

CLINICAL EXAMINATION: Mental Status: Alert and oriented x 3. Normal affect. **Speech somewhat fluent with the patient being a very good historian. Evidence of dysarthria.** No evidence of non-organic behaviors. Though content was goal directed.

Head: Facial symmetry was normal. E No scleral injection or peri-orbital rash. No proptosis.

Neck: No cervical adenopathy. No bruits noted over the carotid or vertebral arteries.

Muscle Tone: **Fasciculations were visualized on the right calf and EDB.** No atrophy, spasticity, or rigidity.

Cranial Nerves: As noted, patient spoke fluently, had good eye movement and normal facial expression. Formal assessment revealed no deficits.

Gait: Patient walked normally without any evidence of ataxia or spasticity. Arm and leg swing were normally coordinated. Slow and rapid gait were normal. Ability to turn corners was normal.

Coordination: Tandem walk, finger to nose, heel to shin, fine finger dexterity and rapidly alternating movements were all normal.

Reflexes: The deep tendon reflexes are active and symmetrical bilaterally throughout the biceps, brachioradialis, triceps, patellar and achilles points at a grade of +2 **however hyperreflexia of the patellar points/L4 bilaterally were present at a grade of +3.** Babinski sign, Chaddock's Wrist and Foot, Hoffman's, Rossolimo Hand and Foot, Oppenheim, Schaefer's, Gordon's Hand and Foot were all absent/not present. No clonus is present.

Muscle Strength: Myotomal manual muscle testing of the deltoids (C5 myotome), wrist extensors (C6 myotome), wrist flexors (C7 myotome), finger flexors (C8 myotome), hand interossei (T1 myotome), tibialis anterior (L4 myotome), extensor hallucis longus (L5 myotome), peroneus longus and brevis (S1 myotome) musculature throughout the upper and lower extremities are within normal limits at a grade of 5/5.

Sensation: Peripheral sensitivity testing, utilizing a Wartenburg pinwheel, is graded as equal in character throughout the C5-T1 and L1-S1 dermatomes within the upper and lower extremities. The upper and lower limbs showed normal sharp vs. dull, distinction between hot and cold, vibratory perception, joint position and graphesthesia. There was no astereognosis of the hands.

Extremities: Visual inspection of the hands bilaterally is negative for gross visible evidence of thenar eminence atrophy. Two point discrimination is intact, static and moving, at a 7mm setting utilizing an aesthesiometer. Light touch/pressure is intact utilizing a 5.07 (10g) Semmes-Weinstein monofilament. Phalen's Test, Tinel's Tap Test and Wrist Flexion with Manual Median Nerve Compression are negative bilaterally for median nerve mononeuropathies at the wrists. Manual muscle testing of median nerve innervated abductor pollicis and opponens pollicis muscles are within normal limits at a resulting grade of 5/5.

Conventional motor and sensory nerve conduction studies with late responses were performed in order to rule out peripheral neuropathy. A needle EMG examination of the selected upper and lower limb muscles was performed to exclude denervation secondary to radiculopathy. No SEP or DEP testing was performed at this time. All procedures were performed using a Cadwell Sierra Summit electromyographic instrument. The needle examination was performed using 28 gauge disposable monopolar needle electrodes. All procedures were performed and interpreted by Dr. Luis C. Vera.

ELECTRODIAGNOSTIC RESULTS:

Nerve Conduction Studies

Anti Sensory Summary Table

Stim Site	NR	Peak (ms)	Norm Peak (ms)	P-T Amp (μV)	Norm P-T Amp	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Median Anti Sensory (2nd Digit) 36.2°C											
Wrist		3.4	<3.6	54.2	>10.0	Wrist	2nd Digit	2.7	14.0	52T	>50.0
Right Median Anti Sensory (2nd Digit) 36.2°C											
Wrist		3.3	<3.6	30.0	>10.0	Wrist	2nd Digit	2.4	12.0	50T	>50.0

