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Original Research

Intradural conus and cauda equine tumors: clinical presentation Prognosis and outcome after surgical treatment

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ABSTRACT:

Background: Conus and cauda equina tumors represent a unique group of tumors due to their specific location in the spinal canal. Hence; the present study was conducted for assessing clinical presentation, Prognosis and outcome after surgical treatment of Intradural conus and cauda equine tumors. **Materials & methods:** All cases of intradural cauda equina and conus medullaris tumors (CECMTs) treated surgically were retrospectively evaluated. A total of 30 adult patients were enrolled. Among these subjects, 18 were males and 12 were females. Follow-up data was recorded for a time period of one year and data was evaluated. All the findings were recorded in separate Performa. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis. **Results:** Nerve sheath tumors were seen in 53.33 percent of the cases while Ependymomas and Meningiomas were seen in 30 percent and 16.67 percent of the patients respectively There were 80% individuals having LBP, 70% with radicular pain, 43.33% with motor deficit, 16.67% with sensory deficit and 13.33% patients had sphincter involvement. After surgery, improvement was seen in 66.67 percent of the patients. **Conclusion:** Intradural CECMTs present as a group of tumors with varying histological features and clinical symptoms. Early surgery is advisable as more than two-third of the patients show improvement on follow-up.

Key words: Intradural conus, Cauda equine tumors

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INTRODUCTION

Conus and cauda equina tumors represent a unique group of tumors due to their specific location in the spinal canal. The conus medullaris forms the last portion of the spinal cord from where the axons of the distal nerve roots originate and where the spinal bowel and bladder centers are located. The cauda equina is the conglomeration of the nerve roots of the lumbar and sacral spinal nerves distally to the conus area. These two areas form a transition between the central nervous system and the peripheral nervous system. Conus lesions will primarily affect the central functions, while cauda lesions will affect peripheral functions. As these two areas are in close proximity, lesions in one area can affect the function of the other area. Lesions in each area give rise to specific deficits and are appropriately called cauda equina syndrome (CES) and conus medullary syndrome (CMS).[1-3]

The best way to assess the cauda equina is with MRI of the lumbar spine with and without contrast medium. Highfield strength MR magnets (≥1.5 T) allow evaluation of the nerves, their size, enhancement, and involvement by a pathologic process. Pathology of the cauda equina can arise from a nerve root, pia mater, or arachnoid space. The etiology can be primary or secondary via direct or hematogenous spread of disease. Pathology can be classified in multiple ways. A simple classification into malignant, inflammatory, vascular, infectious, and congenital is considered in this article. The purpose of this article is to review the most common pathologies of the conus medullaris, cauda equina,

and filum terminale with emphasis on MRI findings.[4-7] Hence; the present study was conducted for assessing clinical presentation, Prognosis and outcome after surgical treatment of Intradural conus and cauda equine tumors.

MATERIALS & METHODS

The present study was conducted for assessing clinical presentation, Prognosis and outcome after surgical treatment of Intradural conus and cauda equine tumors. All cases of intradural cauda equina and conus medullaris tumors (CECMTs) treated surgically were retrospectively evaluated. Exclusion criteria for the present study included:

- Subjects with arachnoid cysts
- Subjects with multifocal tumors

A total of 30 adult patients were enrolled. Among these subjects, 18 were males and 12 were females. Follow-up data was recorded for a time period of one year and data was evaluated. All the findings were recorded in separate Performa. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis. SPSS software was used for data assessment. Univariate regression curve and Chi-square test were used for evaluation of level of significance.

RESULTS

In the present study, out of 30 patients, location was Extramedullary in 26.67 percent of the patients while it was intramedullary in 73.33 percent of the patients. (Table 1) Among these cases, nerve sheath tumors were seen in 53.33 percent of the cases while Ependymomas and Meningiomas were seen in 30 percent and 16.67 percent of the patients respectively. (Table 2) There were 80% individuals having LBP, 70% with radicular pain, 43.33% with motor deficit, 16.67% with sensory deficit and 13.33% patients had sphincter involvement. (Table 3) After surgery, improvement was seen in 66.67 percent of the patients. (Table 4)

