnetic resonance imaging (MRI) can demonstrate abnormal pathology, even in asymptomatic individuals. We treat patients and not x-rays.

**Discussion**

**Case One: Will this patient require surgery?**

This man’s presentation and physical examination is consistent with a disc herniation impinging against the left S1 nerve root. It has been three weeks since this man’s symptoms occurred. There is no motor deficit, and there is an absent ankle reflex (there is no guarantee that early surgery will restore an ankle reflex). Treatment at this stage includes analgesics as required (with or without nonsteroidal anti-inflammatory medication), and activity as tolerated. The majority of patients show continued improvement over six to 12 weeks without surgical intervention.

If there is no improvement or symptoms deteriorate, investigations may be carried out. Investigations include a myelogram with a post myelogram CT scan, or MRI. Patients may demonstrate significant improvement following the myelogram. Positive clinical findings and positive imaging studies show a 90% to 95% success rate for improvement of leg pain with surgical intervention.

**Case Two:**

**What is the best management strategy?**

This woman’s symptoms are localized to her lower back, without evidence of sciatica. The best approach for management of this problem is to encourage the patient to remain active through the acute attack and continue with her daily activities; she may require acetaminophen as an analgesic. An exercise program should be arranged when the episode of back pain subsides. The most important aspect of treatment is to remain as active as possible and avoid staying in bed beyond the normal rest period. The patient should be assured that despite the pain, no permanent damage has been done to her back.

This patient’s condition should improve in six to 12 weeks. If the patient continues to have significant pain after this period, more aggressive intervention is required.

This patient’s symptoms improved over five days and resolved within two weeks.

**Generally, the severity of the patient’s initial presentation will determine if an x-ray is required immediately.**

**What About Treatment?**

The management of lower-back and leg pain has evolved over the years. Patients may want to rest and stay in bed, but they should be encouraged to remain active to avoid the negative effects of inactivity. If bed rest is prescribed, it should be for less than two days. Some physicians may be concerned that activity will exacerbate the patient’s symptoms and prolong the recovery phase: This is not the case—patients with acute back pain who maintain their normal activities experience a faster recovery than patients who try either bed rest or exercise. Patients with severe symptoms may need a longer period rest, with mobilization for feeding or personal hygiene.

Adequate pain control can usually be provided by acetaminophen. Occasionally, codeine may be added, but rarely will a stronger narcotic be
Lower-Back Pain

required. Early mobilization should lead to an exercise program that strengthens abdominal and back musculature. A weight-reduction program, including a general reconditioning program, helps reduce stress on the lumbar spine.

A brace or corset may offer some relief in the acute stage, but its long-term use deconditions the musculature. Active treatment modalities are more effective than passive modalities of treatment in rehabilitating patients with low-back pain. Passive treatment may have the negative effect of increasing the patient’s subjective feeling of an ongoing disability. This negative effect, combined with inactivity and deconditioning, complicates the recovery process, leading to the development of a chronic situation.

The management of lower-back and leg pain has evolved over the years. Patients may want to rest and stay in bed, but they should be encouraged to remain as active as possible.

There is evidence that a structured exercise program, started after an episode of back pain has subsided, will prevent recurrence and absence from work. Manipulation may offer some short-term relief of lower-back pain in the acute phase.

Modalities, such as traction, massage, transcutaneous electrical nerve stimulation, cryotherapy, biofeedback and facet-joint injections have not been scientifically proven to increase the speed of recovery or provide a cure. Physicians must remember that recovery usually occurs within four to 12 weeks. Some physicians advocate no major intervention for six to eight weeks. Early treatments may often be inefficient because they do not speed recovery. Patients with soft-tissue injuries with good prognoses may suffer early iatrogenic disability because of early treatment. Some patients may do well without treatment.

Surgery. Emergency surgery is required with a cauda equina syndrome or situations with a progressive motor deficit. There is no effective surgery for acute lower-back pain. During surgery, nerve roots are decompressed by removing disc material and/or bone; this may be done in situations where conservative treatment for a disc herniation or spinal stenosis has failed. To be successful, the patient must have a distribution of pain that follows specific nerve roots, appropriate clinical findings on examination and imaging studies confirming the clinical impressions. The spine can be fused by the placement of bone graft in the specified area of the spine to increase the spine’s stability.

Conclusion

The management of lower-back pain requires the physician to pay close attention to the patient’s history and perform a detailed physical examination. The pain should improve within six weeks to three months. If symptoms do not improve, or if the patients deteriorate, further investigation is required.

One of the most important approaches to management is encouraging the patient to remain as active as possible during the acute episode and to avoid prolonged bed rest. An early return to work—at least in a modified fashion and according to the patient’s limitations—usually benefits patients and also reduces the likelihood of the development of a chronic situation. [CME]