To Analyze Outcome of Spinal Intradural Extramedullary Tumors. Experience of Lady Reading Hospital Department of Neurosurgery B unit

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ABSTRACT

Background: Spinal tumors classification is extradural, intradural extramedullary (IDEM), or intradural intramedullary. IDEM tumors are rare, occurring in 5 to 10 per million people.

Objective: To analyze outcome of spinal intradural extramedullary tumors.

Material & Methods: This is retrospective descriptive study. This study was conducted in the department of neurosurgery unit B, MTI, LRH from 1st July 2013 to 30th December 2016. All spinal IDEM tumors were included. Metastasis, carries spine, intramedullary tumors were excluded. Patient history and clinical examination findings were noted from hospital record. All patient preoperative and postoperative MRI spine record collected. Biopsies were done in all cases. Post-operative complications and functional outcome were noted from patient record and follow-up. All data were analyzed with SPSS version 20 and presented in tables and charts.

Results: Total numbers of cases were 17, Male 11(64.71%) and female 6(35.29%), age ranges from 18 to 61 year mean 41 ±13 years. Schwannomas was found in 10 (58.83%) cases, meningioma in 6 (35.29%) cases and myxopapillary ependymoma of filum terminale in 1 (5.88%) case. Cervical tumors were 5(29.41%), thoracic 8(47.06%) and lumbo-sacral spine in 4(23.53%) cases. Posterior approach was done in all cases. Nurick's grade improvement was noted in all cases from 3.0 ± 1.3 to 2.0 ± 0.0 ($p = 0.005$).

Conclusions: The commonest symptom was localized pain at the site of lesion. Thoracic spine was commonest site. Shwannoma is commonest patholgy. Early diagnosis, small size of the tumor and early surgery has better functional outcome.

Keywords: Intradural extra medullary tumor, Nurick grade, Shwannoma, MRI spine

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INTRODUCTION

Spinal tumors classification is extradural, intradural extramedullary (IDEM), or intradural intramedullary. IDEM tumors are rare, occurring in 5 to 10 per million people. Schwannomas and meningiomas are most common IDEM tumors, together accounting for 45% of all spinal neoplasms[1]. Sir Victor Horsley in 1887 did first attempt at surgical excision of thoracic spine tumor. IDEM tumors are histologically benign and occur at different levels of spinal cord that are cervical, thoraxic and lumbosacral parts. These tumors present with localized pain at the site of lesion, radicular or nocturnal pain and progressive sensory, motor deficits. Some cases present with sphincteric dysfunction[2] depends upon the involvement of the level of spinal cord. Motor deficits are monoparesis, hemiparesis, paraparesis and tetraparesis or plegia depends upon the extent of cord compression.

The diagnosis of these lesions made easy by the typical symptoms and signs and recent advances in neuroradiology. The 3D CT and MRI scans and others have significant role in early diagnosis.

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The outcome of the benign lesions are good depends upon early diagnosis and safe total removal.

Tha anaplastic lesions have relatively bad outcome in terms of functions especially those lesions which have extensions to the surrounding structures. They may needs multi discipline approach and combined therapy . The recovery of sphincteric dysfunctions have bad recovery and difficult to manage[16]. In some cases the management of intractable pain is agonizing which is also called cancer pain. The role of physiotherapy and prevention of bed sores are very important in these cases.

MATERIALAND METHODS

Among patients who had been surgically treated for IDEM tumors between 1st July 2013 and 30th June 2016(3 years), patients who were available for follow up MRI spine, at least 6 month postoperative were included in this retrospective study. Each patient history, physical examination findings, radiological studies record, surgical procedure and post operative base line neurological record was collected from hospital record. Follow up were performed in an outpatient setting. Total 17 patients was available for study, (male: female ratio of 11: 6), Mean age was 41 years (range 18 to 61 years).one patient had multiple tumors. For assessment of preoperative neurological function Nurick's grading system (Table 1) was used in our unit and we followed patient postoperative with same grading system[10].

Evaluation of postoperative functional recovery was based on history and physical examinations. Location of tumor on sagittal and axial MRI images were noted to determine the statistical significance with the preoperative symptoms and final surgical outcome. Diagnosis of recurrence was based on MRI scans performed at last follow-up (6 months)[17]. SPSS version 20 was used for statistical analysis and data were presented in charts and tables.

