Cauda Equina Syndrome due to lumbar disc herniation

- Comparison of microdiscectomy and fragmentectomy on clinical outcomes for single level lumbar disc herniation: a systematic review and meta-analysis of comparative studies
- Cauda Equina in Pregnancy: Early Management and Outcome
- The implications of surgery on sexual dysfunction in patients with lumbar disc herniation with cauda equina syndrome: a systematic review
- A Giant Lumbar Disc Herniation Causing Chronic Cauda Equina Syndrome: A Clinical Image
- The experience and need of patients with cauda equina syndrome caused by lumbar disc herniation: a phenomenological qualitative study
- Is out-of-hours decompression for acute lumbar disc herniation associated with greater peri-operative complications? A tertiary centre, retrospective cohort study
- Integrative Korean medicine for recurrent lumbar disc herniation after coronavirus disease vaccination: A case report and literature review
- Surgical outcomes of unilateral painful foot drop secondary to lumbar disc herniation: a multicenter retrospective study

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Cauda equina syndrome (CES) is a rare neurologic condition that is caused by compression of the cauda equina. Cauda equina consists of spinal nerves L2-L5, S1-S5 and the coccygeal nerve. The compression of these nerve roots can be caused mainly by lumbar disc herniation (45% of all causes). The diagnosis consists of two critical points: a) detailed history and physical examination and b) MRI or CT. The gold standard of the treatment of this syndrome is the surgical approach in combination with the timing of onset of symptoms. The surgery as an emergency situation is recommended in the first 48 hours of onset of symptoms. Any delay in diagnosis and treatment leads to a poor prognosis of CES [1)].

see Cauda equina syndrome due to intradural lumbar disc herniation.

Outcome

There was a clear correlation between the presence of complete perineal anesthesia and the absence of anal wink as both univariate and multivariate predictors of poor outcomes. There was a significant association between a slower onset of CES and a favorable outcome. There was no significant correlation found between initial motor function loss, bilateral sciatica, and level of the lesions as predictors of a poor outcome [2)].

Patients with CES and bladder incontinence or retention, over 90% regained continence. Recovery of function was not related to the time to surgical intervention. The majority of the patients were adequately treated without the need for a complete laminectomy [3)].

Case series

A cross-sectional observational study was conducted at Shaheed Suhrawardy Medical College and Hospital, from January 2015 to January 2021 and the aim of this study was to find the predictors and the clinical outcome of cauda equina syndrome after spinal decompression with delayed presentation. Among 680 patients with degenerative disc diseases; 32 cases (4.7%) had CES, those presenting late in course of the disease. The time interval between bladder and bowel dysfunction and admission to the hospital varied from 2-64 days with a mean delay of 15.4 days. The average follow-up was 22.6 months, ranging from 12 to 34 months. There was a significant positive correlation ($p<0.05$) between the duration taken for total recovery and delay in surgery and between delayed decompression and poor outcome. Also, there was a clear correlation between the presence of complete perineal anesthesia and the absence of anal wink as both univariate and multivariate predictors of poor outcomes. There was a significant association between a slower onset of CES and a favorable outcome. There was no significant correlation found between initial motor function loss, bilateral sciatica, and level of the lesions as predictors of a poor outcome [4].

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116 patients with CES associated with disc herniation underwent decompression and stabilization surgery from January 2005 to January 2020 in a single-center study, and data were collected and retrospectively analyzed. The patients were divided into the O-TLIF and the MI-TLIF group. The perioperative clinical data and MRI assessment were used to assess the efficacy of the respective surgical methods preoperatively and with a minimum follow-up of 30 months.

Results: As expected, the O-TLIF group had statistically significantly longer surgery times and hospital stay, more bleeding, and perioperative surgical complications than the MI-TLIF group. At a minimum follow-up period of 30 months, the MI-TLIF group had significantly better Oswestry Disability Index, visual analog scale, and Short-Form-36, and neurologic CES symptoms than the O-TLIF group. The postoperative MRIs revealed a statistically significant difference in the multifidus muscle area in MI group compared with the O group.

In patients with acute CES caused by disc herniation, MI-TLIF, with decreased disruption of paravertebral tissues and postoperative pain syndrome, results in earlier mobilization and rehabilitation with better long-term clinical outcomes compared with O-TLIF [5].

Twenty-three (10%) patients met the criteria for GDH. Clinically significant motor weakness was present in 21 patients (91.3%) before surgery, and 3 patients (13%) presented with cauda equina syndrome. The average mean visual analog scale (±SD) for the preoperative pain score was 8.3 and decreased to 2.4 at follow-up after surgery. All cases of cauda equina syndrome resolved postoperatively.

Unilateral tubular minimally invasive surgery diskectomy seems to be a safe and effective treatment alternative for lumbar GDHs, combined with the “over-the-top” decompression, which provides bilateral decompression and working space [6].

A retrospective review of all patients with lumbar herniated discs and CES from the years 1985 to 2004 was carried out. There were 31 patients, 28 of whom had bladder incontinence or retention requiring catheterization. Six patients were operated within 24 hours, 8 between 24 and 48 hours, and 17 after 48 hours (range: 60 h to 2 wk). Average follow-up was 5 years.

Twenty-seven of these patients regained continence not requiring catheterization. There was no correlation between the time-to-surgery and recovery of bladder function. There was also no correlation between the time-to-surgery and recovery of motor and sensory function. The majority of patients underwent unilateral hemilaminotomy or bilateral hemilaminotomies; decompressive laminectomy was reserved for patients with underlying spinal stenosis or posteriorly herniated fragments. All of the patients were relieved of their radicular pain.

Patients with CES and bladder incontinence or retention, over 90% regained continence. Recovery of function was not related to the time to surgical intervention. The majority of the patients were adequately treated without the need for a complete laminectomy [7)].

Case reports

Two males had features of cauda equina syndrome. Both had posterior lesions at L4/5 level in magnetic resonance imaging. The mass of the 41-year-old man had peripheral rim enhancement with gadolinium. The epidural mass was excised. The histopathology showed fibrocartilaginous disc. The 67-year-old man had mass with moderate enhancement. The mass had thinned the dura to appear as intradural tumor. The histopathology showed a fibrocartilaginous disc. Immunohistochemistry was negative for neoplasm.

A migrated disc should be considered in the case of a posterior extramedullary mass. The granulation tissue around the disc produces peripheral enhancement with gadolinium. Thin enhancement is common. Thick enhancement is also reported. Neoplasms have intense enhancement and inflammatory changes are seen in abscess [8)].

Unclassified

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