

**The Study of Etiological and Clinical Profile of Paraparesis / Paraplegia in a Tertiary Care Center****Jakati GopalaKrishna<sup>1</sup>, Sunitha Kumari Namindla<sup>2</sup>, K. Sudhakar Suresh<sup>3</sup>, Azmath Begum<sup>4</sup>**<sup>1,2</sup>Assistant Professor of Medicine, Osmania Medical College / General Hospital, Hyderabad<sup>3</sup>Assistant Professor of Forensic Medicine, Osmania Medical College / General Hospital, Hyderabad<sup>4</sup>M.D, General Medicine, Osmania Medical College / Osmania General Hospital, Hyderabad

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Conflict of interest: Nil

**Abstract:****Aim of the Study:** To the Study the etiological factor and determine the clinical profile.**Material & Methods:** A total of 50 patients underwent with weakness of lower limbs and admitted in Osmania General Hospital, Hyderabad Telangana State from January 2021 to December 2022.**Results:** A total 50 cases were studied. 92% of the study population presented with clinical picture of non-traumatic Paraparesis. 62% of the study population was below 40 years of age, which highlights the brunt of illness in young people. 66% of the cases has presented with acute onset of weakness, followed by 18% subacute onset followed by 16% presented with insidious onset. 69.2% of non-compressive myelopathy have preceding symptoms and 46% of polyradiculopathy cases. 43% of the cases are showing demyelinating lesion among which 50% are LETM cases. 75% of tumors are primary tumors of brain and spinal cord in this population study.**Conclusion:** In the study, most common cause was acute inflammatory demyelinating polyradiculoneuropathy and acute transverse myelitis followed by Spinal Tuberculosis.**Keywords:** Etiological and Clinical Profile of Paraparesis, Cerebrovascular accident, Magnetic resonance image.

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**Introduction**

Etymologically paraplegia means a physical condition simulating that of a person struck by a violent force (Greek: Para-besides; Plesseinto strike). Sir Pervicall Pott summarized the pathetic plight of paraplegia when he wrote in 1779. If the patient were an infant, it becomes an object of constant distress to its parents. If an adult is rendered helpless to him and useless to all others, which of all possible state is usually the worst. It is the sense of being "useless to all others" that makes the paraplegic more miserable than agony of being helpless to him.

To improve accurate communication and consistency among clinicians and researchers, American Spinal Injury Association (ASIA) developed and published the international standards for neurological and functional classification of spinal cord injury patients. 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<sup>1</sup>. 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 [2].

The disease spectrum is somewhat different in India as compared to western countries, where infections and nutritional causes are less common. The etiology of paraplegia differs from one region to other in our own country. During past three decade, several studies to find out the etiology of paraplegia have been carried out at different regions of India. The earliest studies were reported from Bombay, followed by several others from Lucknow [3,4]. Some of these studies have amply shown that the etiology of paraplegia in India differs from that of west and there are marked regional differences within our country [5,6,7] Thus, this study aims to find out the plethora of symptomatology and etiology of paraparesis in

patients admitted to Osmania General Hospital, Hyderabad.

**Aim of the Study**

- To the Study the etiological factor
- To determine the clinical profile.
- To Categorise paraparesis / paraplegia into subtype.

**Material and Methods**

This study was conducted at Osmania General Hospital, Hyderabad from January 2021 to December 2022. 50 nos of patients presenting with weakness of lower limbs admitted in Department of General Medicine, Osmania General Hospital, Hyderabad Telangana State were examined.

