

Cauda Equina Syndrome Etiology

Risk Factors

No set risk factors have been clearly defined for CES at this point in time.

Individuals most at risk for disc herniation are the most likely to develop CES. Race has little influence with the notable exception that African Americans appear slightly less likely to develop CES than other groups; similarly, men are slightly more likely to develop CES than women.

Middle age also appears to be a notable risk factor, as those populations are more likely to develop a herniated disc; heavy lifting can also be inferred as a risk factor for CES.

After the conus medullaris, the canal contains a mass of nerves (the cauda equina or "horse-tail") that branches off the lower end of the spinal cord and contains the nerve roots from L1-5 and S1-5. The nerve roots from L4-S4 join in the sacral plexus which affects the sciatic nerve, which travels caudally (toward the feet). Compression, trauma or other damage to this region of the spinal canal can result in cauda equina syndrome.

The symptoms may also appear as a temporary side-effect of a sacral extra-dural injection.

Disc herniation

see [Cauda Equina Syndrome due to lumbar disc herniation](#)

Tumors and lesions

Any lesion which compresses or disturbs the function of the cauda equina may disable the nerves although the most common is a central disc prolapse. Metastatic disease may also be a cause.

see [Cauda equina lymphoma](#).

[Lumbar juxtafacet cysts](#) are a rare but increasingly common cause of symptomatic nerve root compression and can lead to [radiculopathy](#), [neurogenic claudication](#), and [cauda equina syndrome](#).

Trauma

Direct trauma can also cause cauda equina syndrome. Most common causes include iatrogenic lumbar punctures, burst fractures resulting in posterior migration of fragments of the vertebral body, severe disc herniations, spinal anaesthesia involving trauma from catheters and high local anaesthetic concentrations around the cauda equina, penetrating trauma such as knife wounds or ballistic trauma.

Spinal stenosis

CES can be caused by lumbar spinal stenosis, which is when the diameter of the spinal canal narrows. This could be the result of a degenerative process of the spine (such as osteoarthritis) or a developmental defect which is present at birth. In the most severe cases of spondylolisthesis cauda equina syndrome can result.

Inflammatory conditions

Chronic spinal inflammatory conditions such as Paget disease, neurosarcoidosis, [chronic inflammatory demyelinating polyneuropathy](#), ankylosing spondylitis and chronic tuberculosis can cause it. This is due to the spinal canal narrowing that these kind of syndromes can produce.

Other

Other causes of CES are as follows: aortic diseases; congenital diseases including spinal dysraphism, dwarfing syndromes and congenital tumors; iatrogenic symptoms secondary to surgery or [epidural anesthesia](#); [spinal tumor](#); infective diseases and epidural/subdural hematoma ¹⁾.

Aortic diseases including abdominal aortic aneurysm (AAA), aortic dissection and even aortic saddle embolism (ASE) lead to a high mortality. Misdiagnosis of such kinds of diseases could be fatal. Aortic diseases mostly present with abdominal and back pain, lower limb ischemia, visceral ischemia and other symptoms. According to the literatures, the initial symptoms of aortic diseases that are similar to those of CES are rare ^{2) 3)}.

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Kavanagh M, Walker J. Assessing and managing patients with cauda equina syndrome. Br J Nurs. 2013;22:134-137.

²⁾

Qadura M, Pervaiz F, Harlock JA, Al-Azzoni A, Farrokhyar F, Kahnamoui K, Szalay DA, Rapanos T. Mortality and reintervention following elective abdominal aortic aneurysm repair. J Vasc Surg. 2013;57:1676-1683.

³⁾

El-Osta B, Ghaz A, Singh VK, Saed E, Abdunabi M. Spontaneous spinal cord infarction secondary to embolism from an aortic aneurysm mimicking as cauda equina due to disc prolapse: a case report. Cases J. 2009;2:7460.

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