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NON-TRAUMATIC MYELOPATHY- A STUDY OF CLINICAL AND ETIOLOGICAL SPECTRUM IN COVID 19 PATIENTS, JAIPUR

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Abstract

Background: Diseases of the spinal cord are termed myelopathies, can be either traumatic or non-traumatic. The clinical presentation and causes of compressive myelopathies characteristically differ from those of non-compressive myelopathies, although rare presentations in either category. Little information regarding the functional outcome of non-traumatic myelopathies as a whole is available in the current literature. With this background, we planned a study with the aim to find out various etiological factors and clinical profiles in patients of non-traumatic myelopathy.

Methods and Material: This observational, cross-sectional study was conducted among patients came to OPD/IPD of Neurology Unit, Department of General Medicine, National Institute of Medical Sciences and Research, Jaipur among patients with non-traumatic myelopathy of age 18 years and above. Patients underwent All statistical analysis was performed in SPSS (statistical package for social sciences) version 23. Correlation and statistical analysis have been done between the etiology and clinical spectrum of non-traumatic myelopathy.

Results: In our study, out of 135 study subjects, 81(60%) cases were male and rest 54 (40%) were female. The most prevalent age group was 40-50 years. Around half of the cases, (48.2%) were presented with paraparesis and 54 (40%) with quadriparesis. Based on MRI findings, 75 (55.5%) were presented with compressive and 58 (42.9%) with non-compressive myelopathies and 2(1.6%) with unknown etiology.

Conclusions: Non-compressive myelopathy affects people across all age groups. Most of the patients are middle-aged and many of them are active members of the family. As seen in other long-duration studies, an underlying disease may be revealed in long-term follow-up of the patients.

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Keywords: Non-traumatic myelopathy, Clinical, Etiological Spectrum, Tuberculosis of the Spine, Acute transverse myelitis.

1. INTRODUCTION

Diseases of the spinal cord are termed myelopathies, can be either traumatic or non-traumatic. Non-traumatic myelopathies are of two types: Compressive and non-compressive myelopathies. The clinical presentation and causes of compressive myelopathies characteristically differ from those of non-compressive myelopathies, although rare presentations in either category.[1]

The history, neurological examination and the study of the cerebrospinal fluid guide the diagnosis of spinal cord injuries. However, imaging is of great importance in order to diagnose and classify the aetiology appropriately. The management strategies between compressive and non-compressive myelopathies differ dramatically, as compressive lesions usually require urgent neurosurgical intervention, whereas non compressive myelopathies are usually amenable to medical treatment itself.[2,3]

The yield of positive diagnosis has greatly increased with the advent of MRI, a sensitive imaging modality for lesions of the spinal cord, the yield for positive diagnosis has greatly increased. The incidence of non-traumatic spinal cord lesions is difficult to determine because of the infrequent reporting, but it is estimated to be equal to that of traumatic spinal cord injury. [4] Spinal tumors and Pott's spine have been reported as the most common etiology of non-traumatic spinal cord lesions in different studies.[5]

An apt diagnosis of non-traumatic etiological myelopathy at the right time can prevent any permanent damage or further damage to the spinal cord, thereby avoiding or reducing patient morbidity and mortality.

Little information regarding the functional outcome of non-traumatic myelopathies as a whole is available in the current literature. With this background, we planned a study with the aim to find out various etiological factors and clinical profiles in patients of non-traumatic myelopathy.

2. METHODS AND MATERIALS

This observational, cross-sectional study was conducted among patients came to OPD/IPD of Neurology Unit, Department of General Medicine, National Institute of Medical Sciences and Research, Jaipur between July 1, 2022, to May 31, 2023. All patients admitted with non-traumatic myelopathies and of age 18 years and above were included in the study.

Inclusion criteria:

- Age 18 years and above.
- Both male and female.
- Patients with signs and symptoms suggestive of non-traumatic myelopathy.
- Patient given consent to participate in the study

Exclusion criteria:

- Age <18 years
- Patients with obvious history of trauma associated with myelopathy
- Radiologically evidence traumatic myelopathy.

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Methodology:
After taking permission from scientific & institute ethical committee and written informed consent from study patients were enrolled for the study. A standardized proforma was designed for information regarding age, gender, height, weight, body mass index (BMI), history of smoking, diabetes, hypertension, and coronary heart disease & other CV morbidities as well as laboratory parameters has recorded. Detailed history and neurological examination were obtained from all the patients. For all patient's routine investigations and required specific investigations were done.
Routine Investigations: Haemogram with peripheral smear, Blood sugar and urea, Urine for routine microscopic and BJ protein, X-ray chest (PA), Tuberculin test, ESR, Sputum AFB, sonography of abdomen and pelvis, ECG.
Specific Investigations: MRI spine, MRI brain when required. Lumbar puncture for CSF microscopy, sugar, AFB, gram stain, VDRL, serum B12 level, culture and sensitivity and antibodies when required.
Based on MRI findings causes of paraparesis and tetraparesis were divided into two main categories;

- **Cord compression:**
  All those patients in whom there was evidence of compression of thecal sac and spinal cord were grouped together as cord compression.
- **Non-compressive myelopathies:**
  All those patients in whom there was no evidence of cord compression and no intracranial cause were identified for their symptoms were grouped together as non-compressive myelopathies.

Patients were categorized first according to their onset of deficit. Those within 7 days were considered acute, less than 4 weeks considered subacute, more than 4 weeks chronic. All statistical analysis was performed in SPSS (statistical package for social sciences) version 23. Parametric data are expressed as the mean (±SD), and nonparametric data are described as the median and interquartile range (IQR). Categorical data were expressed as percentages.

3. RESULTS

In our study, out of 135 study subjects, 81(60%) cases were male and rest 54 (40%) were female. The most prevalent age group was 40-50 years with mean 45+/-2.6 years followed by 30-40 years age group. [Table 1, Figure 1]

Table 1. Distribution of Age & Gender of the study subjects (n=135)

Particulars		Frequency	Percentage
Gender	Male	81	60%
	Female	54	40%
Age	18-30 years	18	13.3%
	31-40 years	27	20%
	40-50 years	55	40.7%
	50 years and above	35	26%

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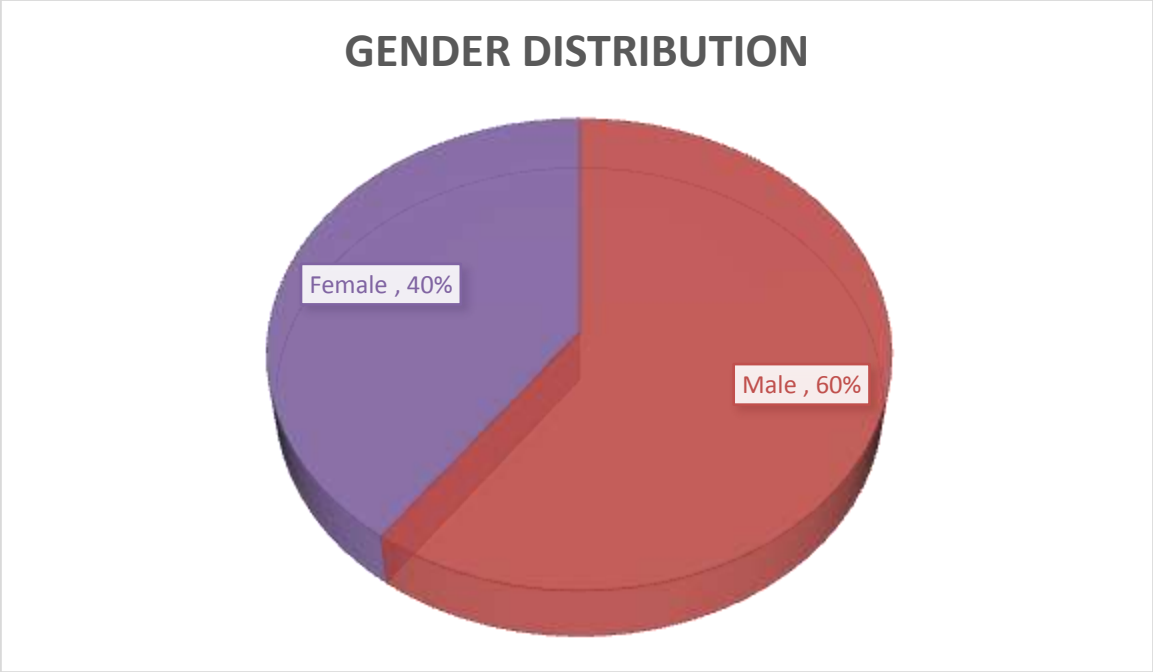

Figure 1: Distribution of Gender among study subjects

One fourth of cases had acute presentation (25.2%) while subacute (28.1%) and rest majority had chronic presentation. Around half of the cases, (48.2%) were presented with paraparesis and 54 (40%) with quadriparesis. Based on MRI findings, 75 (55.5%) were presented with compressive and 58 (42.9%) with non-compressive myelopathies and 2(1.6%) with unknown etiology. [Figure 2]

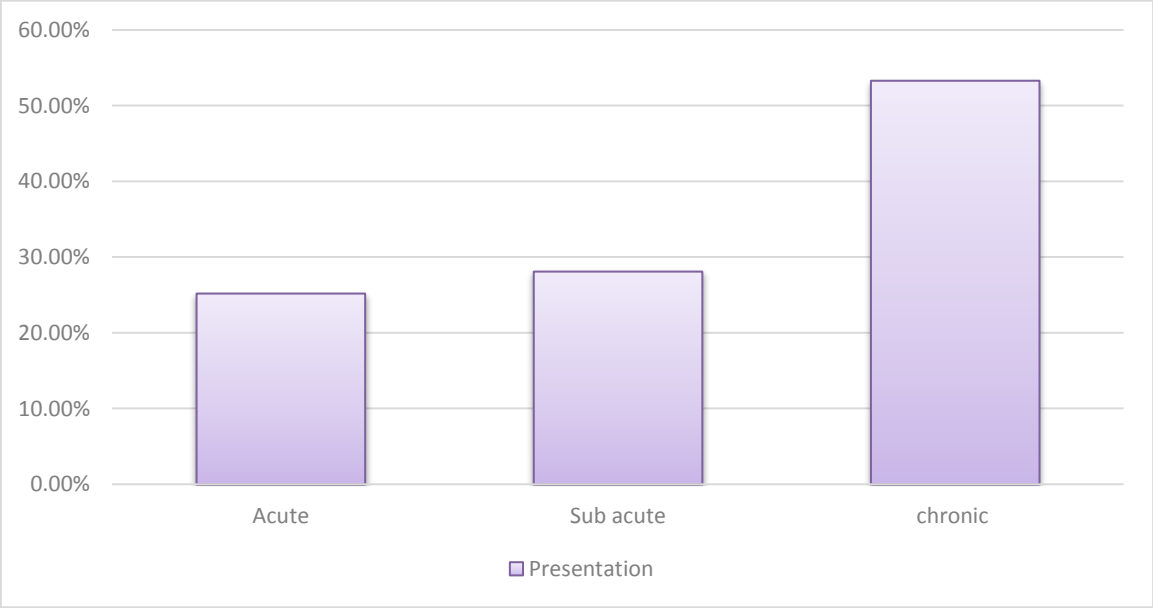

Figure 2: Clinical presentation of study subjects

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Table 2: Various etiological findings of study subjects

Particulars	Frequency	Percentage
Compressive Myelopathies	75	55.5%
Pott's spine	35	46.6%
Spondylosis	15	20%
Tumors	12	16%
CV junction anomalies	8	10.6%
AVM	5	6.6%
Non-Compressive Myelopathies	58	35.5%
Acute transverse myelitis	33	56.9%
Multiple sclerosis	12	20.7%
Sub acute combined degeneration	9	15.5%
systemic lupus erythematosus	3	8.6%
ischemic myelopathy	1	1.7%

Among 75 cases of compressive myelopathies the various etiological findings were Pott's spine 35 (46.6%), Spondylosis 15 (20%), tumors 12 (16%), CV junction anomalies 8(10.6%), AVM 5(6.6%). Among 58 cases of non-compressive myelopathies has included-Acute transverse myelitis 33(56.9%), Multiple sclerosis 12(20.7%), Sub acute combined degeneration, 9(15.5%), systemic lupus erythematosus 3(8.6%) and ischemic myelopathy 1(1.7%). Among 58 cases of non-compressive myelopathies has included-Acute transverse myelitis 33(56.9%), Multiple sclerosis 12(20.7%), Sub acute combined degeneration, 9(15.5%), systemic lupus erythematosus 3(8.6%) and ischemic myelopathy 1(1.7%). [Table 2]

4. DISCUSSIONS

The present study was conducted in the Neurology Unit, Department of General Medicine, National Institute of Medical Sciences and Research, Jaipur among 135 patients diagnosed clinically having non-traumatic myelopathy. Based on MRI they were grouped into compressive and non-compressive myelopathies.

In our study, around half of the cases, (48.2%) were presented with paraparesis and 54 (40%) with quadriparesis. In Dr Pughaz Deivigan et al.[6] study, number of cases in paraparesis (58%) were more than quadriparesis (42%), myelopathy due to cord compression (54%) was more common than non-compressive (40%), which is similar to the study conducted by Chaurasia et al. and Birender joshi et al.[4,7]

In this study among compressive myelopathies, Pott's spine 35 (46.6%), Spondylosis 15 (20%), tumors 12 (16%). Tubercular spondylitis was the most common cause followed by spondylosis, which correlates well with other Indian studies.[5-8] In contrast to Indian studies, western studies done by Moore et al.[9] shows spondylosis as the commonest cause in compressive group. In tubercular spondylitis there is loss of height of the disc with decrease in signal on T1WI and increase in signal on T2WI. There is disappearance of low signal intra-nuclear cleft on T2WI. Decrease in marrow signal is present in T1WI and increase in T2WI. Marrow signal becomes isointense after gadolinium administration. Bulging of annulus fibrosis, herniation of nucleus pulposus, hypertrophy of spinal ligaments, spinal canal stenosis, abnormal signal in spinal cord at compression site and atrophy are present in spondylitis myelopathy.

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The third most common cause in compressive group in present study is spinal tumors which accounts for 12 (16%) which is also similar to study done by chaurasia et al.[4] & Dr Pughaz Deivigan et al.[6] in which spinal tumors accounts for 19.84%. while a study done by Mehrotra et al.[10] shows 20.1%. Among the spinal tumors in our study two cases are intramedullary which includes astrocytoma and ependymoma each, one case is extramedullary intradural which includes meningioma and two case of extra dural metastasis. Early suspicion and relevant investigations and early treatment are essential to prevent irreversible damage. Tuberculosis of spine was the most common cause of compressive myelopathy and among the non-compressive group acute transverse myelitis and SACD were important etiologies. This study brings out aetiologies like acute transverse myelitis, SACD, ADEM which are now better diagnosed, timely treated and prognosticated. There may be many shortcomings in this study. But this study will definitely give us a fair idea of the etiology of non-traumatic spinal cord involvement in the Jaipur city population.

5. CONCLUSIONS

Non-compressive myelopathy affects people across all age groups. Most of the patients are middle-aged and many of them are active members of the family. Non-traumatic myelopathies are a condition with significant morbidity and cause problem not only to patients but also his family. As the management differs considerably between compressive and non-compressive groups, correct diagnosis and immediate treatment reduce the morbidity and further damage. Clinically it is difficult to diagnose these conditions, thus MRI plays a crucial role in differentiating various causes of non-traumatic myelopathies.

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