Medical Treatment Guidelines

Washington State Department of Labor and Industries

Work-Related Acute Cauda Equina Syndrome (CES)

Diagnosis and Treatment

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I. INTRODUCTION

This guideline is intended as an educational resource for physicians who treat injured workers in the Washington workers' compensation system under Title 51 RCW. The guideline serves as review criteria for claim managers, occupational nurses, and utilization review staff to help ensure diagnosis and treatment of cauda equina syndrome is of the highest quality. The emphasis is on accurate diagnosis and treatment that is curative or rehabilitative (see WAC 296-20-01002 for definitions).

This guideline was developed in 2009 by Washington State's Labor and Industries' Industrial Insurance Medical Advisory Committee (IIMAC). It focuses on work-related medical conditions. One of the committee's goals is to provide standards that ensure a uniformly high quality of care for injured workers in Washington State.

The guideline was developed using the weight of the best available clinical and scientific evidence from a systematic review of the literature. CES is a surgical emergency, and there are no high quality clinical or scientific studies regarding this condition. This guideline summarizes information from the available medical literature and expert clinical opinion to help physicians make an accurate diagnosis quickly and deliver the appropriate care as soon as possible.

Acute cauda equina syndrome (CES*) is a rare, compressive disorder of the lumbosacral nerve roots below the tip of the conus medullaris. Only a small number of patients who present with back pain will have CES. It is characterized by multiple lumbo-sacral sensori-motor deficits which may have disabling long term consequences. It requires immediate surgical attention. Due to the emergent nature of CES, controlled studies are not feasible and literature is limited to case series and narrative reviews.

*In this guideline, all references made to CES are considered acute cauda equina syndrome.

II. ESTABLISHING WORK-RELATEDNESS

Work related activities may cause or contribute to the development of CES. Establishing work-relatedness requires all of the following:

1. Exposure: Workplace activities that contribute to or cause CES, and
2. Outcome: A diagnosis of CES that meets the diagnostic criteria under Section III, and
3. Relationship: Generally accepted scientific evidence, which establishes on a more probable than not basis (greater than 50%) that the workplace activities (exposure) in an individual case contributed to the development or worsening of the condition (outcome).

CES has been reported to result from the following work- and non work-related conditions[1, 2]:

- Disc herniation (most common cause; most often central herniation)
- Trauma (e.g. gunshot wound, vertebral fracture)
- Infection (e.g. discitis, vertebral osteomyelitis, epidural abscess)
- Degenerative conditions (e.g. degenerative spondylolisthesis, spinal stenosis)
- Metastatic or primary tumor (with or without pathologic fracture)
- Post surgical complications (e.g. epidural hematoma, fat graft, durotomy, use of Gelfoam)

- Vascular malformations (e.g. bleeding arteriovenous malformations)
- Intradiscal electrothermal annuloplasty
- Spinal manipulation

III. MAKING THE DIAGNOSIS

A. SYMPTOMS AND SIGNS

The hallmark symptoms of CES include[3,4-7]:

- Partial or complete loss of bowel and/or bladder function (incontinence or retention not otherwise explained), usually accompanied by impaired perineal sensation, especially saddle anesthesia
- Diminished or absent anal sphincter tone
- Reduced or absent bulbo-cavernosus reflex or anal wink
- Sexual dysfunction
- Impaired sensation in the lower extremities
- Acute low back pain with unilateral or bilateral sciatica
- Weakness of both legs and/or weakness involving multiple nerve roots in one leg
- Hyporeflexia or areflexia in the legs
- Gait disturbances

B. DIAGNOSTIC TESTS

MRI	Usually the preferred imaging test for characterizing and localizing spinal lesions.
CT and/or CT Myelography	Used to locate narrowing of the spinal canal; will provide useful information when MRI cannot be done or is limited by hardware artifact.
Plain x-rays	Used to identify fractures, tumors, infection, and degenerative changes.
Urodynamic Tests	May objectively evaluate bladder function; should be considered only in light of the patient's clinical condition after emergent care has been given.

