Cauda Equina Syndrome

Overview

Back pain is a common complaint, but when it occurs suddenly and also includes sudden numbness in the genital area, difficulty urinating, and weakness in the legs — **it is a medical emergency**. Cauda equina syndrome is often caused by a large disc herniation in the lower back that compresses the nerve roots at the end of the spinal cord. These nerves send messages to and from the bladder, bowel, and legs. If they remain squeezed for too long, irreversible damage can occur. Prompt surgery to relieve the pressure may prevent permanent damage and restore bladder and bowel function.

What is cauda equina syndrome?

Cauda equina syndrome is a rare condition but has serious consequences if not treated promptly. It is most often caused by a large disc herniation in the lower back that compresses the nerve roots at the end of the spinal cord (Fig 1). These nerve roots are bundled together and resemble the tail of a horse. This is how they get their name. Cauda equina means "horse's tail" in Latin.

Unlike most back problems that are longstanding or chronic, cauda equina is an acute event, like a stroke or heart attack. It most often develops rapidly, within as few as 6 to 10 hours. Classic symptoms of back pain, coupled with a sudden onset of numbness in the genital area and sudden urinary retention, are signs of a medical emergency. Relieving compression quickly can determine whether one resumes a normal life or lives with incontinence and paralysis of the legs.

Less often, in people with recurrent back problems, cauda equina can come on gradually, with a slow progression of urinary symptoms. Because cauda equina syndrome is a disorder of the nerves that control the bladder, its symptoms can be similar to those caused by bladder or prostate problems.

What are the symptoms?

The symptoms of cauda equina compression include problems with bladder, bowel, or sexual function, such as trouble urinating (retention) or trouble holding it (incontinence). Most people have searing pain in the low back and buttocks as well as numbness and tingling in the "saddle area" (the rectal and genital areas and the inner thighs). Pain may travel down the back of the thigh, past the knee, to the calf and foot (sciatica). An individual might experience weakness or paralysis in the leg or foot, especially when getting up out of a chair. Extreme leg weakness and loss of bladder or bowel function are signs of an emergency; if this has occurred, seek medical help immediately.

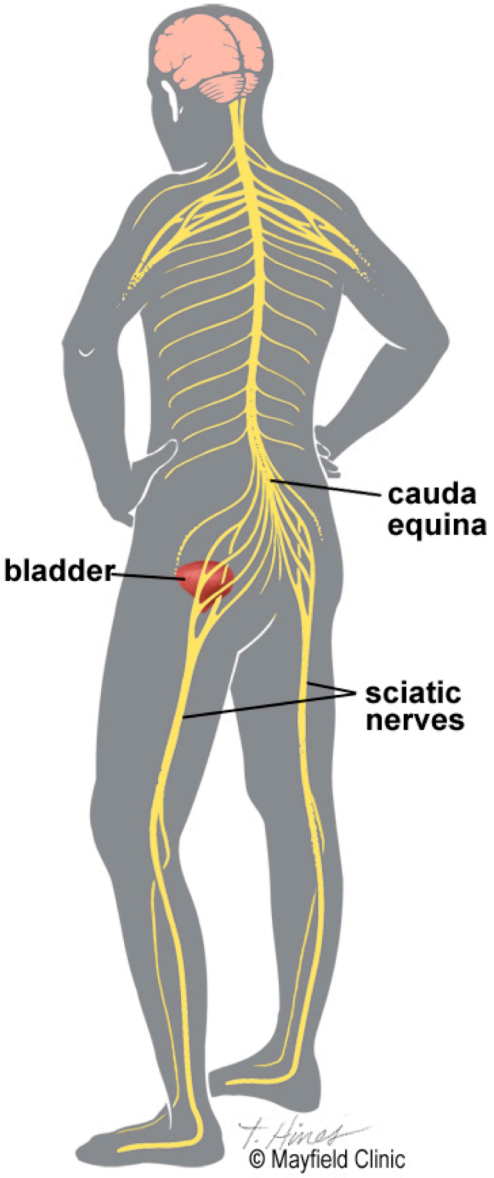

Figure 1. The cauda equina is a bundle of spinal nerves in the lower back. Branches from these nerves go to the bladder, colon and pelvic organs. The nerves continue through the pelvis and down the back of each leg as the sciatic nerves.