Table 1: Distribution of cases according to location

Type	Number of patients	Percentage
Extramedullary	8	26.67
Intramedullary	22	73.33
Total	30	100

Table 2: Distribution of cases according to sub-location

Sub-location	Number of patients	Percentage
Nerve sheath tumors	16	53.33
Ependymomas	9	30
Meningiomas	5	16.67
Total	30	100

Table 3: Distribution of patients according to clinical presentations

Clinical presentation	Number of patients	Percentage
LBP	24	80.0
Radicular pain	21	70.0
Motor deficit	13	43.33
Sensory deficit	5	16.67
Sphincter involvement	4	13.33

Table 4: Neurological improvement

Neurological outcome	Number of patients	Percentage
Improvement	20	66.67
No-improvement	10	33.33
Total	30	100

DISCUSSION

Intradural cauda equina and conus medullaris tumors (CECMTs) are rare. Only a few large clinical series exist to date. Therefore, clinical symptoms, surgical complications, and outcomes are poorly understood.[8-10] Hence; the present study was conducted for assessing clinical presentation, Prognosis and outcome after surgical treatment of Intradural conus and cauda equine tumors.

In the present study, out of 30 patients, location was Extramedullary in 26.67 percent of the patients while it was intramedullary in 73.33 percent of the patients. Among these cases, nerve sheath tumors were seen in 53.33 percent of the cases while Ependymomas and Meningiomas were seen in 30 percent and 16.67 percent of the patients respectively. Maria Wostrack et al evaluated all cases of intradural CECMTs treated surgically. Arachnoid cysts and multifocal tumors

were excluded. Sixty-eight adult patients met the inclusion criteria (35 female and 33 male patients; median age 56 years). Follow-up data were available for 72% (n = 49) in a median period of 9 months. Overall, 18 tumors were located intramedullary and 50 extramedullary. The majority were nerve sheath tumors (n = 27), ependymomas (n = 17), and meningiomas (n = 9). The most common preoperative symptom was pain. The rate of new transient postoperative impairment was 18% (n = 12), and new permanent deficits were observed in only 6% (n = 4). Overall neurological improvement was achieved in 62%. The reversibility of preoperative symptoms was related to the interval between the time of symptom onset and the time of surgery and to the presence of preoperative neurological deficits. Surgery of ependymoma and carcinoma metastases was associated with a higher rate of morbidity. Intradural CECMTs present as a group of tumors with varying histological features and clinical symptoms. Symptomatic manifestation is usually unspecific, mimicking degenerative lumbar spine syndromes. Despite a significant risk of transient deterioration, early surgery is advisable because more than 94% of patients maintain at least their preoperative status and more than 60% improve during follow-up.[10]

In the present study, there were 80% individuals having LBP, 70% with radicular pain, 43.33% with motor deficit, 16.67% with sensory deficit and 13.33% patients had sphincter involvement. After surgery, improvement was seen in 66.67 percent of the patients. Herbert H Engelhard et al reported results from a series of 430 patients with primary intraspinal tumors, taken from a larger cohort of 9661 patients with primary tumors of the CNS. Extensive information on individuals diagnosed (in the year 2000) as having a primary CNS neoplasm was prospectively collected in a Patient Care Evaluation Study conducted by the Commission on Cancer of the American College of Surgeons. Data from US hospital cancer registries were submitted directly to the National Cancer Database. Intraspinal tumor cases were identified based on ICD-O-2 topography codes C70.1, C72.0, and C72.1. Patients with primary intraspinal tumors represented 4.5% of the CNS tumor group, and had a mean age of 49.3 years. Pain was the most common presenting symptom, while the most common tumor types were meningioma (24.4%), ependymoma (23.7%), and schwannoma (21.2%). Resection, surgical biopsy, or both were performed in 89.3% of cases. Complications were low, but included neurological worsening (2.2%) and infection (1.6%). Radiation therapy and chemotherapy were administered to 20.3% and 5.6% of patients, respectively.[11]

CONCLUSION

From the above results, the authors concluded that intradural CECMTs present as a group of tumors with varying histological features and clinical symptoms. Early surgery is advisable as more than two-third of the patients show improvement on follow-up.

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