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Original Research Article.

Assessment of Profile of 150 Patients with Spinal Cord Tumour: An Institutional Based Study

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ABSTRACT

Background: Primary spinal cord tumors represent 2-4% of all neoplasms of the CNS. Early recognition of the signs and symptoms of primary spinal cord tumors allows for early treatment, potentially minimizes neurologic morbidity and improves outcome. Hence; we planned the present study to assess the profile of patients with spinal cord tumour.

Materials & Methods: The present study included assessment of patients presenting with spinal cord tumour. Clinical, histological and imaging data of 150 cases of spinal cord tumour surgically treated at Department of Neurosurgery, N. H. L. Municipal Medical College, Ahmedabad, Gujarat (India) over a period of 2005 to 2015 were collected and analyzed. Patients were classified on basis of age, sex, duration of symptoms and neurological status before surgery. Tumours were categorized according to histology and neuroanatomical location. Follow up at 1 month, and 6 month to see surgical outcome in relation to histological grade, site and pre op neurological deficit. All the results were compiled and analyzed by SPSS software.

Results: 75% of schwannomas were IDEM and others were extradural and 3 cases of dumbbell shwannomas with intrathoracic extension. All meningiomas were IDEM, Astrocytomas and ependymomas were intramedullary. Metastasis was found extradurally and was adenocarcinoma, follicular carcinoma of thyroid and renal cell carcinoma on histopathology. All cases of L1 and above level tumor were given 1 gram methylprednisolone intraoperatively at time of induction and in case of intramedullary tumors it was given as per spinal injury regimen. Radiotherapy was given in malignant lesions.

Conclusion: The most important predictive factor for the outcome is the duration of symptoms before surgery. This time factor is important because it partly allows predicting the functional results after surgery.

Key words: Neurological, Spinal Cord, Tumour.

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INTRODUCTION

Primary spinal cord tumors represent 2-4% of all neoplasms of the CNS. Primary spinal cord tumors are anatomically separable into two broad categories: intradural intramedullary and intradural extramedullary. Intramedullary tumors are comprised predominantly of gliomas (infiltrative astrocytomas and ependymomas). Resective surgery can usually be accomplished with spinal ependymomas owing to separation of tumor from spinal cord and, when complete, require no further therapy.[1-4]

Intramedullary spinal cord tumors (IMSCTs) are the rarest of these neoplasms and can potentially lead to severe neurologic deterioration, decreased function, poor quality of life, or death. Within the IMSCT category, the most common lesions are ependymomas, astrocytomas, and hemangioblastomas, followed by other rare lesions.[5,6] Early recognition of the signs and symptoms of primary spinal cord tumors allows for early treatment, potentially minimizes neurologic morbidity and improves outcome.[7]

Hence; we planned the present study to assess the profile of patients with spinal cord tumour.

MATERIALS & METHODS

The present study was conducted in the Department of Neurosurgery, N. H. L. Municipal Medical College, Ahmedabad, Gujarat (India) and it included assessment of patients presenting with spinal cord tumour. Clinical, histological and imaging data of 150 cases of spinal cord tumour surgically treated at our institute

over a period of 2005 to 2015 were collected and analyzed. Patients were classified on basis of age, sex, duration of symptoms and neurological status before surgery. Tumours were categorized according to histology and neuroanatomical location. Recording of the neurological status on admission, 1 month after surgery and 6 month after surgery was done. Main parameters were pain, sensory, motor deficits and sphincter involvement. MRI was done in all patients to define size, margin and location of tumour. Marking radiograph was done for dorso-lumber tumors. Histopathological evaluation was done for all cases. Most cases were operated by posterior laminectomy in prone position, some cases of schwannoma with intrathoracic extension treated with lateral thoracotomy approach. Ultrasonic aspirator (CUSA) and Microscope were used whenever needed. Surgical outcome and data analysis: it was established by comparing symptoms before and after surgery and assessing symptoms improved, unchanged, worsened or any new deficits occurred. Follow up at 1 month, and 6 month to see surgical outcome in relation to histological grade, site and pre op neurological deficit. All the results were compiled and analyzed by SPSS software.