Motor Summary Table

Stim Site	NR	Onset (ms)	Norm Onset (ms)	O-P Amp (mV)	Norm O-P Amp	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Median Motor (Abd Poll Brev) 36.2°C											
Wrist		3.4	<4.2	6.2	>5.0	Elbow	Wrist	6.3	33.0	52T	>49.0
Elbow		9.7		5.9							
Right Median Motor (Abd Poll Brev) 36.2°C											
Wrist		3.3	<4.2	8.3	>5.0	Elbow	Wrist	5.8	32.0	55T	>49.0
Elbow		9.1		7.8							
Left Peroneal Motor (Ext Dig Brev) 36.2°C											
Ankle		5.9	<6.1	4.6	>2.5	B Fib	Ankle	6.1	27.0	44T	>44.0
B Fib		12.0		4.6		Poplt	B Fib	2.1	10.0	48T	>44.0
Poplt		14.1		4.6							
Right Peroneal Motor (Ext Dig Brev) 36.2°C											
Ankle		5.0	<6.1	4.4	>2.5	B Fib	Ankle	5.8	26.0	45T	>44.0
B Fib		10.8		4.5		Poplt	B Fib	2.2	10.0	45T	>44.0
Poplt		13.0		4.8							
Left Radial Motor (Ext Ind Prop) 36.2°C											
8cm		1.6	<3.0	5.5	>2.0	Elbow	8cm	4.5	26.0	58T	>49.0
Elbow		6.1		4.6							
Right Radial Motor (Ext Ind Prop) 36.2°C											
8cm		2.1	<3.0	4.7	>2.0	Elbow	8cm	3.4	23.0	68T	>49.0
Elbow		5.5		3.9							
Left Tibial Motor (Abd Hall Brev) 36.2°C											
Ankle		5.9	<6.1	11.1	>3.0	Knee	Ankle	9.8	40.0	41	>41.0
Knee		15.7		7.5							
Right Tibial Motor (Abd Hall Brev) 36.2°C											
Ankle		5.8	<6.1	8.9	>3.0	Knee	Ankle	7.5	40.0	53	>41.0
Knee		13.3		7.6							
Left Ulnar Motor (Abd Dig Minimi) 36.2°C											
Wrist		3.0	<4.2	7.1	>5.0	B Elbow	Wrist	1.7	14.0	82T	>49.0
B Elbow		4.7		7.3		A Elbow	B Elbow	4.1	20.0	49T	>49.0
A Elbow		8.8		6.5							
Right Ulnar Motor (Abd Dig Minimi) 36.2°C											
Wrist		3.1	<4.2	7.5	>5.0	B Elbow	Wrist	1.4	10.0	71T	>49.0
B Elbow		4.5		7.5		A Elbow	B Elbow	4.6	30.0	65T	>49.0
A Elbow		9.1		7.5							

F Wave Studies

NR	F-Lat (ms)	Lat Norm (ms)	L-R F-Lat (ms)	L-R Lat Norm
Left Median (Mrkrs) (Abd Poll Brev) 36.2°C				
	29.14	<33	1.66	<2.0
Right Median (Mrkrs) (Abd Poll Brev) 36.2°C				
Left Radial Anti Sensory (Base 1st Digit) 36.2°C				
Wrist	2.8	<3.1	33.2	>15.0
				Wrist Base 1st Digit 2.2 12.0 55T >50.0
Right Radial Anti Sensory (Base 1st Digit) 36.2°C				
Wrist	2.4	<3.1	38.8	>15.0
				Wrist Base 1st Digit 1.8 12.0 67T >50.0
Left Sup Peron Anti Sensory (Ant Lat Mall) 36.2°C				
Site 3	3.9		15.3	
Right Sup Peron Anti Sensory (Ant Lat Mall) 36.2°C				
14 cm	3.8	<4.4	11.6	>5.0
				14 cm Ant Lat Mall 2.7 12.0 44T >40.0
Left Sural Anti Sensory (Lat Mall) 36.2°C				
Calf	3.6	<4.4	18.1	>5.0
				Calf Lat Mall 2.8 14.0 50T >40.0
Right Sural Anti Sensory (Lat Mall) 36.2°C				
Calf	4.0	<4.4	17.1	>5.0
				Calf Lat Mall 3.3 14.0 42T >40.0
Left Ulnar Anti Sensory (5th Digit) 36.2°C				
Wrist	3.2	<3.7	21.1	>15.0
				Wrist 5th Digit 2.4 12.0 50T >50.0
Right Ulnar Anti Sensory (5th Digit) 36.2°C				
Wrist	3.1	<3.7	32.1	>15.0
				Wrist 5th Digit 2.3 12.0 52T >50.0

