Cauda Equina Syndrome: an Uncommon Entity

Some researchers5,6 have reported a 2.2% incidence of cauda equina syndrome (CES) following disc herniation in the lumbar spine. Others2,3 have reported an incidence of 3.2%, although they believed that this represented an overestimate because it did not include the majority of patients with lumbar disc prolapse who had undergone non-surgical treatment. The generally accepted frequency of CES is between 2 and 6% of all laminectomies performed for lumbar disc herniation. Other sections in this monogram detail aspects of causation (trauma, metastatic tumor of the spine, and infection) prognosis, treatment, and the occurrence of CES with spinal stenosis due to prolonged degenerative changes of the spine as well as iatrogenic factors.

Medicolegal Controversies

There are numerous reasons why CES, regardless of its origins, generates medicolegal problems. These will be discussed separately and include the following: 1) failure of an emergency room physician to recognize the syndrome; 2) failure of an emergency room physician to examine the patient properly; 3) failure in communication among professional personnel; 4) failure of a nurse to recognize or report motor weakness and/or bladder incontinence; 5) inadequate nursing examination of the patient in the postoperative environment on hospital floor; 6) failure of a physician to recognize the problem; 7) inadequate physical examination conducted by neurosurgeon, orthopedic surgeon, or other subspecialist; 8) failure to act promptly; and 9) failure to understand the pathophysiology and cause of the disease entity.

Definition of CES

It is important that all health care providers understand the definition of CES. This disease consists of a constellation of symptoms and signs that may include motor weakness and/or sensory disturbance in the lower extremities, pain, and in the radicular distribution, back pain, and affected nerve roots that control bowel and bladder function only. Note that radicular pain may not be present if central herniation occurs at L5–S1 where the motor roots are spared.

The diagnosis is implicit and includes the loss of visceral functions such as those of the bladder and bowels. Given that urinary excretion occurs more frequently than bowel evacuation, a diagnosis is most often based on urinary dysfunction. The urinary dysfunction may be characterized by overflow incontinence, marked bladder distension with insensate bladder so that the patient is unaware of his or her full bladder, and failure to void and to empty the bladder completely in a patient with a partially sensate bladder. Physical examination reveals such things as unilateral or bilateral limitation in straight leg raising, motor dysfunction in the lower extremities, and sensory loss in the lower extremities. A diagnosis of CES is implied on finding decreased or absent rectal tone, including anal reflex, and hypesthesia or complete anesthesia in the perianal area. Rectal tone may be diminished in people who have had rectal disease or in women who have given birth multiple times. As several researchers1–4,6,7 have pointed out, analgesia in the perianal area carries a much worse prognosis than that with hypesthesia.

Some physicians confuse CES with a problem of the conus medullaris. The latter produces an upper motor neuron lesion of the bladder and bowel, but may affect motor and sensory roots distally.

Emergency Room Difficulties

The following are problems that may arise in an emergency room situation and may lead to medicolegal difficulties. 1) Nursing staff fail to document a patient’s major complaints. 2) Nursing personnel fail to communicate to physicians symptomatology or a change in a patient’s condition. 3) Physicians fail to obtain an appropriate history, including that regarding bladder and bowel function. 4) Personnel fail to perform a complete and appropriate physical examination in a patient with acute back pain and/or lower-extremity radicular pain. This latter category also includes a failure to complete an appropriate motor examination by rating gradations of power based on the Medical Research Council grading system (0 to 5), to perform an appropriate sensory examination, and to conduct straight leg raising and other tests to assess the signs of lumbar root tension appropriately. In a patient presenting in an acute mode, medical personnel fail to perform a rectal examination including digital testing of anal tone, anal...
wink, and perianal sensation to pin prick. 5) Medicolegal issues may also arise if, in an acute setting, personnel do not explain the risks of a further loss in nerve function, including those associated with the bowel and bladder, on discharge of the patient. 6) Problems may also occur if a patient with a loss of neural function is not referred elsewhere when required (primarily in an acute setting). 7) On admission to the hospital, failure to communicate the appropriateness of the situation to nursing personnel and to the physician under whose name the patient is registered. For example of the latter, the patient is admitted and communication to the nurse is that there is potential for loss of bowel and bladder function; the physician to whom the patient is registered is not told of the significance of the physical examination. The patient does not have CES. The physician fails to examine the patient until the following day.