RESULTS

In the present study, schwannoma was the most common tumour encountered found to be present in 36 percent of the total cases. Other cases included meningioma, ependymoma, metastasis, Lipoma and hemangioblastoma. In this study all cases were diagnosed clinically, radiologically and confirmed histopathologically after surgery. In the present study youngest case was of 3 yrs and oldest case was of 68 years, average age of presentation was 36.5 years and 84% of tumors were at cervico-dorsal level and 16% was at lumbar level. In the present series 75% of schwannomas were IDEM and others were extradural and 3 cases of dumbbell schwannomas with intrathoracic extension. All meningiomas were IDEM, Astrocytomas and ependymomas were intramedullary. Metastasis was found extradurally and was adenocarcinoma, follicular carcinoma of thyroid and renal cell carcinoma on histopathology. Six of seven cases were treated by chemo-radiotherapy after surgery. Five cases of lipoma operated, one case has both intra and extradural components.

One case of malignant melanoma was operated, has skin stigmata and spreading upto intramedullary compartment. Duration of sign symptoms varied from 15 days to 4 years and mean presentation period was 1.2 years. Pain was found in 90%, motor deficits in 86%, sensory deficits in 74.6% and sphincter involvement in 18% of the patients.

Table 1: Incidence of different tumour

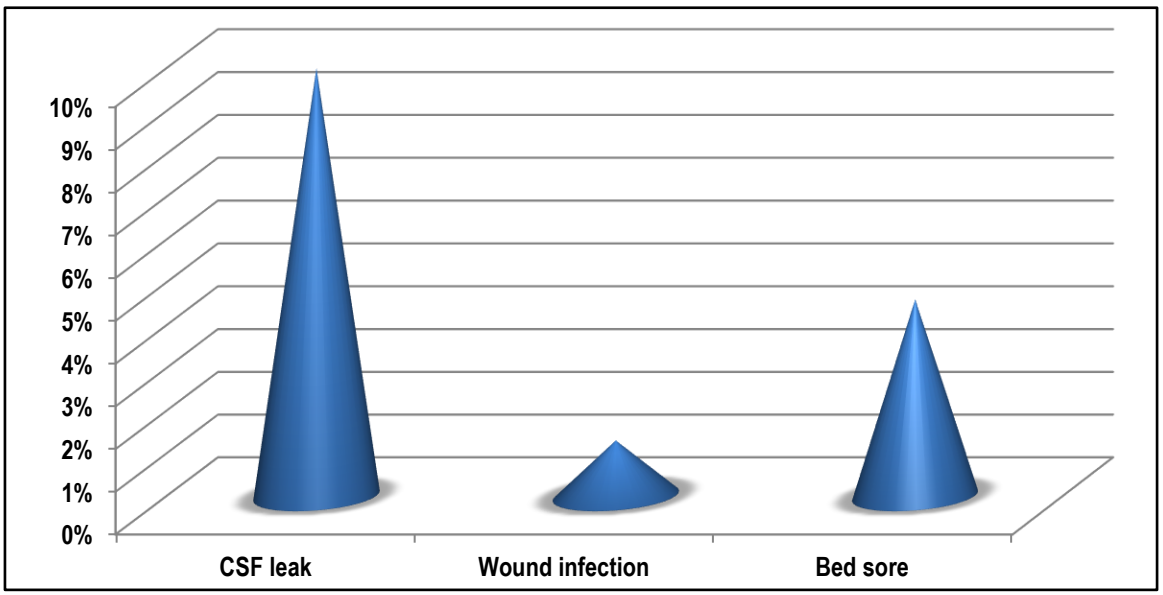
Diagnosis	n	%
Schwannoma/neurofibroma	54	36%
Meningioma	31	20%
Astrocytoma	22	14%
Ependymoma	16	10%
Metastasis	7	04%
Lipoma	5	03%
Hemangioblastoma	3	02%
Epidermoid cyst	2	01%
Tubercular lesion	2	01%
Malignant melanoma	1	0.06%
Plasmacytoma	1	0.06%
Paraganglioma	1	0.06%
Necrotic material	1	0.06%
Dermoid cyst	1	0.06%
Neuroentric cyst	1	0.06%
Malignant spindle cell carcinoma	1	0.06%
Ewing sarcoma	1	0.06%