IV. TREATMENT

A. CONSERVATIVE TREATMENT

Conservative treatment alone is rarely indicated because CES is an emergent condition and surgical decompression is the treatment of choice.

B. SURGICAL TREATMENT

To prevent further neurological deterioration, urgent surgical decompression should be performed. Decompression for rapidly progressing CES may prevent sphincter paralysis. The best surgical outcomes were reported in patients with the least neurological deficit prior to surgery[2,8-11].

Decompression surgery may range from microdiskectomy to wide laminectomy with diskectomy, ideally limiting the manipulation of potentially damaged neural tissue[2].

VI. GUIDELINE SUMMARY

Review Criteria for the Diagnosis and Treatment of Acute Cauda Equina Syndrome				
SURGICAL PROCEDURE	**CONSERVATIVE CARE**	**CLINICAL FINDINGS**		
		SUBJECTIVE	**OBJECTIVE**	**DIAGNOSTIC**
		AND	**AND**	
Lumbar decompression at the earliest safe opportunity	Conservative care alone is rarely indicated	Partial or complete loss of bowel and/or bladder function (incontinence or retention not otherwise explained) **AND/OR** Acute low back pain **AND/OR** Bilateral/unilateral sciatica **AND/OR** Sexual dysfunction	Diminished or absent anal sphincter tone **AND/OR** Saddle anesthesia **AND/OR** Numbness and/or weakness involving both legs or multiple nerve roots in one leg **AND/OR** Urinary retention, incontinence, and / or patulous anus **AND/OR** Reduced or absent bulbo-cavernosus reflex or anal wink **AND/OR** Gait disturbances	A radiographic study demonstrates that a lesion with mass effect on the cauda equina is present in the spinal canal, compressing multiple lumbo-sacral nerve roots (usually large mass effect). Lumbar MRI is the diagnostic procedure of choice. CT or CT myelography may provide useful information, especially when MRI cannot be done or is limited by hardware artifact

References:

1. Mauffrey C, Randhawa K, Lewis C, Brewster M, Dabke H. Cauda equina syndrome: an anatomically driving review. British Journal of Hospital Medicine 2008;69(6):344-347.

2. Spector LR, Madigan L, Rhyne A, Darden B, Kim D. Cauda equina syndrome. J Am Acad Orthop Surg 2008;16:471-479.

3. Kostuik JP. Medicolegal consequences of cauda equina syndrome: an overview. Neurosurg Focus 2004;16(6):39-41.

4. Buchner M, Schiltenwolf M. Cauda equina syndrome caused by intervertebral lumbar disk prolapse: mid-term results of 22 patients and literature review. Orthopedics 2002;25(7):727-731.

5. Jalloh I, Minhas P. Delays in treatment of cauda equina syndrome due to its variable clinical features in patients presenting to the emergency department. Emerg Med J 2007;24:33-34.

6. Shapiro S. Medical realities of cauda equina syndrome secondary to lumbar disc herniation. Spine 2000;25(3):348-351.

7. Thongtrangan I, Le H, Park J, Kim D. Cauda equina syndrome in patients with low lumbar fractures. Neurosurg Focus 2004;16(6):28-33.

8. Ahn UM, Ahn NU, Buchowski JM, Garrett ES, Sieber AN, Kostuik JP. Cauda equina syndrome secondary to lumbar disc herniation. A meta-analysis of surgical outcomes. Spine 2000;25(12):1515-1522.

9. DeLong WB, Polissar N, Neradilek B. Timing of surgery in cauda equina syndrome with urinary retention: meta-analysis of obersvational studies. J Neurosurg Spine 2008;8:305-320.

10. Hussain SA, Gullan RW, Chitnavis BP. Cauda equina syndrome: outcome and implications for management. British Journal of Neurosurgery 2003;17(2):164-167.

11. Qureshi A, Sell P. Cauda equina syndrome treated by surgical decompression: the influence of timing on surgical outcome. Eur Spine J 2007;16:2143-2151.