

Research Article

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Cauda Equina Syndrome Retention Type –Late Intervention Can also give Excellent Results

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ABSTRACT

Introduction: Cauda Equina Syndrome (CES) is an acute stenosis of lumbar spinal canal leading to compression of neural elements below the level of L1 mostly due to disc herniation but other causes exist. Intervention within 48 hours prevent permanent sensorimotor, sphincter and sexual disturbances. We report twelve cases of Cauda Equina Syndrome with complete sensorimotor deficit, bladder, bowel dysfunction intervened at least 1 month after initiation of symptoms with complete recovery of functions. Till date a few literature support is there to substantiate this evidence.

Methods: 22 patients between 2011 to 2015, 18 male and 4 female, attended with complete or retention type of cauda equina syndrome. Of the 8 men, 5 had acute disc herniations, 2 had caudal spine, 1 had trauma. Of the 4 women, 3 had acute disc herniation, 1 had caudal spine. 4 attended 35- 39 days, 4 between 45- 45 days, 4 between 45- 60 days. They were urgently decompressed within 72 hours of attendance. 4 were lost in follow- up within 1 year. Rest were followed up 3- 5 years.

Results: 3 patients improved by 14 to 28 days, their neurological status improved from ASIA A to ASIA D, 4 patients by 30 to 90 days from ASIA A to ASIA E. 1 male patient improved from ASIA A to ASIA C in 3 years. All the above neurological status maintained. 2 men and 2 women were lost to follow up within 1 year when their improvement were by only one grade in ASIA impairment scale. 7 out of 8 patients had excellent results.

Conclusion: Though early intervention is the golden rule, in late presentations of complete cauda equine syndrome, thorough decompression improves the neurological status of the patient.

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Introduction

The Cauda equina Syndrome refers to a characteristic pattern of neuromuscular and urogenital symptoms resulting from the simultaneous compression of multiple lumbosacral nerve roots below the level of conus medullaris. It is an acute compression on the nerves exiting from different spinal levels below the level of Lumbar 1 vertebra where the spinal cord ends. It is a lower motor neuron lesion. Although CES can occur at any age, it is most often seen in adults in whom the spinal cord may be compromised and stenosed. The cauda equina (CE) is a bundle of intradural nerve roots at the end of the spinal cord, in the subarachnoid space distal to the conus medullaris. The CE provides sensory innervations to the lower extremities, perineum and buttocks. The pathophysiology remains unclear but may be related to damage to the nerve roots composing the CE from direct mechanical pressure and venous congestion and ischemia [1]. Early diagnosis is often

challenging because the initial signs and symptoms frequently are subtle. Classically, the full-blown syndrome includes urinary retention, saddle anesthesia of the perineum, bilateral lower extremity pain, numbness and weakness.

Decreased rectal tone may be a relatively late finding. Cauda equina syndrome is a surgical emergency. It is generally accepted that urgent surgical decompression within 48 hours of the onset of symptoms is necessary for maximum improvement of clinical signs and symptoms. Without surgery CES progresses and become permanent [1 – 4]. The timing of surgical decompression is controversial, with immediate early, and late surgical decompression showing varying results. In a case compression, the dictum was to operate emergently within 6 hours of CES but several authors have argued over the clarity of the data supporting this practice [5 – 10]. Hussain et al reported no difference at a 16- month follow- up among patients who underwent surgery within 24 hours [1]. Furthermore a recent small prospective study reported no difference in outcome at 3 and 12 months after surgical decompression performed at less than 24 hours, at 24- 28 hours,

and within more than 48 hours after the onset of CES [11]. The role of surgery is to relieve pressure from the nerves in the cauda equine region and to remove the offending elements. Surgical treatment is wide laminectomy and extensive decompression [9].

After surgery, internal stabilization with fixation devices may be implanted at the same sitting or different date.

Patients and Methods

Twenty two patients underwent surgery for CES- Retention type from April 2011 to October 2015 presented themselves between 25- 60 days of diagnosis of their condition. There were 18 male and 4 female patients between the age 40- 65 years. Of the 18(66.67%) men, 15(41.7%)men had acute disc herniations, 2(16.67%)men had caries spine involving the lumbar spine, 1(8.33%) had sustained trauma. Of the 4 (33.33%) women, 3(25%) women had acute discherniation, 1(8.33%) woman had caries spine involving the lumbar spine. At presentation their neurological status was ASIA A. Routine investigations, CT scan especially in trauma patients and MRI of the dorsal and lumbar spine were done within 12 hours of their attendance.

(41.67%) patients were intervened within 24 hours, whereas 6 patients(50%) were intervened within 48 hours of presentation. One patient (8.33%) was delayed upto 120 hours after presentation due to his co- morbidities. Decompression by wide laminectomy was the surgery of choice involving the offending segments with one level above and below. Post- operative outcome was assessed at 1month, 3 months, 6 months, 1 year, 1and half years and 2 years using the ASIA impairment scale, the Oswestry Disability Index (ODI) for back and leg pain and a Short Form Incontinence Questionnaire (SFIQ) base don't he Leicester MRC Incontinence Study looking at these verity of urological and bowel dysfunction [12, 13].

