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Original Article

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Evaluation of Cases of Non-Compressive Myelopathies- A Clinical Study

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Abstract

Background: Myelopathy describes pathologic conditions that cause spinal cord, meningeal or perimeningeal space damage or dysfunction. The present study was conducted to assess cases of myelopathy. **Subjects and Methods:** The present study was conducted on 82 cases of myelopathy of both genders. Lumbar puncture was performed in all patients. Cerebrospinal fluid (CSF) was examined for protein, cells, and sugar. **Results:** Out of 82 patients, males were 52 and females were 30. There were 41 males and 14 females with idiopathic transverse myelitis and 11 males and 16 females with other acute myelopathies. Mean CSF protein in group I was 56.2 and in group II was 82.4, CSF cells were 28.5 in group I and 214.6 in group II, CSF sugar was 71.4 in group I and 62.7 in group II, RBS was 120.1 in group I and 116.3 in group II. The difference was significant (P< 0.05). Centromedullary involvement was seen in 95% in group I and 82% in group II, LETM was present in 82% in group I and77% in group II, contrast enhancement was seen in 31% in group I and 45% in group II, cord swelling was seen in 64% in group I and 52% in group II. The difference was significant (P< 0.05). **Conclusion:** Authors found that cases were of idiopathic transverse myelitis and acute myelopathies. MRI is useful in diagnosis of lesions.

Keywords: MRI, myelopathies, transverse myelitis

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Introduction

The term myelopathy describes pathologic conditions that cause spinal cord, meningeal or perimeningeal space damage or dysfunction. Traumatic injuries, vascular diseases, infections and inflammatory or autoimmune processes may affect the spinal cord due to its confinement in a very small space. Spinal cord injuries usually have devastating consequences such as quadriplegia, paraplegia and severe sensory deficits.[1]

Transverse myelitis is a pathogenetically heterogeneous inflammatory disorder presenting with acute or subacute spinal cord dysfunction.[2] Clinically, it is characterized by a triad of motor, sensory, bladder and bowel abnormalities. Magnetic resonance imaging (MRI) shows a hyperintense spinal cord lesion extending over several cord segments.[3] Acute transverse myelitis is either an isolated inflammatory phenomenon or a manifestation of a widespread multifocal central nervous system demyelinating disorder such as acute disseminated encephalomyelitis, multiple sclerosis, or neuromyelitis optica. Several rheumatological diseases such as systemic lupus erythematosus, Sjogren's syndrome, para-infectious myelitis, spinal cord infarct, and infectious myelitis can present with acute transverse myelopathy.[4]

Myelopathies may have a variable course and may manifest as a single event or as a multi-phasic or recurrent disease.[5] The latter is rare and is usually secondary to demyelinating diseases, vascular malformations of the spinal cord, or systemic diseases. The central nervous system (CNS) damage may be monofocal as in transverse myelitis and optic neuritis, or multifocal as in acute disseminated encephalomyelitis (ADEM) (brain and spinal cord), neuromyelitis optica (optic nerve and spinal cord) and multiple sclerosis (MS) (any area of the neural axis).[6] The present study was conducted to assess cases of myelopathy.

Subjects and Methods

The present study was conducted in the department of Neurosurgery. It comprised of 82 cases of myelopathy of both genders. All were informed regarding the study and written consent was obtained.

It was a retrospective study using the data in the medical records. General data such as name, age, gender etc. was recorded. Patients were examined clinically and MRI was done in all patients. In spinal MRI, the number of lesions, their extent, and localization in the sagittal (cervical, dorsal, and lumbar); section while in the axial sections centromedullary versus a peripheral location, cord edema, and the changes visible following gadolinium-contrast administration were noted. Only cases without MRI features of spinal cord compression were included. Lumbar puncture

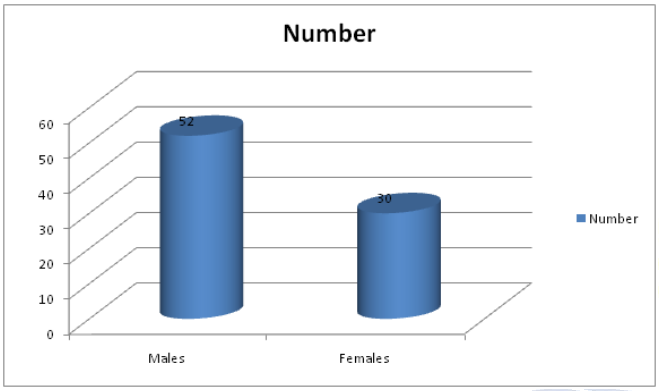
was performed in all patients. Cerebrospinal fluid (CSF) was examined for protein, cells, and sugar. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients

Gender	Males (52)	Females (30)
Idiopathic transverse myelitis (group I)	41	14
Other acute myelopathies (Group II)	11	16

[Table-1] shows that out of 82 patients, males were 52 and females were 30. There were 41 males and 14 females with idiopathic transverse myelitis and 11 males and 16 females with other acute myelopathies.