Table 2: Type of complications in the present study

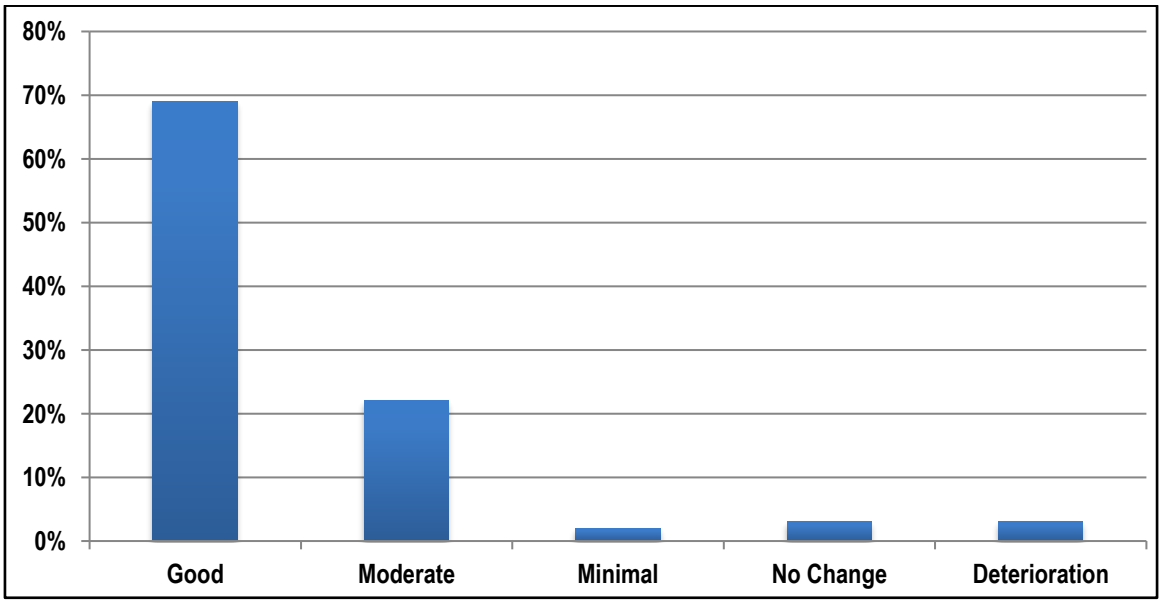
Type of complication	Percentage
CSF leak	10%
Wound infection	1.3%
Bed sore	4.6%

Table 3: Recovery profile of patients

Type of recovery	Percentage
Good	69%(104)
Moderate	22%(33)
Minimal	02%(3)
No Change	03%(5)
Deterioration	03%(5)



Graph 1: Type of complications in the present study



Graph 2: Recovery profile of patients

All cases were operated. CUSA and Microscope used as needed. All cases of L1 and above level tumor were given 1 gram methylprednisolone intraoperatively at time of induction and in case of intramedullary tumors it was given as per spinal injury regimen. Radiotherapy was given in malignant lesions. Postoperative physiotherapy was given to all patients and continued after discharge. Patients were observed after surgery and in followup after 1 month and 6 month for pain, sensory-motor deficits and sphincter control.