**Inclusion Criteria**

1. Age equal to or more than 18.
2. Acute, subacute to chronic onset motor weakness of both lower limbs

**Exclusion Criteria**

1. Exclusion of weakness of upper limbs.
2. Age less than 18 years.

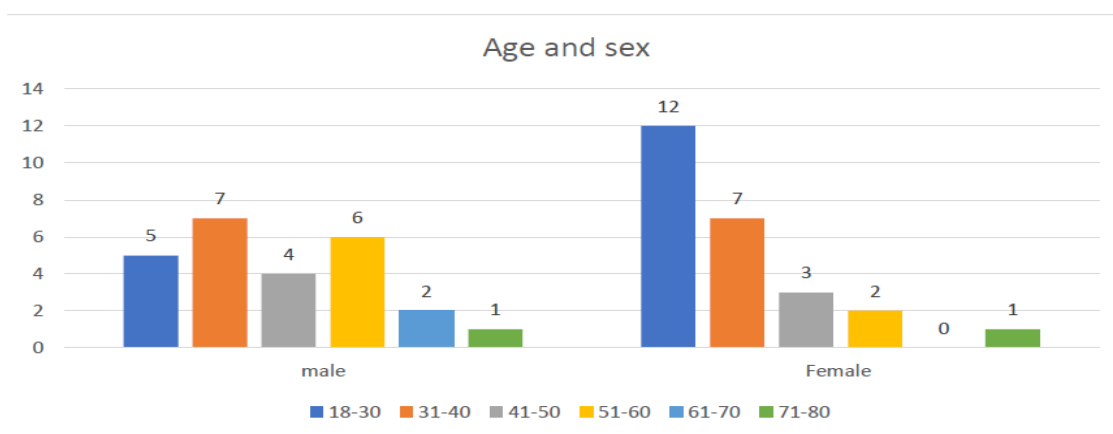
**Investigations:**

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, Clarity, Aquaporin Positivity
4. Viral markers: HIV, HBsAG, HCV
5. ECG
6. X Ray Spine & Chest
7. CT Spine
8. MRI Spine with or without contrast
9. Nerve Conduction Study

**Results**

**Table 1: Etiological diagnosis**

S.No.	Etiological Diagnosis	No. of Cases	Percentage
1	Traumatic Myelopathy	4	8
2	Ossification of posterior longitudinal ligament	1	2
3	Ossification of ligamentum flavum	2	4
4	Spondylosis	1	2
5	Pott Spine	3	6
6	Epidural abscess – TB	3	6
7	Secondaries in spine	2	4
8	Pathological fracture	1	2
9	Osteoporosis	1	2
10	Intramedullary lesion	1	2
11	Extradural lesion	0	0
12	Post infective transverse	5	10
13	Multiple sclerosis	1	2
14	Spinal cord infarction	1	2
15	NMO-SD	5	10
16	Gullain barre syndrome	14	28
17	CIDP	1	2
18	Hypokalaemic paraparesis	3	6
19	Peripheral neuropathy	1	2



**Graph 1: Age and Sex Distribution**

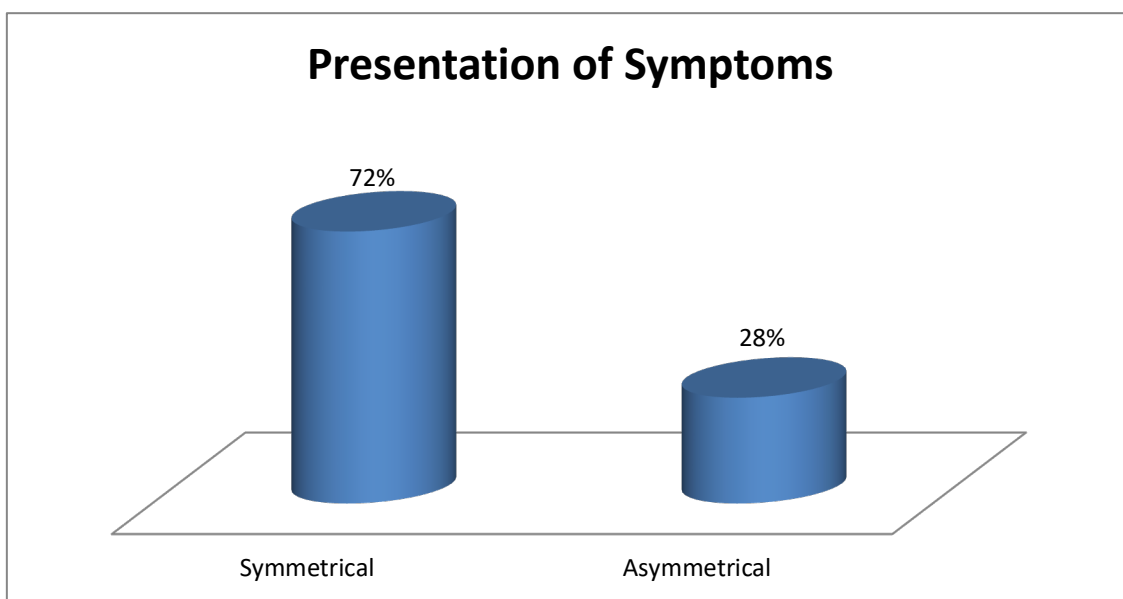
62% of the study population were below 40 years of age, which highlights the brunt of illness in young people.

