

**TYPES AND OUTCOMES OF SPINAL CORD TUMORS :  
A STUDY OF 30 CASES ATTENDING THE  
DEPARTMENT OF NEUROSURGERY IN CHITTAGONG  
MEDICAL COLLEGE HOSPITAL, CHITTAGONG**

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**Abstract**

This was a descriptive, cross sectional study carried out in the Department of Neurosurgery, Chittagong Medical College, Chittagong during the period from April 2006 to July 2007 to evaluate types and outcome of spinal cord tumor. Following admission, 30 patients were selected and data were collected by structured questionnaire.

History, clinical examination, laboratory investigation like FNAC and special investigation of MRI of spinal cord with contrast has taken to diagnose spinal tumor.

Patients were treated by surgery, surgery and radiotherapy and also with other options like physiotherapy. Highest age incidence of patients were 41-60 years. Male predominated then that of female. Among the clinical feature, most common presentation were paraparesis 15 (50%). Most of tumors were extradural 15(50%) and located at the dorsal region, incidence was 10(33.3%). Metastasis was found in 10(33.3%). Study revealed surgery is the best option in case of spinal cord tumors. In malignant tumors, options of treatments are according to site, progress, type and clinical conditions of patients.

**Key words:** extradural; intradural; extramedullary; intramedullary; metastasis.

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**Introduction**

Metastatic tumors of spinal cord occur in 5% of all cancer patients and accounts for 50% of adult acute myelopathies<sup>1</sup>.

Victor Horsley in 1887 was the first to successfully remove a spinal cord tumor<sup>2</sup> diagnosed by William Gowers<sup>3</sup>. In 1883 McEwen of Glasgow removed an epidural neoplasm in a boy aged nine, the first such operation in a child<sup>4</sup>. Elsberg<sup>5</sup> starting from 1911 published a number of monographs of spinal tumors, the last one in 1940<sup>6</sup>.

15% of primary CNS tumors are intraspinal<sup>7</sup>. Most primary CNS spinal tumors are benign and presented by compression rather than invasion.

According to site and origin spinal tumors are classified in three groups. Although metastases may be found in each category they are usually extradural. Extradural lesions are less common in neurosurgical clinics because of relative exclusion of extradural lymphomas, metastatic carcinoma, etc:

1. Extradural (ED) (55%) : arise outside cord in vertebral bodies or epidural tissues
2. Intradural extramedullary (ID-EM) (40%) : arise from leptomeninges or roots. Primarily these are meningiomas and neurofibromas (together=55%) of (ID- EM tumors)
3. Intramedullary spinal cord tumors (IMSCT) (5%): arise in spinal cord substance. They invade and destroy tracts and grey matter.

**A. Metastatic spinal tumors**

Comprise the majority of ED tumors. They cause bony destruction.

**B. Primary spinal tumors**

The symptoms and signs of spinal tumors include, that is produced by i) the involvement of the nerve roots (posterior and anterior) ii) the cord segments and iii) the long tracts, e.g the motor, sensory, autonomic and other tracts. Some signs pertaining to the spinal column may also become apparent<sup>8</sup>.

### Material and methods

This was a descriptive cross sectional study carried out during a period from April 2006 to July 2007, in the Department of Neurosurgery, Chittagong Medical College Hospital, Chittagong.

A structured questionnaire was made. Data were collected after admission of patient and proper history and clinical examination was done. MRI of spine & spinal cord with contrast revealed spinal tumor. They were operated and close follow up were done. Laminectomy and excision of tumors were done partially or completely and were sent for physiotherapy in the Department of Physical Medicine and Rehabilitation, Chittagong Medical College Hospital, Chittagong. Patients with malignant tumors were sent for oncological consultation.

Improvement of muscle power was assessed by comparing of muscle weakness before and after surgery.

### Results

**Table I :** Distribution of patients by age (N=30)

Age (years)	Number of patients	Percentages (%)
< 20	03	10.00
20-39	06	20.00
40-59	13	43.30
> 60	08	26.60
Total	30	100.00

**Table II :** Distribution of patients by sex (N=30)

Sex	Number of patients	Percentages (%)
Male	18	60.00
Female	12	40.00
Total	30	100.00

**Table III :** Distributions of the patients by weakness of upper and lower limbs.

Types of limb weakness	Number of patients	Percentage (%)
Quadriplegia	03	10.00
Quadriparesis	03	10.00
Others	01	3.33
Total	07	23.33

**Table IV :** Distributions of the patients by weakness of lower limbs.

Lower limb Weakness	Number of patients	Percentage (%)
Para paresis	15	50.00
Paraplegic	12	40.00
Others	03	10.00

**Table V :** Distribution of the patients by site of lesions.

Site	Number of patients	Percentage (%)
Cervical	04	13.33
Dorsal	10	33.33
Dorsolumbar	06	20.00
Lumbar	09	30.00
Sacral	03	10.00
Others	02	6.00
Total	30	100.00

**Table VI :** Distribution of patients by dural involvement.

According to involvement	Number of patients	Percentage (%)
Extradural	15	50.00
Intradural		
Extramedullary	11	36.6
Intramedullary	02	6.6
Others	02	6.6
Total	30	100.00

**Table VII :** Distribution of the patients by the histopathological types of tumors.

Histopathological types of Tumors	Number of patients	Percentage (%)
Metastasis	10	33.30
Primary spinal tumour	03	10.00
Schwannoma	07	23.33
Meningioma	06	20.00
Astrocytoma	03	10.00
Ependymoma	03	10.00
Others	02	6.66
Total	30	100.00