RESULTS

Mean duration of symptoms was from 1 to 15 months at an average of 6 months. Pain (localized, radicular or nocturnal) and numbness was present in 16 cases 94.13%. Motor weakness was in 12 patients (70.59%). Symptoms improved postoperatively in 15 cases (88.24%). Average Nurick's grade improvement noted was 3.0 ± 1.3 (range, 1 to 5) preoperatively to 2.0 at last follow-up (Table 2).

Preoperative symptoms and Nurick's grading system were highly associated with the percentage of the tumor occupying intradural space. MRI whole spine was performed in all patients .Cervical tumors were 5(29.41%), thoracic 8(47.06%) and lumbo-sacral spine were 4 (23.53%) cases. 13(76.48%) tumors were dorsal and 4 (23.53%) were ventrolateral to spinal cord. Posterior approach (standard laminectomy or laminoplasty) were performed in all cases.In 1 case subtotal resection was done because of multiple root involvement. Cerebrospinal fluid leak occurred in 1(5.88%) patient. Wound infection in 2 cases (11.76%) .

Biopsy results were schwannoma 10 cases (58.83%), meningioma 6 cases (35.29%) and 1 case of myxopappillary ependymoma of filum terminale (5.8%). In 1 of case there were multiple schwannomas (5.88%). Meningioma was present in thoracic region in 4(66.66%) cases. Residual tumor was in 1 case. One case each of cerebrospinal leak and infection occurred.

DISCUSSION

Intradural extramedullary tumors are rare with a prevalence of about 8 cases per 1 million people every year with male and female ratio of 1:3. Before MRI era, spinal cord tumors were often misdiagnosed as multiple sclerosis, syringomyelia or herniated disc. MRI images with contrast for whole spine with thin axial cuts should be routine in spinal tumor[6, 9]. Neurosurgical results improved with latest neuroimaging which helped in early diagnosis. Use of high resolution HD surgical microscopes has changed result in favor of patient. Schwannoma and meningioma outnumbered all other tumors. Neurology improves postoperatively in all caeses.

In our study, localized pain, sensory, motor and sphincteric dysfunction were present in different combinations and severity, which is also mentioned in literature by Bhatti et al[7]. Table 2.

Table 1 Nuricks Grading

Grade	Description
1	Normal gait, possible clinical spinal irritation
2	Slight difficulty in walking with normal domestic and working life
3	Functional disability limiting normal work and domestic activities
4	Significant weakness needs assistance
5	Bedridden or Wheelchair bound

Table 2 preop and post op Nurick grade

		POST OP			
COUNT		GRADE 1	GRADE 2	GRADE 3	TOTAL
preop	grade 3	1	4	1	6
	grade 4	0	8	2	10
	grade 5	0	0	1	1
Total		1	12	4	17

(Pain 1,sensory deficit 2, motor weakness 3, sphincteric loss 4)

Posterior approach was used in all cases[2, 13, 14] and literature suggest the same as by Bokhari et al[3]. Gross Total Resection (GTR) was noted in all cases (100%) of schwannomas. Myxopapillary ependymona having multiple roots adherent to it was excised partially which is same result as that by Mehta et al[6]. Nurick's grade improvement noted to 2 in 13 cases (76.48%) n-17 until last follow-up. According to the literature, 31% of the tumors are located ventral to spinal cord and Slin'ko and Al-Qashqish claimed that an extreme lateral or an anterior approach was necessary for the removal of these tumors[15]. However, extreme lateral approaches require spinal fusion and anterior approaches are difficult to use due to epidural venous bleeding, limited field of view, require removal of several vertebral bodies, difficulty of dural closure and fusion.

In 16 cases (94.13%) GTR was done and subtotal resection in 1. Neurology improved postoperatively especially pain, motor and sensory deficits. Longer duration of symptoms and neurological deficit were bad prognostic factors. Preoperative symptoms and motor weakness as measured by Nurick's grading system were significantly related the extent of tumor occupying intradural compartment[15]. Nurick grade was high in tumors of thoracic spine. Nurick's grade improved to 2 postoperatively for all cases regardless of prognostic factors except 1 case. Neurologic deficits recover due to slow progressive compression[8].Cerebrosinal fluid leak occurred in 1 case and was managed with reinforcing sutures and conservative measures. Wound infection in 2 cases was managed with daily dressing and antibiotics.