Whether a rectal examination is necessary in a patient with a history of chronic back problems depends on the acuteness of the condition. If the condition is so acute that it has necessitated a visit to the emergency room, then the patient should undergo a rectal examination.

**Hospital Stay**

The following are factors that may lead to potential litigation. 1) Nursing personnel fail to communicate with physicians regarding the patient’s condition or a change in this condition. 2) Physicians fail to respond to nursing requests or concerns in an appropriate and timely fashion; for example, a patient has become incontinent, and the physician is informed but fails to examine the patient for several hours. 3) The physician does not perform an adequate examination periodically. These include on admission and during subsequent rounds. 4) Residents do not communicate with their superiors. 5) The superiors fail to respond to resident or trainee concerns or information. 6) Personnel fail to document physical examinations appropriately and/or completely. 7) Concerns about the potential for neurological change are not communicated.

In the postoperative phase, potential problems include failure to perform a rectal examination following spinal surgery to have baseline data with which to compare during instances of subsequent deterioration, and a failure of nursing and other medical personnel to communicate changes in the patient’s status including changes in pain and neurological characteristics. The best example of this scenario involves a patient who has undergone a laminection and initially is recovering well. There has been no postoperative rectal examination during which data have been obtained to serve as a baseline. At 24 hours postsurgery, the patient begins to suffer increasing back pain and lower-extremity pain shortly thereafter. The patient is not examined by either nursing or other medical personnel appropriately. No one communicates that the patient has experienced changes in any symptoms including increased back pain and/or radicular pain and perhaps difficulty in urination. Bladder function inquiries are crucial. Failure to examine the patient in a timely manner is another potential error. Occasionally, a physician will fail to respond in a timely fashion to telephone requests or inquiries. Consider the following scenario: A patient undergoes spinal surgery and initially fares well. He or she is discharged home in an appropriate time, but several days later the patient calls with complaints of increasing pain. He or she is provided with an analgesic agent without inquiry as to function. The pain continues to increase; however, the patient is not asked about his or her symptoms and function subjected to examination.

**Is There Such a Thing as Impending CES?**

By definition, CES can exist only with the loss of bladder and bowel function. As mentioned previously, this disease is diagnosed based on symptoms of urinary incontinence or urinary retention and complaints of perianal loss of feeling. Objective signs include loss of anal tone, anal wink, and decrease or loss of perianal sensation.

If a patient presents with acute radicular pain and/or acute back pain, he or she must be warned that loss of visceral function may occur.

The patient who presents with acute back pain and acute radicular pain, limited straight leg raising, with or without subjective signs and symptoms of sensory motor loss in the lower extremities may rarely, as noted previously, develop CES.

One must exercise good medical judgment in determining whether to proceed to treatment beyond nonsurgical care in this setting. In the event of extreme pain and marked limitation in unilateral or bilateral straight leg raising in an otherwise healthy patient, one should perform early diagnostic studies including magnetic resonance imaging and surgical intervention. It is rare, however, to require surgical intervention, unless there is neurological dysfunction or a very massive herniation demonstrated on magnetic resonance imaging. A smaller herniation in the presence of a narrowed canal should also raise concerns about the need for surgical intervention.

The onset of CES varies a great deal and depends on fluid intake. The amount of urine flow per hour is dependent on intake, and averages between 30 and 50 ml. If a patient experiences urinary retention and is catheterized during passage of more than 400 ml of urine, one might
question whether CES is present and perform an appropriate rectal examination to determine perianal sensation. Obviously, if there is a 1000 ml of urine and the patient has not complained of marked pain, he or she must have an insensate bladder. Thus, one can potentially track the onset of CES to a number of hours earlier based on the amount of fluid intake and appropriate perianal function.

**Other Considerations**

The appropriateness of a referral is important. The internist, neurologist, emergency room physician, or other nonsurgical spinal physician must, in the presence of a patient with CES or the potential for such, refer the patient to an appropriate spinal surgeon. An example of an inappropriate referral involves a concerned physician who contacts the appropriate multispecialty center and is referred to the surgeon on call who may have little or no experience with spinal problems. It is essential that the referring physician communicate with the appropriate consultant.

**References**