What are the causes?

A large ruptured disc can cause cauda equina syndrome. During a herniation, the gel-like center of a spinal disc can bulge or rupture through a weak area in the disc wall and compress the nerves. In the majority of cases, the disc herniation occurs at the L4-5 or L5-S1 discs in the lumbar spine.

A sports injury, fall, or car accident can fracture the spine or tear a muscle and damage nerves. Other causes include a narrowing of the spinal canal (stenosis), a tumor, an infection, or a hemorrhage.

How is a diagnosis made?

A careful medical exam will confirm or rule out a suspected diagnosis of cauda equina. Evaluation includes a medical history and physical exam. A loss of sensation in the anal area is a clear finding. A patient who complains of severe leg weakness, numbness in the genital area, or loss of bladder or bowel function will undergo an MRI scan to reveal the extent to which the herniation is compressing the spinal nerves. The doctor may also order a CT scan or a myelogram.

What treatments are available?

For a patient with acute cauda equina syndrome, surgery is likely an urgent need. The goal is to relieve pressure on the spinal nerves to restore sensation and muscle function to the bladder, bowel, and legs. Depending on the cause, one of the following surgeries may be performed:

Discectomy for a herniated disc removes the portion of the disc that is compressing the nerves. The surgeon makes a small incision in the middle of the back. The spinal muscles are moved aside to expose the bony vertebra. A window of bone is removed to expose the nerve root and disc. The portion of the ruptured disc compressing the spinal nerves is carefully removed.

Spinal decompression for stenosis removes the bone spurs and ligaments compressing the nerves. A small incision is made in the back. The surgeon removes the bone that forms the roof of the spinal canal. Next, soft tissue and bone spurs are removed to create more room for the nerves. Tumors and other lesions can also be removed.

Clinical trials

Clinical trials are research studies in which new treatments—drugs, diagnostics, procedures, and other therapies—are tested in people to see if they are safe and effective. Research is always being conducted to improve the standard of medical care. Information about current clinical trials, including eligibility, protocol, and locations, are found on the Web. Studies can be sponsored by the National Institutes of Health (see clinicaltrials.gov) as well as private industry and pharmaceutical companies (see www.centerwatch.com).

Recovery & prevention

Some bladder and bowel functions are automatic, but those under voluntary control may be lost if you have cauda equina syndrome. This means you might not know when you need to urinate or move your bowels or you might have difficulty doing so.

Recovery from cauda equina depends on the severity of symptoms and how long the nerves were compressed before surgery was performed. The chance of full recovery for those who have urinary retention is worse [1,2]:

- Of those who have numbness and tingling in the genital area (incomplete CES), 90% regained normal bladder, bowel, and sexual function.
- Of those who suffer bladder retention (complete CES), 20% may have permanent incontinence and loss of sensation in the pelvic area.

Residual problems after surgery may take some months to resolve. Rehabilitation methods such as bladder re-training may be required.

People who suffer permanent injury will face adjustments in their daily lives. Physical therapists can help them learn important self-care skills, including self-catheterization, stress management, and relaxation techniques. Additional assistance can be provided by a social worker, a support group, a sex therapist, or a psychiatrist (for depression).

In rare cases, paralysis of the legs may occur.

Sources & links

If you have questions, please contact Mayfield Brain & Spine at 800-325-7787 or 513-221-1100.

Sources

1. Tien Chau AM, et al. Timing of Surgical Intervention in Cauda Equina Syndrome - a Systematic Critical Review. World Neurosurg. Nov 12, 2013 [ePub]
2. Lavy C, et al. Cauda equina syndrome. BMJ 338:b936, 2009

Links

www.caudaequina.org
www.spine-health.com

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