**Table VIII :** Distribution of patient by options of treatments (N=30).

Option of treatment	Number of patients	Percentage (%)
Only Surgery	16	53.33
Surgery + Radiotherapy	12	40.00
Radiotherapy	01	3.33
Others	01	3.33
Total	30	100.00

**Table IX :** Distribution of the patients by outcome after treatment (N=30).

Outcome	Number of patients	Percentage (%)
Improved	21	70.00
Same as before	07	23.33
Detriorate	02	6.6
Total	30	100.00

**Table X :** Grading of muscle power before and improvement after surgery (N=30).

Grading	Description	Number of patient		Percentage(%)
		Before surgery	Improvement after surgery	
Mild	Walk with difficulty	04	04	100.00
Moderate	Able to move legs but not against gravity	10	09	90.00
Severe	Slight residual motor and sensory loss	10	08	80.00
Complete	Complete motor sensory loss	06	00	00.00
Total		30	21	70.00

**Discussions**

This was a prospective study, which was carried out at the Department of Neurosurgery, Chittagong Medical College Hospital during a period of 16 months from April 2006 to July 2007. This study was done to elucidate the type, site and outcome of spinal cord tumor. A structured questionnaire was made. Data were collected after patient's admission. Different modalities of treatments were given and close follow up were done.

Age incidence of astrocytoma were 3<sup>rd</sup> to 5<sup>th</sup> decade in previous study<sup>9</sup>.

In our study among the spinal tumor highest age groups were 41-61 years (43.3%). Mean age was 47+ 18.25 years. In previous study ratio of male & female were 1.5:110. This study showed male & female ratio 18:12. Males were in predominate groups 18 (60%). Highest incidence was day labourers (26.6%).

Most of the patients had been suffering from paraparesis 15(50%). Others suffered from paraplegia, quadriparesis, quadriparesis & autonomic involvement. Site of lesions were dorsal 10 (33.3%), cervical 4 (13.3%), dorsolumbar 06 (20%), lumbar 9(30%) etc. In case of previous study the most common site of metastasis was dorsal spine (50-60%)<sup>11</sup>. Most of the patients were extradural 15 (50%) in our study. Previous study mentioned that 55% tumors were extradural<sup>12</sup>.

Histological types of lesions metastasis were more prominent 10 (13.3%). Other groups were

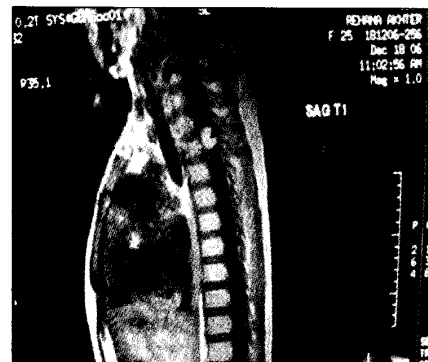
schwannoma 5(16.6%), meningoma 4(13.3%), astrocytoma 3(10.00%) and others groups. Among the thirty patients 21(70%) were improved after treatment. 53.33% of patients were treated by surgery, 40.00% were treated by surgery and radiotherapy and was the main option of treatment.

After surgical treatment patients were send for physiotherapy and close follow up were done.

Previous study shows, surgery only was the options of treatment of about 36% of patients. Surgery and radiotherapy was main options in 76% of patients<sup>13</sup>.

**Conclusion**

This study concluded that surgery and surgery +radiotherapy is revealed as main options of treatment. Maximum of patients were improved their quality of lives with comprehensive, multidisciplinary management.



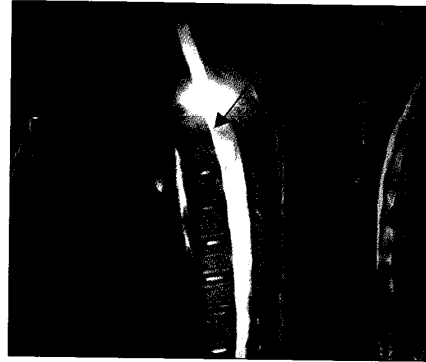
**Fig 1 :** Dorsal schwannoma at D<sub>3</sub> level.



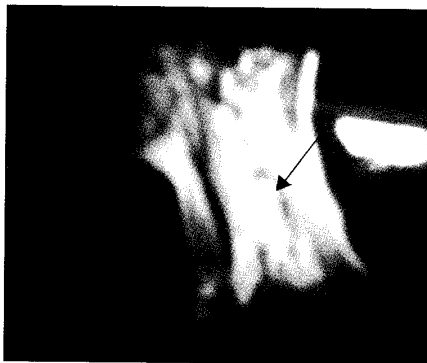
**Fig 2 :** Dorsal meningioma at D<sub>9</sub> level.



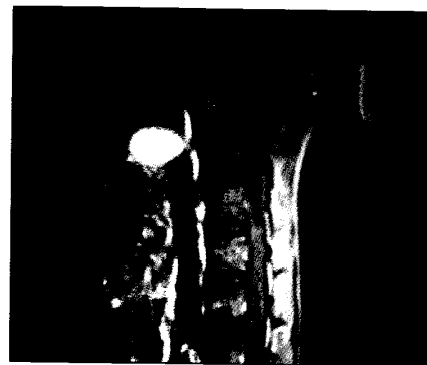
**Fig 3 :** Lumbar metastasis from follicular thyroid carcinoma causing osteolytic lesion at lumbar spine.



**Fig 6 :** Ependymoma at D<sub>5</sub> level



**Fig 4 :** Cervical neurofibroma.



**Fig 7 :** Astrocytoma dorsal region



**Fig 5 :** Sacral chordoma.

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