Under the aegis of Department of Neurology
IMS-BHU

IANCON 2025 KASHI

Abstract Id is **628**

"A dance of missteps: Echoes of the cerebellum in the neuromuscular cleft"

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Background:

- Lambert–Eaton Myasthenic Syndrome (LEMS) is a rare autoimmune disorder affecting presynaptic voltage-gated calcium channels (VGCCs) at the neuromuscular junction.
- Cerebellar ataxia is recognized in paraneoplastic LEMS (P-LEMS),
- Its occurrence in non-paraneoplastic LEMS (NP-LEMS) is exceedingly rare

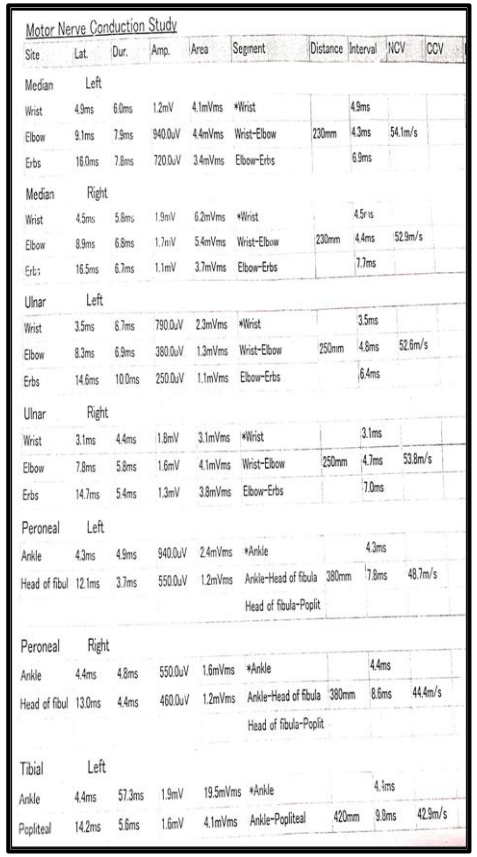
Case description:

- A 63-year-old chronic smoker presented with progressive gait imbalance and recurrent falls over 4 months, worsened in low light and narrow spaces.
- Clinical examination revealed cerebellar signs (hypometric saccades, broken pursuits, mild limb incoordination, ataxic wide-based gait) and global hyporeflexia with preserved power and sensation.
- MRI brain and spine were unremarkable.
- Nerve conduction studies revealed axonal motor neuropathy.
- **Repetitive nerve stimulation test showed a significant decremental (>10%) and incremental (>100%) response.**
- Routine blood work, autoimmune panel, and CSF studies were normal.
- **Serum anti-VGCC antibodies were positive.**
- Imaging for malignancy (CECT NTAP) was negative.

Diagnosis: Cerebellar ataxia (CA) in NP-LEMS (Immune-mediated)

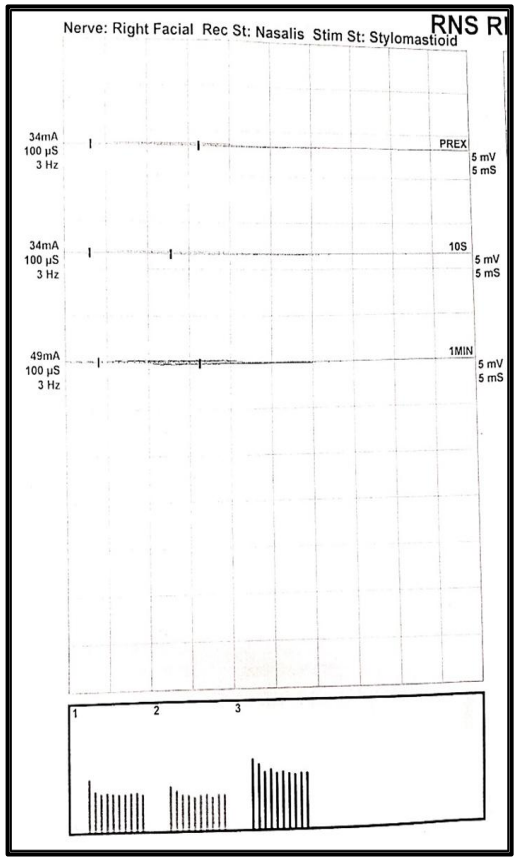
Treatment and follow up:

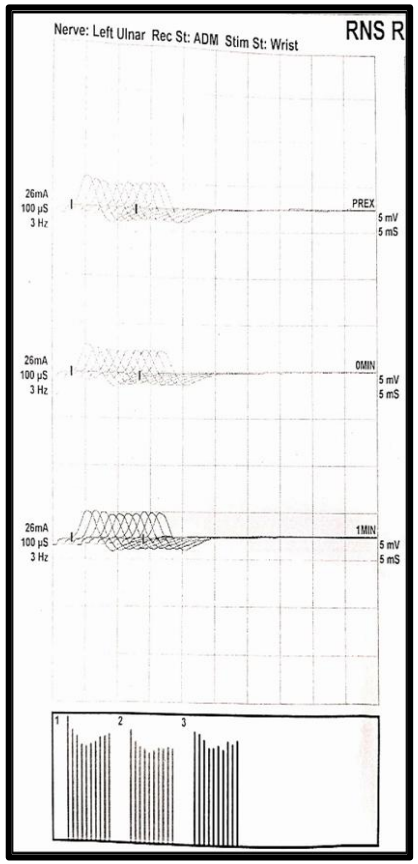
- **The patient was treated with IVIg followed by oral corticosteroids**