**Table 2: Onset of Weakness**

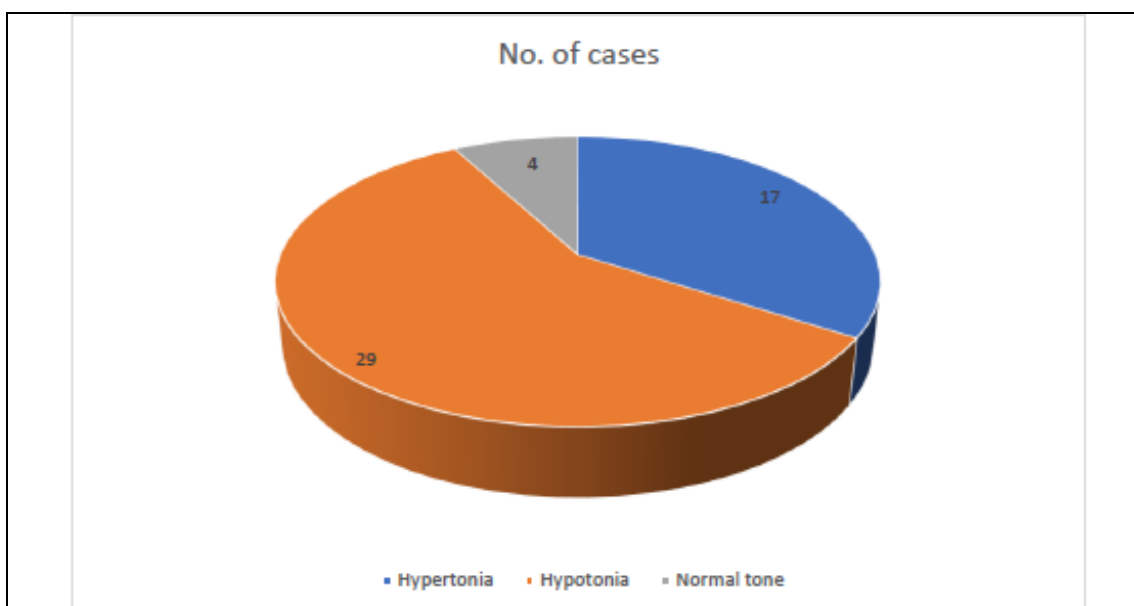
Onset of Clinical features	No. of Cases	Percentage
Acute (1-14 days)	33	66
Subacute (14-30 days)	9	18
Chronic (30 days)	8	16

**Table 3: Preceding Symptoms**

Etiology	Preceding Symptoms	Cases	
		No	Percentage
Comprehensive Myelopathy	Yes	9	47.3
	No	10	52.7
Non- Compressive Myelopathy	Yes	9	69.2
	No	4	30.8
Polyradiculopathy	Yes	6	46.1
	No	7	53.9



**Graph 2: Presentation of Symptoms**



**Graph 3: Tone of Muscle**

**Table 4: CT – SPINE**

	No. of Cases	Percentage
Lytic Lesion	5	38.6
Fracture / Fracture collapse	3	23
Wedge compression	1	7.6
Compression	2	15.6
Osteophytes	1	7.6
Spondylosis	1	7.6

**Table 5: MRI SPINE**

S.No	Lesion	No. of Cases	Percentage
1	Ossification of posterior longitudinal ligament	1	4.34
2	Hyperintense lesion demyelination	5	21.73
3	Epidural / paraspinal collection	3	13.04
4	Spinal cord infarction	1	4.34
5	Hyp/hyperintense lesion? Metastasis	2	8.69
6	Longitudinal extensive	5	21.73
7	Ligamentum flavum hypertrophy	2	8.69
8	Spondylodiscitis	1	4.34
9	PVD	3	13.04

**Table 6: Tumors of Spinal Cord**

Tumor	No. of Cases	Percentage
Primary	2	75
Secondary	1	25

## Discussion

Paraplegia or paraparesis could be defined as loss of function of both legs as a result of disease or injury of the spinal cord, spinal roots, peripheral nerves or myopathies. However, it could also result from certain parasagittal intracranial lesions and electrolyte disturbance. Paraplegia due to non-traumatic myelopathy is disabling and distressing neurological disease with protean clinical presentations [8]. Paraplegia are conditions with considerable morbidity having tremendous social repercussions. It is considered as disease of great and constant misery to patient, family and society.