Results

3patients (Group1,n= 3,25%), improved by 14 to 28 days, their neurological status improved from ASIA A to ASIA D, two were male and one was female. All the three were patients of prolapsed intervertebral disc. 4 patients (Group2,n= 4,33.3%) improved after 30 days but before 90 days and were E in ASIA impairment scale- all 4 of them were patients of prolapsed intervertebral disc, 2 were male while 2 were female patients. 1 male patient (Group3,n= 1,8.33%) with lumbar spine fracture improved from ASIA A to ASIA C beyond two years. 4 patients (33.33%) were lost to follow up between 1 to 2 years but had improved from ASIA A to ASIA B till then. Assessment using The Oswestry disability index(ODI) scoresforlegandbackpain Grp 1. Grp 2. Grp 3 at beginning. 86.3% 89.5%92.0% (Mean ODI%) At 2yfollow-up. 12.3%19.5%32.0% (Mean ODI%) Atearly(3 months) followup ,the median score for impact of urological dysfunction on quality of life (SFIQQ2) was 12.6 (range0–24),this was unchanged at late followup (12months). 8 of 12 patients (66.7%) felt either “mostly dissatisfied”(n= 3),“unhappy”(n= 3)or“terrible”(n= 2)about having to spend there to ftheir life with their current urinary pattern. At final followup (24months) this reduced to four of 12 patients (33.3%) with two patients feeling “terrible.”

Conclusion

Early intervention in Cauda Equina syndrome is of golden importance. Late presentation may be an inherent part in the clinical scenario pertaining to our geophysio – socioeconomic conditions. Decompression with wide laminectomy is the standard procedure. Our study has found that seven of the twelve patients surgically intervened (58.3%) despite late presentation

with retention type of cauda equina syndrome gave excellent improvements in sensorimotor features and returned to productive life. Though back and leg pain were often tormenting them, most people were also dissatisfied with the improvements in their urinary conditions having to continue in a catheter or such.

Etiopathogenesis

Cauda Equina Syndrome occurs most commonly due to large lower lumbar disc herniations, prolapsed or sequestrations. CES may also be due to smaller prolapses in preexisting spinal stenosis [14]. Less common causes are epidural hematoma, infections, primary and metastatic neoplasms, trauma, post-surgical, prolapse after manipulation, chemonucleolysis, after spinal anesthesia and it has been reported in patients with ankylosing spondylitis, gunshot wounds and even resulting from constipation [15 - 27].

Classifications

Tandon and Sankaran described three variations of CES (T and S groups) [28]:

1. Rapid onset without a previous history of back problems.
2. Acute bladder dysfunction with a history of low back pain and sciatica.
3. Chronic backache and sciatica with gradually progressing CES often with canal stenosis.

It is evident that the onset of CES may be either acute within hours or gradual over weeks or months, and within these groups CES may be complete with painless incontinence or incomplete with some sphincter function. A recent analysis from China of the current literature on CES cases have been helpful in specifying the main patterns of progression of this condition. This early stage of symptoms or “Early CES” should be recognized and treated before established urinary incontinence or retention.. They have suggested a further category called CES E (Early) to designate this group, and have done a more exhaustive review, with ranking of the frequency of presentation of each feature [29].

Discussion

CES is a rare entity. Review of literature indicates 50- 70% of patients have urinary retention (CES- R) on presentation and 30- 50% have incomplete syndrome (CESI) [30, 31]. Severe back pain, saddle and/or genital sensory anesthesia involving S3 to S5 dermatomes, bladder and bowel dysfunction, motor and sensory loss of the extremity [32, 33]. The nerves in the cauda equine region include the lower lumbar and all the sacral nerve roots. Function of the nerves includes sensory innervations to the saddle area, voluntary control of the external anal and urinary sphincters and sensory and motor fibres to the lower limb. Several studies argue that a continuum exists with respect to progressive lengthening in the time to surgery yielding increasing poor outcomes [11&34]. Controversy exists throughout the literature regarding the question of timing of surgical decompression in CES and its influence on outcome. In his retrospective review of 44 patients with CES, Shapiro noted the delayed surgery group (>48h) demonstrated a significantly greater chance of permanent motor weakness, urological dysfunction, chronic severe pain and sexual dysfunction [35]. Ahns meta- analysis of 322 cases of CES has similarly shown a significant difference in outcome in those cases decompressed in under 48 and those decompressed after 48h [36]. This study has been critiqued for its inappropriate methodology and flawed statistical analysis. A repeat analysis of the data by Kohles et al [37]. still demonstrated a significant improvement

in outcome with earlier decompression. Gleave and McFarlane have opined that recovery in cauda equine syndrome is more dependent on the nature of disc prolapsed than the intensity of such [38, 39]. Although several authors support the critical importance of timing of surgery, these studies have been retrospective in nature with limitations of subjectively ascertaining outcomes with variable length of follow up and of ten in complete data gathering. Previously held beliefs regarding the importance of time of surgical decompression and the consensus opinion that delay in decompression negatively affect outcome should be questioned. Although we have shown a relationship between the timing of surgery and outcome in CES, this current study has limitations. The number of cases is small which reflects the difficulties in evaluating a relatively frequent emergency presentation. Our small study is comparable to other studies in the literature. Lack of proof of benefit does not equate to proof of lack of benefit [39]. Further study is required specifically to assess the impact of varying grades of urological deficit in CES, determined by urodynamic studies, on post-operative outcome. The influence of delays in treatment may have historically been overestimated [40].

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