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Original Article

Clinical Presentation and Aetiology of Myelopathy

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Abstract

Introduction: Diseases of the spinal cord are called myelopathy. They are frequently devastating. They produce quadriplegia or paraplegia with sensory deficits far beyond the site of damage. Many spinal cord diseases are reversible if recognized and treated at an early stage.

Objectives: The aim of this study was to evaluate clinical presentation and aetiology of myelopathy among the patients attending Rajshahi Medical College Hospital with the help of history, clinical examination and investigations.

Methodology: This was a cross-sectional type of descriptive study. A total 44 myelopathic patients were evaluated between January 2009 to December 2009.

Result: Out of 44 patients, 33 (75%) were male and 11 (25%) were female (ratio 3:1), mean aged 35 ± 13.9 years (range 13-65 years). Among them 24 (54.5%) patients had paraparesis and 20 (45.5%) patients had quadriparesis. It was observed that majority 33 (75%) of them had compressive type and 11 (25%) patients had non-compressive type of involvement. Out of 33 compressive myelopathy, the commonest cause was cervical spondylotic myelopathy 14 (42.4%) in number. 2nd cause was Pott's disease 8 (24.2%) in number. Syringomyelia was detected in 5 (11.4%) patients, disc herniation was in 2 (6.1%) patients, schwannoma was in 2 (6.1%) patients, lipoma was in 1 (3%) patient and 1 (3%) patient was metastasis to the vertebra. Out of 11 non-compressive myelopathy, acute transverse myelitis was detected in 9 (81.8%) patients and familial spastic paraplegia in 2 (18.2%) patients.

Conclusion: All patients with myelopathy should be investigated for potentially treatable causes.

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Introduction

The spinal cord is a compact structure in which all the ascending and descending tracts are concentrated within an area having a diameter of 17 to 18 mm. Any disease affecting the cord will therefore affect all or most of the structures within this small area. The ascending tracts carry information from outside and inside the body to the brain while the descending tracts facilitate the activities of the lower motor neuron by carrying information from the brain. The important ascending tracts are the anterior and lateral

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spinothalamic tracts, the posterior columns, the spinocerebellar and the spino tectal, reticular and olivary tracts. The important descending tracts are the major corticospinal tracts, and the reticulo, tecto, rubro, vestibulo, and olivospinal tracts and some descending autonomic fibres.

Myelopathy is thus a catastrophic condition which affects all aspects of the normal functioning of the human body. Motor, sensory and autonomic functions are all affected to a variable degree in diseases of the spinal cord. So the sine qua non of a myelopathic disease is: motor weakness, sensory impairment, with a definite anatomical level, and loss of sphincteric function. Common case of myelopathy in developing countries where TB is prevalent endemically is spinal tuberculosis, caused by spinal cord compression due to abscess, granulomatous tissue or bony displacement.[1] Tuberculosis remains an important problem in underdeveloped countries. In developed countries, there was an increase of the disease due to several factors, especially the appearance of AIDS.[2] TB of the spine is an ancient disease. In 1782, Sir Percival Pott described spinal TB and surgical treatment of paravertebral abscess. Spinal TB accounts for 50% of the cases of skeletal TB, 15% of the cases of extrapulmonary TB and 2% of all cases of TB[3]. Most cases of spinal TB in developed countries are seen primarily in immigrants from Africa and Southeast Asia.[4] Weight loss has been recorded in 58% of patients and 90% to 100% of patient had back pain.[3] Cervical spondylotic myelopathy (CSM) is the most common spinal cord disorder in persons more than 55 years of age in North America and perhaps in the World. Spondylosis refers to the degenerative changes that occur in the spine, including degeneration of the joints, intervertebral discs, ligaments and connective tissue of the cervical vertebrae.[5] Acute transverse myelitis is an acute or subacute disorder of spinal cord resulting in motor, sensory and sphincter dysfunction secondary to various causes.[6] MRI findings are helpful in detecting transverse myelitis and differentiating this entity from multiple sclerosis and cord tumors, but clinical assessment and observation of MRI changes over time are essential in making the diagnosis.[7]

Materials and Methods

This was a cross sectional type of descriptive study and study period was January 2009 to December 2009. Identification of participant was done by asking duty doctor or nurse in the ward and outdoor. The selection of the patients participants indicated that a non random sampling technique was applied. But the researcher selected each study participant on the basis of predetermined inclusion and exclusion criteria. Inclusion criteria were (1) age > 12 yrs (2) Spastic weakness of one or both lower limbs or all four limbs (3) Flaccid type of paralysis with sensory level or bowel bladder involvement. Exclusion criteria were (1) Impaired consciousness (2) Cranial nerve involvement (3) History of trauma (4) Sign of cerebellar involvement. Data were collected by face-to-face interview, physical examination and investigations in a data collection sheet. It was collected after taking informed consent of the patient.