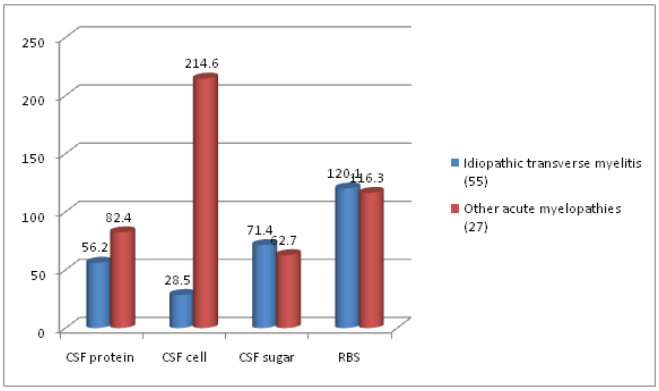


Graph 1: Distribution of patients

Table 2: Laboratory findings

Laboratory findings (mean)	Idiopathic transverse myelitis (55)	Other acute myelopathies (27)	P value
CSF protein	56.2	82.4	0.01
CSF cell	28.5	214.6	0.02
CSF sugar	71.4	62.7	0.05
RBS	120.1	116.3	0.21

[Table 2], Graph 2 shows that mean CSF protein in group I was 56.2 and in group II was 82.4, CSF cells were 28.5 in group I and 214.6 in group II, CSF sugar was 71.4 in group I and 62.7 in group II, RBS was 120.1 in group I and 116.3 in group II. The difference was significant (P< 0.05).

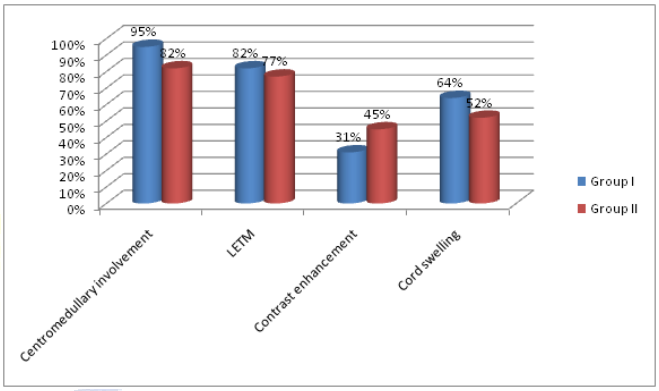


Graph 2: Laboratory findings

[Table-3], Graph-3 shows that centromedullary involvement was seen in 95% in group I and 82% in group II, LETM was present in 82% in group I and77% in group II, contrast enhancement was seen in 31% in group I and 45% in group II, cord swelling was seen in 64% in group I and 52% in group II. The difference was significant (P< 0.05).

Table 3: Neuroimaging in patients

Parameters	Group I	Group II	P value
Centromedullary involvement	95%	82%	0.12
LETM	82%	77%	0.23
Contrast enhancement	31%	45%	0.01
Cord swelling	64%	52%	0.02



Graph 3: Neuroimaging in patients.

Discussion

Spinal cord pathologies may be classified as acute, subacute/ intermittent or chronic, depending on the time course, the extent of the involvement, the clinical picture or syndrome, or the etiology.[7] Patients with myelopathies but no evident lesions, or who present with multiple lesions of chronic appearance on magnetic resonance imaging, must be questioned about prior subtle symptoms.[8]

Acute onset that worsens within hours or days points to a spinal cord infarct or hemorrhage. When symptoms are recent, it is of paramount importance to rule out a surgical emergency.[9] This requires immediate imaging work-up, ideally total spine magnetic resonance (MR). If there is evidence of spinal cord compression due to an acute lesion (epidural metastasis or abscess), definitive management is required in order to avoid damage or to adequately manage all other potential diagnoses. If the symptoms progress for more than three weeks, transverse myelitis is improbable, and other conditions must be considered, such as a spinal tumor, chronic compressive disease, dural arterio-venous fistula, metabolic disorder, sarcoidosis, or a degenerative process.[10] The present study was conducted to assess cases of myelopathy.

In this study, out of 82 patients, males were 52 and females were 30. There were 41 males and 14 females with idiopathic transverse myelitis and 11 males and 16 females with other acute myelopathies. Pandey et al[11] evaluated the

spectrum of acquired demyelinating and inflammatory disorders in patients presenting with an acute transverse myelopathy. They studied differences between an acute idiopathic transverse myelitis and myelitis resulting from other etiologies. Eighty consecutive patients with acute transverse myelopathy were included. Majority (n = 49; 61.25%) of patients had idiopathic acute transverse myelitis. Eleven cases had neuromyelitis optica spectrum disorders (8 had anti-aquaporin antibody positivity). Multiple sclerosis was diagnosed in 7 cases. Eight cases had infectious or parainfectious myelitis. Longitudinally extensive transverse myelitis was noted in 66 (82.5%) patients. Seventeen patients had abnormalities in the brain. Majority of patients improved following methylprednisolone therapy. On univariate analysis, delay in administering methylprednisolone therapy, poor modified Barthel index at discharge, and extensive cord involvement were associated with severe residual disability. On multivariate analysis, delayed initiation of methylprednisolone was identified as a poor prognostic factor.

We found that mean CSF protein in group I was 56.2 and in group II was 82.4, CSF cells were 28.5 in group I and 214.6 in group II, CSF sugar was 71.4 in group I and 62.7 in group II, RBS was 120.1 in group I and 116.3 in group II. Centromedullary involvement was seen in 95% in group I and 82% in group II, LETM was present in 82% in group I and77% in group II, contrast enhancement was seen in 31% in group I and 45% in group II, cord swelling was seen in 64% in group I and 52% in group II.

Cobo Calvo et al[12] used diffusion MRI to assess fourteen patients between two hours and three days after cervical trauma and found that lesions that showed a high signal on MRI with diffusion restriction showed myelomalacia or exacerbation on follow-up, helping to predict the functional prognosis. The differential diagnosis includes extradural metastasis, epidural hematoma, migrated disc fragments or epidural lipomatosis.

Conclusion

Authors found that cases were of idiopathic transverse myelitis and acute myelopathies. MRi is useful in diagnosis of lesions.

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