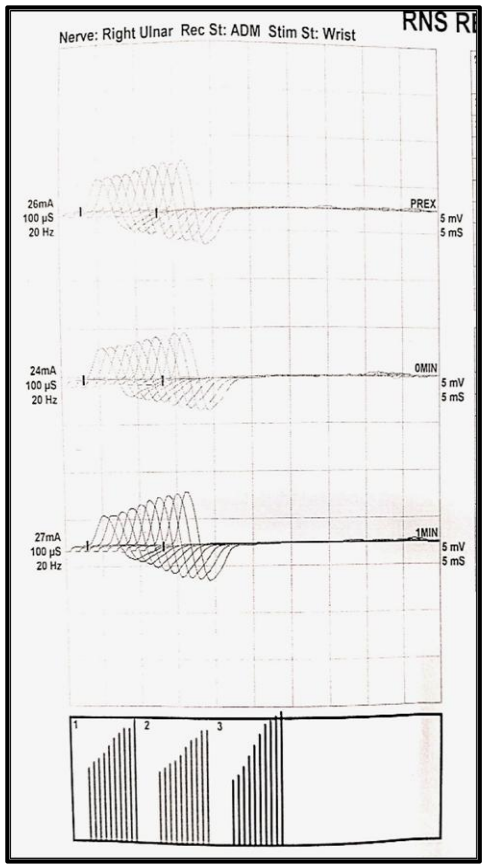


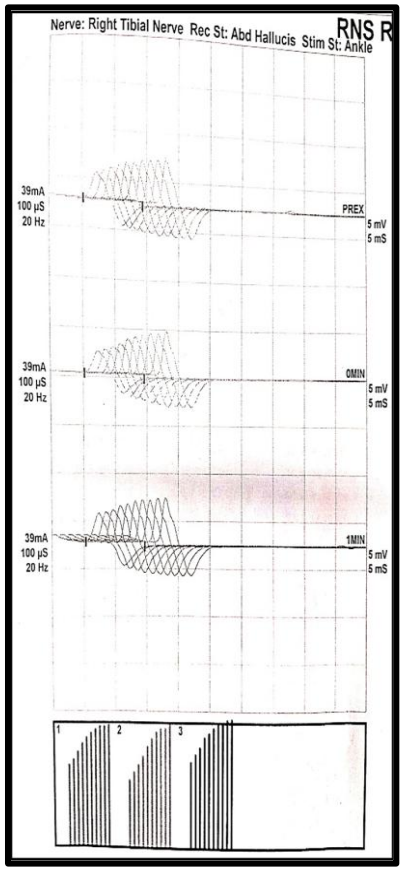
Motor Nerve Conduction Study

Site	Lat.	Dur.	Amp.	Area	Segment	Distance	Interval	NCV	CCV
Median	Left								
Wrist	4.9ms	6.0ms	1.2mV	4.1mVms	*Wrist		4.9ms		
Elbow	9.1ms	7.9ms	940.0uV	4.4mVms	Wrist-Elbow	230mm	4.3ms	54.1m/s	
Erbs	16.0ms	7.8ms	720.0uV	3.4mVms	Elbow-Erbs		6.9ms		
Median	Right								
Wrist	4.5ms	5.8ms	1.9mV	6.2mVms	*Wrist		4.5ms		
Elbow	8.9ms	6.8ms	1.7mV	5.4mVms	Wrist-Elbow	230mm	4.4ms	52.9m/s	
Erbs	16.5ms	6.7ms	1.1mV	3.7mVms	Elbow-Erbs		7.7ms		
Ulnar	Left								
Wrist	3.5ms	6.7ms	790.0uV	2.3mVms	*Wrist		3.5ms		
Elbow	8.3ms	6.9ms	380.0uV	1.3mVms	Wrist-Elbow	250mm	4.8ms	52.6m/s	
Erbs	14.6ms	10.0ms	250.0uV	1.1mVms	Elbow-Erbs		6.4ms		
Ulnar	Right								
Wrist	3.1ms	4.4ms	1.8mV	3.1mVms	*Wrist		3.1ms		
Elbow	7.8ms	5.8ms	1.6mV	4.1mVms	Wrist-Elbow	250mm	4.7ms	53.8m/s	
Erbs	14.7ms	5.4ms	1.3mV	3.8mVms	Elbow-Erbs		7.0ms		
Peroneal	Left								
Ankle	4.3ms	4.9ms	940.0uV	2.4mVms	*Ankle		4.3ms		
Head of fibul	12.1ms	3.7ms	550.0uV	1.2mVms	Ankle-Head of fibula	380mm	7.8ms	48.7m/s	
					Head of fibula-Poplit				
Peroneal	Right								
Ankle	4.4ms	4.8ms	550.0uV	1.6mVms	*Ankle		4.4ms		
Head of fibul	13.0ms	4.4ms	460.0uV	1.2mVms	Ankle-Head of fibula	380mm	8.6ms	44.4m/s	
					Head of fibula-Poplit				
Tibial	Left								
Ankle	4.4ms	57.3ms	1.9mV	19.5mVms	*Ankle		4.1ms		
Popliteal	14.2ms	5.6ms	1.6mV	4.1mVms	Ankle-Popliteal	420mm	9.8ms	42.9m/s	









Discussion:

- **Cerebellar ataxia in NP-LEMS is infrequent and may obscure the diagnosis of LEMS.**
- **Anti-VGCC antibodies may cross-react with cerebellar structures, particularly Purkinje cells, contributing to ataxia.**
- **While LEMS symptoms often improve with immunotherapy**

Conclusion:

NP-LEMS should be considered in patients with subacute cerebellar ataxia, especially when routine evaluations are inconclusive. Early detection and immunotherapy may improve neuromuscular symptoms and functional outcomes.