DISCUSSION

Schwannoma was the most common tumour encountered found to be present in 36 percent of the total cases. Other cases included meningioma, ependymoma, metastatsis, Lipoma and hemangioblastoma. Bhat AR et al established a hospital-based regional epidemiology of spinal tumors in the Valley since the data are derived from a single institution. The hospital-based incidence for all spinal tumors was 0.24/100,000 persons per year. The malignant spinal cord and vertebral tumors comprised 32.58% (173/531) of all tumors, and benign spinal cord and vertebral tumors comprised 67.42% (358/531). The extradural-intradural tumors such as metastatic lesions and primary malignant vertebral tumors were on rise with 16.38% (87/531) cases. The children below 18 years were 5.46% (29/531), of which 55.17% (16/29) were below 9 years. The most common primary bone malignancy was multiple myeloma (54.54% =12/22). Histopathologically, the most common metastatic deposit in the spinal canal was non-Hodgkin's lymphoma (24.61% =16/65). A mortality of 3.20% (17/531) was noted. Recurrences were noted in 4.90% (26/531), and adjuvant therapies were given to 16.38% (87/531) patients. The malignant spinal cord and vertebral tumors, especially metastatic deposits, are on rise in elderly population. The surgical outcome, in terms of recovery and spinal stability, of benign tumors, is comparatively better than malignant ones. The study revealed a low regional incidence (hospital-based) of spinal tumors.[8]

In this study all cases were diagnosed clinically, radiologically and confirmed histopathologically after surgery. In the present study youngest case was of 3 yrs and oldest case was of 68 years, average age of presentation was 36.5 years and 84% of tumors was at cervico-dorsal level and 16% was at lumbar level. In the present series 75% of schwannomas were IDEM and others were extradural and 3 cases of dumbbell shwannomas with intrathoracic extension. All meningiomas were IDEM, Astrocytomas and ependymomas were intramedullary. Metastasis was found extradurally and was adenocarcinoma, follicular carcinoma of thyroid and renal cell carcinoma on histopathology. Six of seven cases were treated by chemo-radiotherapy after surgery. Five cases of lipoma operated, one case has both intra and extradural components. One case of malignant melanoma was operated, has skin stigmata and spreading upto intramedullary compartment. Duration of sign symptoms varied from 15 days to 4 years and mean presentation period was 1.2 years. Pain was found in 90%, motor deficits in 86%, sensory deficits in 74.6% and sphincter involvement in 18% of the patients. Arora RK et al retrospectively analyzed 111 patients with spinal tumors operated over a period of 9 years to observe the relative frequency of different lesions, their clinical profile, functional outcome and prognostic factors. 30/111 (27%) were extradural, 40/111 (36.1%) were intradural extramedullary (IDEM) and 41/111 (36.9%) were intramedullary spinal cord tumors (IMSCTs). Mean age at surgery was 30.81 years (range 1–73 years). The average preoperative duration of symptoms was 16.17 months (15 days to 15 years). Major diagnoses were ependymomas and astrocytomas in IMSCT group, schwanommas and neurofibromas in IDEM group, and metastasis, lymphoma in extradural group. The common clinical features were motor weakness in 78/111 (70.27%), sensory loss in 55/111 (49.54%), pain 46/111 (41.44%), and sphincter involvement in 47/111 (42.43%) cases. Totally, 88/111 (79.27%) patients had improvement in their functional status, 17/111 (15.31%) remained same, and 6/111 (5.4%) were worse at time of their last follow-up. The mean follow-up was 15.64 months (1.5 m−10 years). Totally, 59 out of 79 patients, who were dependent initially, were ambulatory with or without the aid. Most common complication was persistent pain in 10/111 (9%) patients and nonimprovement of bladder/bowel symptoms in 7/111 (6.3%). One patient died 3 months after surgery. Congenital malformative tumors like epidermoids/dermoids (unrelated to

spina bifida) occur more frequently, whereas the incidence of spinal meningioma is less in developing countries than western populations.[9]

CONCLUSION

From the above results, the authors conclude that the most important predictive factor for the outcome is the duration of symptoms before surgery. This time factor is important because it partly allows predicting the functional results after surgery. By this, risk of surgery and the potential benefits can be weighed against each other. Moreover, it is the only predictive factor that can be influenced by early diagnosis and therapy. Determination of the resectability of an intramedullary tumour is best made by direct intraoperative inspection of the tumour- spinal cord interface.

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