Results

Table no. 1: Frequency distribution of patient by age and sex. (n=44)

Age groups	Sex				Total	
	Male		Female			
	N	%	N	%	N	%
<20	4	50.0	4	50.0	8	18.2
21-30	11	78.6	3	21.4	14	31.8
31-40	6	100.0	0	00.0	6	13.6
41-50	9	81.8	2	18.2	11	25.0
>51	3	60.0	2	40.0	5	11.4
Total	33	75.0	11	25.0	44	100.0

Regarding frequency distribution of the patients by age and sex, it was revealed that 14 (31.8%) of them were in the age group of 21-30 years. Among them 11 (78.6%) were male and 3 (21.4%) were female patients respectively. It was also found that 11 (25.0%) patients belonged to age group 41-50 years. Among them 9 (81.8%) were male and 2 (18.2%) were females. There were 8 patients aged 20 years or less in the study.

Table no. 2: Clinical presentation of patients. (n=44)

	Frequency	
Presentation	**Number**	**%**
A. Weakness		
Lower limb	44	100
Upper and lower limb	20	45.5
B. Pain		
Upper limb	7	15.9
Lower limb	5	11.4
Upper and lower limb	0	0
C. Sensory symptoms		
Upper limb	5	11.4
Lower limb	1	2.3
Upper and lower limb	0	0
D. Wasting		
Upper limb	5	11.4
Lower limb	0	0
Upper and lower limb	0	0
E. Urinary retention		
Present	8	18.2
Absent	36	81.8
F. Respiratory difficulty		
Present	0	0
Absent	44	100.0
G. Muscle twitching/Fasciculation		
Present	0	0
Absent	44	100.0
H .Hoffman's sign		
Present	10	22.7
Absent	34	77.3
I .Clonus		
Present	16	36.4
Absent	28	63.6

Table no. 2 shows the frequency distribution of patients by clinical presentation. About the weakness of the limbs, it was found that 44 (100%) patients had weakness in the lower limb. It was also revealed that 20 (45.5%) patients had weakness in both upper and lower limbs.

Regarding pain in the limbs, 7 (15.9%) patients reported of pain in upper limb and 11.4% patients told of pain in lower limb. About 11.0% patients informed of sensory symptoms in upper limb. In case of wasting, it was observed that only 5 (11.4%) patients had wasting in the upper limb. Hoffman's sign present in 10 (22.7%) patients and clonus present in 16 (36. 4%) patients.

Table no. 3: Characteristic of gait of the patients. (n=44)

Gait	**Frequency**	
	Number	**Percentage**
Normal	7	15.9
Abnormal	19	43.2
Could not be performed	18	40.9
Total	44	100.0

Regarding distribution of patients by characteristics of gait, it was revealed that out of 44 patients, 19 (43.2%) of them had abnormal gait, mostly spastic gait. It was also found that 7 (15.9%) patients had normal gait. The test for gait could not be performed for 18 (40.9%) patients.

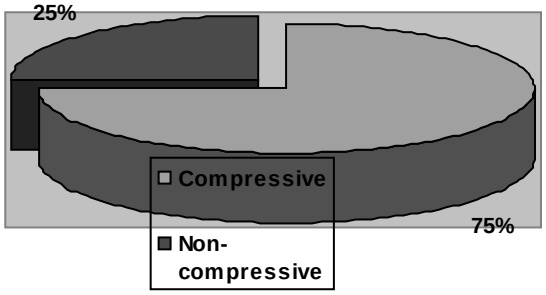

Figure no. 1: Distribution of patients by type of involvement

About the frequency distribution of patients by type of involvement, it was observed that majority 33 (75.0%) of them had compressive type and 11 (25.0%) patients had non-compressive type of involvement.

Table no. 4: Distribution of study subjects according to radiological diagnosis. (n=44)

Diagnosis	**Frequency**	
	Number	**Percentage**
ATM	9	20.5
CSM	14	31.8
Disc herniation	2	4.5
Familial spastic paraplegia	2	4.5
Lipoma	1	2.3
Metastasis	1	2.3
Pott's	8	18.2
Schwannoma	2	4.5
Syringomyelia	5	11.4
Total	44	100.0

Table no. 4 shows the frequency distribution of study subjects by radiological (X-ray and MRI) diagnosis. It was revealed that 14 (31.8%) patients had CSM. It was also observed that 9 (20.5%) patients had developed ATM, 8 (18.2%) patients had Pott's disease. Syringomyelia was detected in 5 (11.4%) patients.

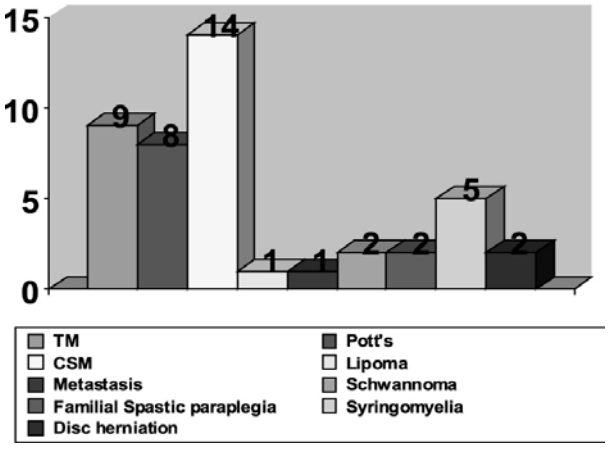

Table no. 5: Distribution of compressive disease. (n=33)

Diagnosis	Frequency	
	Number	Percentage
CSM	14	42.4
Disc herniation	2	6.1
Lipoma	1	3.0
Metastasis	1	3.0
Pott's	8	24.2
Schwannoma	2	6.1
Syringomyelia	5	15.2
Total	33	100.0

Regarding frequency distribution of patients with compressive type of involvement by disease, it was found that out of 33 compressive myelopathy, 14 (42.4%) had CSM. It was also revealed that 8 (24.2%) patients had Pott's disease and 5 (15.2%) patients were detected with syringomyelia.