27.48	<33	1.66	<2.0
Left Peroneal (Mrks) (EDB) 36.2°C			
36.68	<60	3.32	<4.0
Right Peroneal (Mrks) (EDB) 36.2°C			
40.00	<60	3.32	<4.0
Left Radial (Mrks) (Dorsal Hand) 36.2°C			
20.00	<33	0.00	<2.0
Right Radial (Mrks) (Dorsal Hand) 36.2°C			
20.00	<33	0.00	<2.0
Left Tibial (Mrks) (Abd Hallucis) 36.2°C			
47.81	<61	2.33	<4.0
Right Tibial (Mrks) (Abd Hallucis) 36.2°C			
45.48	<61	2.33	<4.0
Left Ulnar (Mrks) (Abd Dig Min) 36.2°C			
28.14	<36	1.33	<2.0
Right Ulnar (Mrks) (Abd Dig Min) 36.2°C			
26.81	<36	1.33	<2.0

H Reflex Studies

NR	H-Lat (ms)	L-R H-Lat (ms)	L-R Lat Norm
Left Tibial (Gastroc) 36.2°C			
34.05	0.16		<2.0
Right Tibial (Gastroc) 36.2°C			
33.90	0.16		<2.0

EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Amp	Dur	Poly	Recrt	Int Pat	Comment
Left	Deltoid	Axillary	C5-6	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	Triceps	Radial	C6-7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	Biceps	Musculocut	C5-6	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	PronatorTeres	Median	C6-7	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	FlexCarRad	Median	C6-7	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	FlexDigSuper	Median	C7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	ExtDigCom	Radial (Post Int)	C7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	1stDorInt	Ulnar	C8-T1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	Abd Poll Brev	Median	C8-T1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	Deltoid	Axillary	C5-6	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	Triceps	Radial	C6-7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	Biceps	Musculocut	C5-6	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	PronatorTeres	Median	C6-7	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	FlexCarRad	Median	C6-7	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	FlexDigSuper	Median	C7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	ExtDigCom	Radial (Post Int)	C7-8	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	1stDorInt	Ulnar	C8-T1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	Abd Poll Brev	Median	C8-T1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	MedGastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	BicepsFemS	Sciatic	L5-S1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	BicepsFemL	Sciatic	L5-S2	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Left	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	MedGastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	BicepsFemS	Sciatic	L5-S1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	BicepsFemL	Sciatic	L5-S2	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml
Right	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	Nml

Paraspinal EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Comment
Left	C5 Parasp	Rami	C5	Nml	Nml	Nml	Nml
Left	C6 Parasp	Rami	C6	Nml	Nml	Nml	Nml
Left	C7 Parasp	Rami	C7	Nml	Nml	Nml	Nml
Left	C8 Parasp	Rami	C8	Nml	Nml	Nml	Nml
Right	C5 Parasp	Rami	C5	Nml	Nml	Nml	Nml
Right	C6 Parasp	Rami	C6	Nml	Nml	Nml	Nml
Right	C7 Parasp	Rami	C7	Nml	Nml	Nml	Nml
Right	C8 Parasp	Rami	C8	Nml	Nml	Nml	Nml
Left	L4 Parasp	Rami	L4	Nml	Nml	Nml	Nml
Left	L5 Parasp	Rami	L5	Nml	Nml	Nml	Nml
Left	S1 Parasp	Rami	S1	Nml	Nml	Nml	Nml
Right	L4 Parasp	Rami	L4	Nml	Nml	Nml	Nml
Right	L5 Parasp	Rami	L5	Nml	Nml	Nml	Nml
Right	S1 Parasp	Rami	S1	Nml	Nml	Nml	Nml

ELECTRODIAGNOSTIC FINDINGS:

- 1) Normal distal motor conduction latencies and amplitudes of the median, ulnar, radial, peroneal and tibial nerves.
- 2) Normal F-responses of the median, ulnar, radial, peroneal and tibial nerves.
- 3) Normal distal sensory latencies and amplitudes of the median, ulnar, radial, superficial peroneal and sural nerves.
- 4) Normal tibial nerve H-reflexes.
- 5) Normal needle EMG examination of the muscles sampled.

CONCLUSIONS:

Based upon the patient's clinical signs and symptoms, coupled with the electrophysiological findings obtained from the current study, he does not exhibit electrophysiological evidence of pathology. Normal median, ulnar, radial, peroneal and tibial motor nerve conduction studies exclude the probability of a focal mononeuropathy, such as entrapment syndromes of these nerves. Median, ulnar, radial, superficial peroneal and sural sensory responses were also within normal limits. The needle examination did reveal spontaneous potentials indicative of membrane instability secondary to denervation in the muscles sampled. ***Thus, there is no detectable electrophysiological evidence of pathology at this time.*** Clinical correlation is advised and it is recommended that he continue with care as recommended by his provider.

ELECTRODIAGNOSTIC IMPRESSION:

1. No detectable electrophysiological evidence of pathology at this time.