In present study the youngest patient was 18-year-old and oldest was a 75-year, mean age group was 42 years. 34%, 28%, 30% belong to age group 18-30years, 30-40 years, 40-60 years respectively. Majority of the population was below 40 years which highlights the fact that the young, bread winning individuals are affected which causes considerable misery. Both males and females were equally affected. In study conducted by Malokar SS et al [8] 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.

In a study conducted by Vaishnav et al [9], the age of presentation varied, but the most commonly affected age groups were between 26 and 50 years (36%) and between 51 and 65 years (34%). The

mean age was 45.66 years (with a standard deviation of 19.26). This showed that all age groups were affected by acute non-traumatic paraparesis. Rajendra et al in their study [10], reported that majority of cases belonged to productive age groups of 2, 3 and 4th decade of life. Thangaraj et al [10] in their study, reported that 32 percent and 22.67 percent of the patients belonged to the age group of 40 to 50 years and 20 to 30 years respectively. In Chintala et al mean age was 3-4 decade and in Ranjit et al the mean age is 44.59.

In present study male and female has equal incidence. In study conducted by Malokar SS et al 56 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. 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 study conducted by Chintada Sruthi Keerthi et al and Dr Ranjit Sanu Watson et al [11], Male to female ratio is 1.7:1 and 1.4:1 respectively. Male preponderance with M: F=1.7:1. Incidence was common in productive age groups of 3rd and 4th decade. In present study, 33(66%) patients presented with acute onset of weakness, followed by 9(18%) with sub-acute onset followed by 16% with insidious onset.

Onset	Chintada Sruthi Keerthi et al <sup>12</sup>	Dr Ranjit Sanu Watson et al <sup>11</sup>	Present Study
Acute	46%	56.3%	66%
Sub-acute to chronic	54%	43.7%	34%

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; Disc prolapsed.

In the study conducted in BHU, Varanasi by Chaurasia R N et al [13], 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%).

The most common cause of Compressive myelopathy in Dr Ranjit Sanu Watson et al study was Tuberculosis of spine and non-compressive myelopathy is transverse myelitis.

In Dr Pughaz Deivigan et al [14], 27(54%) cases were grouped into cord compressive and 20 (40%) were grouped into Non compressive group, while in 3 (6%) case no etiology could be found on MRI. Tuberculosis was the major cause in compressive group while Acute Transverse Myelitis was the major cause in Non-compressive group.

The most common cause of compression is TB-spine. Tuberculosis was the commonest cause of compressive myelopathy in this study and was observed in 12% of patients. In the present study two patient had HIV infection, one case was known TB and one was newly diagnosed with TB. 2 patients were on antitubercular treatment for pulmonary tuberculosis. All the patients were put on antitubercular drugs. MRI done in one case revealed inflammatory spondylodiscitis with paraspinal abscess.

In two studies reported in India in 2004 and 2008 tuberculosis was the leading cause of paraplegia accounting for 22% cases and 18% cases respectively. One Indian study reports 52.2% in their study group 2. Study from Tanzania reports 54% of total cases 3 Lower thoracic spine (T7-12) was involved in all the cases. Rest of the studies also showed Pott's spine involved in lower dorsal region. While in a study done by (Chaurasia et al showed the involvement of upper thoracic spine (T1-6) in the majority.

Paraparesis and its sequelae have serious and lasting effects on an affected person's life. It also has tremendous psychosocial repercussions on the patient and his/her family. Therefore, rapid diagnosis and early treatment of acute non-traumatic paraparesis are crucial determinants of long-term recovery and favourable prognosis of a patient. Thus, it becomes very important for the treating physician to be well-acquainted with various clinical presentations and diagnostic aids for paraparesis of non-traumatic origin.

### Summary & Conclusion

In our study, it was found.

1. Males and females were equally affected.
2. Age group below 45 years was most commonly affected.
3. Majority of patients presented with acute onset.
4. Overall, most common cause of paraparesis is acute inflammatory demyelinating polyradiculoneuropathy (GBS) (20%) and transverse myelitis (10%)/NMO-SD (10%).
5. Potts spine was the most common cause of compressive myelopathy.
6. Acute Transverse myelitis was the most common cause of non-compressive myelopathy.

In the study, most common cause is acute inflammatory demyelinating poly radiculo neuropathy and acute transverse myelitis followed by Spinal Tuberculosis.

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