Table no. 6: Distribution of patient by site of myelopathy. (n=44)

Parameters	Frequency	
	Number	Percentage
Cervical	18	41
Cervico-thoracic	02	4.5
Thoracic	22	50
Lumbar	00	00
Normal	02	4.5
Total	44	100

The study showed that out of 44 patients, cervical myelopathy was 18 (41%), thoracic myelopathy was 22 (50%) patients. Lesion extend from cervical to thoracic was found in 2 (4.5%) patients. 2 (4.5%) familial spastic paraplegic patients had normal MRI finding.

Discussion

The present study was carried out in Rajshahi Medical College Hospital, Rajshahi. A total number of 44 patients were included in the study. In the present study CSM formed the most common cause of myelopathy comprising 31.8% of all patients. Acute transverse myelitis was the next common cause. Pott's disease stands in third position. Rest of the conditions producing myelopathies formed a small percentage and included 5 cases of syringomyelia, 2 cases of disc herniation, 2 cases of familial spastic paraplegia, 2 cases of Schwannoma, 1 case of Lipoma, 1 case of metastasis to the vertebra. Out of 44 patients compressive myelopathy were 33 (75%) and non-compressive were 11 (25%) in number. Out of 33 compressive myelopathy CSM was 14 (42.4%). Pott's disease 08 (24.2%), syringomyelia 05 (15.2%), Disc herniation 02 (6.1%), schwannoma 02 (6.1%), Lipoma 01 (3%) and Metastasis to the vertebra 01 (3%) in number. These findings may be compared with findings observed by William 2000[5] and Moore 1997[8]. Mean age of the CSM patients were 41.6 yrs (range 23-65 yrs), male were 13 and female was 1 in number. Out of 14 patients 9 were Businessman, 4 were Govt. service holder and one house wife. Mean age of Pott's disease was 43.5 yrs (range 20-60 yrs). All Pott's patient had raised ESR (mean 88.12 mm in 1st hour, range 45-120 mm. in 1st hour). All patients presented with paraparesis and involvement of thoracic spine. Out of 8 patients of Pott's disease, 7 patients had paravertebral soft tissue involvement. These findings were consistent with findings observed by Page et al 2006[9]. Two patients were found with single disc herniation without history of trauma. One patient was diagnosed as a metastasis to the vertebra. CT image of chest show an ovoid mass located at the posterior part of mid zone adjacent to pleura in the right lung field. FNAC was done from the mass

and features were suggestive of Adenocarcinoma. MRI of the dorsal spine revealed destruction with partial collapse of D_4 vertebra with paravertebral mass with dorsal cord compression. Out of 44 patients, 5 (11.4%) patients were diagnosed as syringomyelia. 3 patients were male and 2 were female. Mean age was 24 yrs (range 19-30 yrs). Schwannoma and lipoma are rare causes of spinal cord compression. We were, however able to pick up 2 Schwannoma and 1 Lipoma patients. Lipoma was intradural but extramedullary lesion. 11 (25%) patients in this study had non-compressive spinal cord lesions. ATM was the commonest of all. These findings are consistent with that of Prabhakar S, 1999[10], who also found ATM to be the most common form of non-compressive myelopathy. Out of 9 patients of ATM antecedent event was observed in 4 patients (44.4%), febrile illness with upper respiratory illness was found 3 patients, Chickenpox was present in 1 patient. Out of 9 patients 6 were males and 3 females. The mean age was 22.77 (range 13-40) years. All the patients of ATM were severely disabled with the power in lower limbs at presentation being grade 0-2. ATM is a monophasic illness and one of the important questions to be addressed, while confronted with a patient of ATM, is to differentiate between a post-infectious from an initial presentation of a case of MS as they have different prognostic values. CSF study of ATM patients revealed, mean cell count was 12.8 (range 5-20/cumm of CSF) and mean protein value was 53.3 mg/dl (range 40-60 mg/dl, with normal CSF sugar. Two patients of our study had Familial spastic paraphegia. One of them having positive family history (Father affected). MRI of the spinal cord and MRI of the brain were normal.

Conclusion and recommendation

Many spinal cord diseases are reversible if recognized and treated at an early stage. The efficient use of diagnostic procedures, guided by knowledge of the anatomy and the clinical features of spinal cord disease are required for successful outcome. In the present study almost all of the patients suffering from treatable diseases. Early detection of myelopathy and treat accordingly may prevent disability burden in our country and improve the quality of life. All patients with spinal cord disease should be investigated for potentially treatable causes.

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