Research in Review: Cauda Equina Syndrome

By Shawn Thistle, DC, BKin (hons), CSCS

The Study

Title: "Cauda Equina Syndrome: A Literature Review of Its Definition and Clinical Presentation."

Authors: Fraser S, Roberts L, Murphy E.

Authors’ Affiliations: Southampton University Hospital, School of Health Sciences, University of Southampton, U.K.


Background

Cauda equina syndrome (CES) is a rare yet serious condition that most chiropractors will encounter at some point in clinical practice. Although the exact prevalence of this condition is difficult to establish based on the current literature, it has been reported that CES occurs in only one of 2,000 patients with severe low back pain, in 1 percent to 16 percent of those with lumbar disc herniations in general, and in 2 percent to 3 percent of those who require surgery for lumbar disc herniation. As always, epidemiological data matters little to the individual patient in your office, but suffice it to say that CES is relatively rare.

Spine - Copyright â Stock Photo / Register Mark What is more important for clinicians is the ability to swiftly identify those with CES to prevent the serious complications that can result - bowel and bladder dysfunction, permanent neurological damage, and medicolegal nightmares, just to name a few. Therefore, the goal of this literature review was to summarize the current evidence surrounding CES, specifically considering its definition, clinical presentation and etiology.

Study Methods

This study began with a literature search (Medline, Embase, CINAHL) using appropriate terms. Because this was a descriptive review, no attempt was made to rank or weight the quality of the articles that were identified. The authors reviewed case reports, case series, clinical experience pieces, trials, and literature
reviews. From the literature, a framework was developed to identify common symptoms and historical factors that were consistently reported in CES cases. Definitions of CES were also extracted via generalized statements, statements of a pathoanatomical basis, and definitions via description of clinical presentation. From the search, 105 articles were included in the review.

Summary

Definition of Cauda Equina Syndrome: Defining CES was problematic and remains contentious - 17 different descriptions were proposed in the body of literature reviewed. Definitions ranged from general (constellations of symptoms) to very specific (e.g., "retention of urine or dribbling incontinence"). Various authors have attempted to subclassify CES as complete or incomplete, total or partial, full-blown, classic, true, or hemi-CES - some authors argue that these distinctions can predict outcome, yet these claims have not been scientifically quantified. Therefore, at this time, these subclassifications of CES appear unnecessary, do not establish prognosis, and are not helpful.

Based on the overall findings of this review, the authors proposed the following definition: For the diagnosis of CES to be made, one or more of the following must be present: 1) bladder and/or bowel dysfunction; 2) reduced sensation in the saddle region; 3) sexual dysfunction with possible neurological deficit in the lower limb (motor, sensory and/or reflex changes).

Pathology of CES: Fourteen discrete pathologies were reported in the literature. It is commonly accepted that many structures and pathological processes can result in CES, as well as iatrogenic causes. These causes include central or centrolateral disc herniations, space-occupying lesions, infection, aortic dissection, surgical complications, spinal manipulation, and complications from anesthetic or epidural procedures.

Clinical Presentation:

- **Bladder:** no consensus exists, but most articles highlighted bladder involvement. (I seem to remember learning that urinary retention is the most relevant aspect to ask about, but for some reason that was not mentioned in this paper.)
- **Bowel:** less documented than bladder involvement, and no consensus exists; the term *bowel dysfunction* can mean the inability to void, control defecation, or a sense of rectal "fullness."
- While it is often thought that bowel and bladder dysfunction are concurrent, this was only occasionally reported in the literature.
• **Anal tone:** although it is suggested that testing rectal tone, voluntary control and reflex contracture should be part of a comprehensive examination when suspecting CES, no consensus exists on its prevalence in CES cases.

• **Pain:** there is no consensus on the onset pattern or duration of pain in association with CES; however, when lower limb pain is present in CES, it is thought to be a poor prognostic indicator.

• **Sensation:** despite variability in reporting methods, this was the most frequent symptom appearing in the literature - most commonly involving pinprick / light touch over the buttocks, posterior thigh, or perineal region.

• The literature suggests that up to 75 percent of CES cases will have sensory deficit in the saddle area. Complete saddle anesthesia at presentation is a poor prognostic factor.

• **Power/muscle strength:** involvement is often minimal and relevance to prognosis is unclear.

• **Reflexes:** no consensus exists.

• **Sexual function:** little documentation for this factor and hence no consensus.

**Conclusions and Practical Application**

Cauda equina syndrome is a condition that is familiar to all of us, yet the literature on it is lacking. This highlights the need for prospective case series to specifically record both the etiology and clinical presentation of this condition.

As a potential complication of lumbar spinal manipulation, chiropractors must be well-equipped to recognize and immediately refer those with CES. In the absence of a universally accepted definition of CES, the authors’ suggested definition seems appropriate, and emphasizes all major symptoms that are suggestive of CES. In order to diagnose CES, one or more of the following must be present: bladder and/or bowel dysfunction; reduced sensation in the saddle region; sexual dysfunction with possible neurological deficit in the lower limb (motor, sensory and/or reflex changes).

This definition suggests that in patients suspected of having CES, careful questioning regarding bladder/bowel function should be performed, in addition to detailed neurological examination, including sensory assessment of the perineal region and lower limb, reflexes, and anal tone. Suspicion of CES warrants immediate referral to an emergency care facility.
Study Critique

This was a simple study that employed appropriate methodology considering the overall state of the literature on this topic. Due to the general lack of literature specific to CES, this study may have been affected by a publication bias toward unusual presentations and case studies. This study was strengthened by the inclusion of non-English studies.

Dr. Shawn Thistle is founder and president of the Research Review Service (www.researchreviewservice.com), from which all content for this and other articles by Dr. Thistle is derived. Research Review Service posts approximately 60 reviews like this each year and currently has a database of more than 250 reviews. Dr. Thistle graduated from the Canadian Memorial Chiropractic College, where he has been a faculty member since 2004. He holds an honours degree in kinesiology (McMaster) and a certificate in contemporary medical acupuncture. He is also fully ART-certified and is a certified strength and conditioning specialist. Dr. Thistle practices full time at Shape Health and Wellness Centre in Toronto.

Page printed from: