

STUDY ON ACUTE ONSET OF PARAPARESIS IN A TERTIARY CARE HOSPITAL CLINICAL PROFILE AND OUTCOME OF THOSE PATIENTS.

Neurology

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ABSTRACT

AIM OF THE STUDY: To study the etiological factor and determine the clinical profile. **MATERIAL & METHODS:** About 100 patients who presented with weakness of lower limbs admitted in Department of Neuro Medicine and TAEI ward, Government Mohan Kumaramangalam Medical College, Salem were studied prospectively. Patients underwent a detailed clinical evaluation followed by laboratory investigations and neuroimaging studies. **RESULTS:** Present study showed male preponderance. Incidence was common in productive age groups of 3rd and 4th decade. Majority of patients in our study population are affected during the prime part of their lives. Males (73%) are more commonly affected than female population. Based on anatomical localization, UMN (71%) causes of paraplegia are more common than LMN causes. Among UMN causes non-compressive myelopathy predominates the causes of paraplegia. From the time of admission to day 7 – 10 of admission favourable outcome was seen in 52% of our cases. Out of 100 patients, 4 patients (4%) expired. **CONCLUSION:** Tuberculosis and Transverse myelitis were the commonest cause of non-traumatic paraplegia.

KEYWORDS

Etiological and Clinical Profile of Paraparesis, Cerebrovascular accident, Magnetic resonance image, tuberculosis.

INTRODUCTION

Many spinal cord diseases are reversible if recognized and treated at an early stage; thus, they are among the most critical of neurologic emergencies. The efficient use of diagnostic procedures guided by knowledge of the anatomy and clinical features of common spinal cord disease is required for a successful outcome (1)

The disease spectrum is somewhat different in India as compared to western countries, where infections and nutritional causes are less common. The aetiology of paraplegia differs from one region to other in our own country. During past three decades, several studies to find out the aetiology of paraplegia have been carried out at different regions of India. (2)

Thus, this study aims to find out the clinical profile and aetiology of Paraparesis in Government Mohan Kumaramangalam Medical College, Salem.

AIM OF THE STUDY

To assess the clinical and etiologic outcome in patients with acute to sub-acute onset paraparesis

OBJECTIVES OF THE STUDY

- 1) To determine the etiological factors prevalent in and around SALEM (TAMIL NADU) contributing to non-traumatic paraplegia.
- 2) The etiologic subcategorization of various non-traumatic paraplegia.
- 3) To study the clinical pattern of evolution and presentation of nontraumatic paraplegia

MATERIALS AND METHODS

This is an observational study which was conducted at Government Mohan Kumaramangalam Medical College, Salem from June 2023 to May 2024.

About 100 patients who presented with weakness of lower limbs admitted in Department of Neuro Medicine and TAEI ward, Government Mohan Kumaramangalam Medical College, Salem were studied prospectively.

Each patient included in the study was methodically evaluated by obtaining a detailed history and performing complete neurological examination. This was recorded on a predesigned and structured proforma along with the routine investigations done as per standard protocol of the unit. The institution's ethical clearance was obtained by

submitting the detailed synopsis of the study with all the necessary proforma to the institutional ethical committee board on a discussion forum

CASE DEFINITIONS

ASIA (American Spinal Injury Association (ASIA)) defines paraplegia as impairment of motor or sensory function in the thoracic, lumbar or sacral segments of the spinal cord secondary to damage to neural elements within the spinal cord.

Acute transverse myelitis (ATM) was diagnosed as per TMCWG criteria.

Post infectious myelitis (PIM) was considered if there was infective illness preceding onset of neurological symptoms within 30 days.

Acute disseminated encephalomyelitis (ADEM) was diagnosed as per criteria Proposed by International Paediatric Multiple Sclerosis Study Group. 2015 International Panel for NMO Diagnosis criteria was used to diagnose NMO spectrum disorder. The diagnosis of multiple sclerosis (MS) was made according to 2010 Revised McDonald Criteria.

Paraneoplastic myelopathy was defined in case of malignancy with or without paraneoplastic Antibody after excluding other aetiologies. Infectious Myelopathy (IM) was diagnosed on serology or detection of Pathogen in CSF or blood or imaging and correlating clinically.

The Modified Rankin Scale (mRS) is a globally accepted clinical outcome measure for evaluating the degree of disability or dependence in the daily activities of people who have suffered a neurological insult. In the context of this study, mRS was used as a tool to quantify morbidity, based on functional status at 7-10 days.

INCLUSION CRITERIA

- 1) Age more than 12 years.
- 2) Acute and subacute onset motor weakness of lower limbs of non-traumatic aetiology.

EXCLUSION CRITERIA

- 1) Age less than 12 years.
- 2) Patients having traumatic paraplegia.

SAMPLING PROCEDURE

All patients with acute non traumatic paraparesis were taken as sample (simple random sampling). Patients were clinically evaluated;

all the patients had full neurological examination and even when a precise diagnosis could not be offered, the structure affected and the level of the lesion was identified. The diagnosis was made based on clinical evidence and laboratory confirmation in a majority of the patients.

INVESTIGATIONS

1. Blood: Haemoglobin, total WBC count, Differential count of WBC, ESR, peripheral blood smear, random blood sugar, blood urea, serum creatinine, serum electrolyte.
2. Urine: Albumin, sugar, microscopy
3. CSF analysis: Sugar, proteins, cytology, CBNAAT, Culture and Sensitivity,
4. Serum Aquaporin 4 antibodies.
5. Viral markers: HIV, HBsAg, HCV
6. ECG
7. X Ray Spine & Chest
8. CT Spine
9. MRI Spine with or without contrast
10. Nerve Conduction Study

Methods used for statistical analysis: Statistical analysis was done using EPI Info Version-6. Percentage, Chi-square, 'p' value was calculated wherever needed.

RESULTS

Table 1: Frequency distribution of age group of patients

AGE GROUP	No. of patients	Percentage
13- 20 years	6	6%
20- 40 years	33	33%
40-60 years	42	42%
Above 60 years	19	19%
Total	100	100%

39% of the study population were below 40 years of age, which highlights the brunt of illness in young aged people.

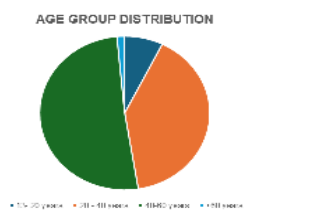


Table 2: sex distribution

Sex distribution	Male	Female
No.	73	27
Percentage	73%	27%

In our study, males (73%) are more commonly affected than female(27%) population.

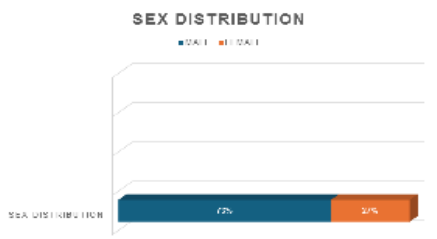


Table 3: Frequency distribution of anatomical localization

ANATOMICAL LOCALIZATION				
UMN (n= 71)				
Compressive myelopathy (n= 27)	Extramedullary (n= 24)	Extradural (n=20)	20	20%
		Intradural (n=4)	4	4%
	Intramedullary (n=3)	3	3%	
Non-compressive myelopathy (n=38)	38		38%	

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Based on anatomical localization, UMN causes of paraplegia are more common than LMN causes. Among UMN causes compressive myelopathy predominates the causes of paraplegia.

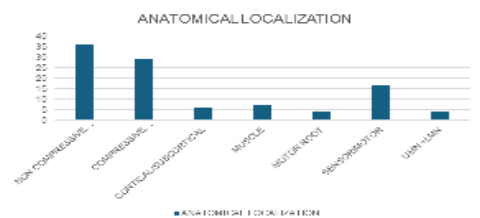


Table4: Frequency distribution of various etiological diagnosis

Sl.no	Etiological diagnosis	No.of cases	Percentage
1.	POST/ PARA INFECTIVE TRANSVERSE MYELITIS	18	18%
2.	MULTIPLE SCLEROSIS	5	5%
4.	GUILLAIN BARRE SYNDROME	11	11%
5.	HYPOKALAEMIC PARAPARESIS	7	7%
6.	RADICULITIS	2	2%
7.	TB SPINE / TUBERCULOMA OF SPINAL CORD / TB ARACHNOIDITIS	14	14%
9.	AORTIC OCCLUSION DISEASE	2	2%
10.	VITAMIN B12 DEFICIENCY	2	2%
11.	CRITICAL ILLNESS NEUROPATHY	2	2%
12.	OPIDN	2	2%
13.	LUMBAR DISC DISEASE	2	2%
15.	SPINE METASTASIS	5	5%
16.	MULTIPLE MYELOMA	1	1%
17.	SPINAL AVM	2	2%
18.	MENINGIOMA	2	2%
19.	EPENDYMOMA	1	1%
20.	PARASAGITTAL MENINGIOMA	2	2%
21.	VASCULAR (ACA INFARCT / SSS THROMBOSIS)	4	4%

From the etiological diagnosis tuberculosis and demyelinating illness was predominant causes and it was also the most common cause affecting the younger population in our study.

Table 5: Outcome of our patients

	(N=100)	percentage
Favorable (mRS 0–2)	52	52%
Unfavorable (mRS 3–6)	48	48%

From the time of admission to day 7 – 10 of admission favourable outcome was seen in 52% of our cases. Out of 100 patients, 4 patients (4%) expired, of whom 2 had TB Spine, whereas 1 was known case of breast cancer with multiple metastasis and one patient with aortoiliac occlusive disease (Leriche's).

The other 96 patients were discharged from Neuromedicine

ward/medicine ward and on follow up and some are transferred to neurosurgery department for surgical intervention.

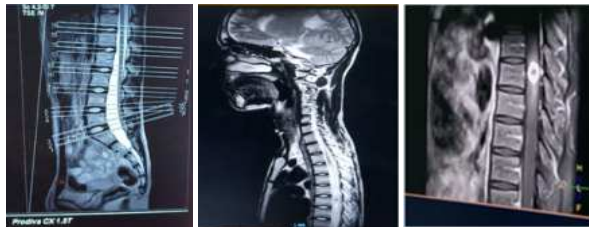


Figure 1

Figure 2a

Figure 2b

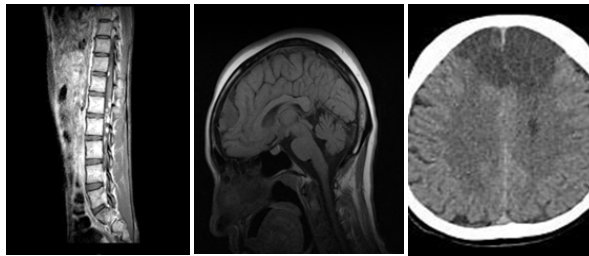


Figure 3

Figure 4

Figure 5

Figure 1, MRI LS spine showed low lying conus medullaris at L5 - S1 with cord tethering at L5- S1. Wide spinal canal from L3 to upper sacral levels. Figure 2a,2b T2 intramedullary hypointense lesion noted at D7 level with cord hyperintensity from D4 to D12 up to conus medullaris with peripheral rim of contrast enhancement. Figure 3 Multiple lumbar meningioma. Figure 4 T1W image showing parasagittal meningioma, Figure 5 CT brain showing B/L ACA territory infarct.

DISCUSSION

About 100 patients who presented with weakness of lower limbs admitted in Department of Neuro Medicine and TAEI ward, Government Mohan kumaramangalam medical college, Salem were studied between June 2023 to May 2024. In present study the youngest patient was 18-year-old and oldest was a 75-year, mean age group was 44 years. 6%, 33%, 42% belong to age group 12- 20years, 20-40 years, 40-60 years respectively. Majority of the population was between 20 – 60 years which highlights the fact that the young and middle aged, bread winning individuals were affected which causes considerable misery. In study conducted by Malokar SS et al [3] 28 percent, 26.67 percent and 25.33 percent of the patients belonged to the age group of 41 -50 years, 51 -60 years and 30 - 40 years respectively. Mean age of patients was 46.69 years. Rajendra et al in their study [4], reported that majority of cases belonged to productive age groups of 2, 3 and 4th decade of life. In our study males are most commonly affected 73 %. In study conducted by Malokar SS et al 56 % of the patients were males while the remaining were females. Rajendra et al, in their study, reported male preponderance with male: female ratio of 1.7:1. In a study conducted by Thangaraj et al, 61.33 percent of the patients were males while the remaining were females. In a study conducted by Vaishnav et al, 54 percent of the patients were males while the remaining were females.[5]

In Malokar SS et al, Upper motor neuron lesions and lower motor neuron lesions was seen in 24 percent and 74.67 percent of the patients respectively. In the remaining 1.33 percent of the patients, upper motor neuron and lower motor neuron lesion was seen. In our study UMN causes were 71% and LMN causes were 29%.

In Malokar SS et al, a total 29.33 percent of the patients had acute inflammatory demyelinating polyradiculoneuropathy as the main etiologic factor, while 26.67 percent of the patients and 21.33 percent of the patients had tuberculosis and Hypokalaemic periodic paralysis as the main etiologic factor. Acute transverse myelitis and cerebrovascular accident in 9.33 percent each. Tuberculosis of spine was the commonest cause of paraplegia followed by Transverse myelitis. From the etiologic diagnosis tuberculosis and demyelinating illness was predominant causes and it was the predominant cause affecting the young population in our study. In the study conducted in BHU, Varanasi by Chaurasia R N et al [6], tuberculosis was the most common cause of non-traumatic compressive myelopathy (in 35.7% of cases). In the study conducted

by Bhumika Vaishnav et al most common cause of acute non-traumatic paraparesis was Pott's Spine (40%). From the time of admission to day 7 – 10 of admission favourable outcome was seen in 52% of our cases. Out of 100 patients, 4 patients (4%) expired, of whom 2 had TB Spine, whereas 1 was known case of breast cancer with multiple metastasis and one patient with aortoiliac occlusive disease (Leriche's).

The other 96 patients were discharged from Neuromedicine / medicine ward and on follow up and some are transferred to neurosurgery department for surgical intervention.

CONCLUSION

Under the light of above obtained data, following Conclusion can be drawn. Acute non-traumatic Paraparesis is a neurological emergency. Reversible Causes of acute paraplegia can be treated successfully if diagnosed early. It is important to diagnose and classify all Cases into compressive and non-compressive lesions based on presenting symptoms because the management of the Two differs. With early diagnosis, it can be managed medically and surgical intervention can be avoided. In our study, 1) In hospital incidence, non-traumatic paraplegia has an inpatient incidence of 1.13 cases /1000 during the study period and has a significant burden on health resources. 2) In this study of Non traumatic paraplegia the incidence was more in Males and was more common in the productive age groups of 3rd and 4th decade. 3) Tuberculosis and demyelinating illness were the commonest causes. 4) Other causes like neoplastic, Disc prolapse, superior sagittal sinus thrombosis, aortoiliac occlusive disease were also seen but to a lesser extent.

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