According to Parsa et al. postoperative recurrence rate of IDEM tumors is 16%[13]. According to Asazuma et al. the recurrence rate of intraspinal neoplasms was 7.2% and 46% of recurrent masses are IDEM tumors[11]. We observed no recurrence (follow-up 6 months). Our obtained recurrence is not reliable due to small data, short follow up and highly selected cases.

According to Shin et al Clinical symptoms of tumor are similar to degenerative disease of spine[12]. Detailed history, physical examination and performing MRI scan of spine are recommended in patients with back pain suggestive of spinal tumor. Early surgery is important for good outcome and better functional recovery[17].

CONCLUSION

The commonest symptom was localized pain at the site of lesion. Thoracic spine was commonest site. Shwannoma is commonest patholgy. Early diagnosis, small size of the tumor and early surgery has better functional outcome.

REFERENCES

1. Bradley J. Carra, Paul M. Sherman, Intradural Spinal Neoplasms: A Case Based Review. J Am Osteopath Coll Radiol 2013; Vol. 2(3):13-21.
2. Bokhari I, Rehman I, Farooq G, Qureshi A. Postoperative Functional Outcome of Intradural Extramedullary Spinal Tumors through Posterior Approach. JCPSP. 2016, Vol. 26 (2): 117-120.
3. Iacob G: Spinal meningiomas. Personal experience and review of literature. Romanian Neurosurgery 21:146160, 2014.
4. Spinal meningiomas: clinicoradiological factors predicting recurrence and functional outcome Tanmoy K. Maiti, Shyamal C, Devi P.Patra, et.al Neurosurg Focus Volume 41 August 2016.
5. Arima H, Takami T, Yamagata T, Naito K, Abe J, Shimokawa N, et al: Surgical management of spinal meningiomas: A retrospective case analysis based on preoperative surgical grade. Surg Neurol Int 5 (Suppl 7):S333S338, 2014.
6. Zong S, Zeng G, Du L, Fang Y, Gao T, et al. (2014) Treatment Results in the Different Surgery of Intradural Extramedullary Tumor of 122 Cases. PLoS ONE 9(11): e111495. doi:10.1371/journal.pone.0111495.
7. Mehta AI, Adogwa O, Karikari IO, Thompson P, Verla T, Null UT et al. Anatomical location dictating major surgical complications for intradural extramedullary spinal tumors: a 10-year single-institutional experience. JNS 2013; 19; 701-7.
8. Bhatti SN, Khan SA, Raja RA, Shah R, Aurangzeb A, Khan AA et al. Outcome of intramedullary spinal cord tumors: experience with 18 patients operated at Ayub Teaching Hospital, Abbottabad. J Ayub Med Coll Abbottabad 2010; 22:15-7.
9. Duong LM, McCarthy BJ, McLendon RE, Dolecek TA, Kruchko C, Douglas LL, et al. Descriptive epidemiology of malignant and nonmalignant primary spinal cord, spinal meninges, and cauda equina tumors, United States, 20042007. Cancer 2012; 118:42207.
10. Liu WC, Choi G, Lee SH, et al. Radiological findings of spinal schwannomas and meningiomas: focus on discrimination of two disease entities. J Eur Radiol. 2009; 19(11): 2707-15.
11. Abul-Kasim K, Thurnher MM, McKeever P, et al. Intradural spinal tumors: current classification and MRI features. Neuroradiology 2008; 50: 310-314.
12. Asazuma T, Toyama Y, Watanabe M, Suzuki N, Fujimura Y, Hirabayashi K. Clinical features associated with recurrence of tumours of the spinal cord and cauda equina. Spinal Cord. 2003; 41 (2):85-9.
13. Shin BJ, Lee JC, Yoon TK, et al. Surgical treatments of intradural extramedullary tumor. J Korean Soc Spine Surg.2002; 9 (3):230-7.
14. Parsa AT, Lee J, Parney IF, et al. Spinal cord and intradural-extraparenchymal spinal tumors: current best care practices and strategies. Journal of Neuro-Oncology. 2004; 69: 291-318.
15. Albanese V, Platania N: Spinal intradural extramedullary tumors.Personal experience. J Neurosurg Sci 46:1824, 2002.
16. Slin'ko EI, Al-Qashqish II: Intradural ventral and ventrolateral tumors of the spinal cord: surgical treatment and results. Neurosurg Focus 17(1):ECP2, 2004.