HANDS-ON SEMINARS

Electrodiagnostic Testing Report Writing Workshop

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Report Components

- Patient Demographic Information
- History & Physical Examination
- Narrative Summary of EDX
  - Summary of NCS Findings
  - Summary of EMG Finding
- Impression
  - What's going on
  - What's NOT going on
  - Recommendations
- NCS Data Table
- EMG Data Table
- Waveforms

Demographic Information

- Examination date
- Referring physician
- Patient identification number
- Patient date of birth & age
- Patient sex
- Patient height & weight

Patient:			
Date:	5/20/15	**Weight:**	180 lbs
Patient ID:	891068	**Date of Birth:**	6/22/1956
Sex:	Female	**Age:**	58 Years 10 Months
Height:	5 feet 6 inch	**Physician:**	Freels

History

- Forms basis for the electrodiagnostic examination
- Explore in as much detail as necessary
- Include subjective complaints including the reason for the referral & patient history
- Review relevant diagnostic tests already performed
- Formulate a preliminary/differential diagnosis
- Gather historical data until a clear idea of where the physical examination should begin to confirm or exclude each differential diagnosis

Physical Examination

- H&P allows formulation of a preliminary approach to the electrodiagnostic examination
- Physical therapists are experts in anatomy & physiology of the nervous & musculoskeletal systems
- In general, the physical examination should be detailed, but brief…
  - However, the specialty council for clinical electrophysiology is requiring the history & physical examination section to be detailed to a standard similar to a physical therapy evaluation
- The EDX is simply an extension of your physical examination

Physical Examination

- Sensory Examination
  - Examine for deficits in cutaneous distribution of every nerve
- Motor Examination
  - Know origins, insertions & actions
    - Strength
    - ROM
    - Substitution patterns
- Muscle Stretch Reflexes
  - Uppers/Lowers
  - Hoffman's/Babinski/Clonus
- Special Tests Pertinent to Suspected Condition

Mentally trace each nerve back to the spinal cord through each site of potential entrapment including the plexus & nerve root level

Nerve Conduction Studies

- Use a tabular format to exhibit data
  - Highlight or bold abnormal findings
- Include:
  - Nerve studied
  - Recording site
  - Stimulating site(s)
  - Limb temperature – Important!

Nerve Conduction Studies

- Latency
  - Onset vs. Peak
  - Report in ms
- Amplitude
  - Baseline to peak vs. Peak to peak
  - Report in μV (Sensory) or mV (Motor)
- Conduction Velocity
  - Segment distance – important!!
  - Segment latency
  - Report in m/s
- Morphology

Nerve Conduction Studies

- Include waveforms if possible
- Include normative data
  - Either as part of data table or as appendix
- Be judicious in using abbreviations
- Ensure waveforms are appropriate with reasonable sensory and motor baselines, latency and amplitude markers before moving on to the next NCS.
- Does the data PASS THE SNIFF TEST.

- WE CANNOT STRESS ENOUGH THE IMPORTANCE OF QUALITY NCS DATA!

NCS Tabular Data

Motor Summary Table

Site	NR	Onset (ms)	Norm Onset (ms)	O-P* Amp (mV)	Norm O-P Amp	Neg Dur (ms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Median Motor (Abd Poll Brev) complete motor conduction block at wrist												
Palm		1.9		**2.0**	>2.8	6.09	Wrist	Palm		5.0		>29
Wrist 8cm	NR		<4.2		>2.8							
Right Median Motor (Abd Poll Brev) complete motor conduction block at wrist												
Palm		2.5		3.4	>2.8	5.47	Wrist	Palm		5.0		>29
Wrist 8 cm	NR		<4.2		>2.8							
Left Ulnar Motor (Abd Dig Minimi)												
Wrist 8cm		3.1	<3.6	9.1	>4.2	4.84	B Elbow	Wrist 8cm	3.2	19.0	59	>49
B Elbow		6.3		8.6		5.16	A Elbow	B Elbow	1.7	10.0	59	>47
A Elbow		8.0		8.1		5.00						
Right Ulnar Motor (Abd Dig Minimi)												
Wrist 8cm		3.0	<3.6	8.5	>4.2	5.31	B Elbow	Wrist 8cm	3.4	20.0	59	>49
B Elbow		6.4		8.0		5.16	A Elbow	B Elbow	1.6	10.0	63	>47
A Elbow		8.0		8.6		5.16						
Left Ulnar FDI Motor (FDI)												
Wrist		4.5		7.5		3.75	Wrist	B Elbow	3.6	19.0	53	>49
B Elbow		8.1		6.7		3.91	B Elbow	A Elbow	1.6	10.0	63	>47
A Elbow		9.7		6.5		3.91	Wrist	Palm	1.1	5.0	45	>29
Palm		3.4		7.3		3.75						
Right Ulnar FDI Motor (FDI)												
Wrist		3.9		11.2		3.91	Wrist	B Elbow	3.8	20.0	53	>48
B Elbow		7.7		10.7		4.06	B Elbow	A Elbow	1.7	10.0	59	>47
A Elbow		9.4		11.0		4.22	Wrist	Palm	0.8	5.0	63	>29
Palm		3.1		11.0		4.06						

Needle Electromyography

- Use a tabular format to exhibit data
- Include:
  - Type of needle used
  - Muscles examined
  - Insertional Activity
  - Resting/Spontaneous activity
  - Motor Unit Morphology/configuration
    - Amplitude, Duration, Phases
    - Motor unit recruitment
    - Recruitment Frequency / Interval
  - Interference pattern

  - Include examples of abnormal EMG potentials if warranted

EMG Tabular Data-Cadwell

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Left	MedGastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	RectFemoris	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	GluteusMed	SupGluteal	L4-S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	TensorFascLat	SupGluteal	L4-5, S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	First Dors Int	Lat Plantar	S1-2	Nml	**2+**	**2+**	Nml	**Incr**	Nml	0	**Rapid**	Nml	
Left	Abd Hall	Med Plantar	S1-2	Nml	**2+**	**2+**	Nml	**Incr**	Nml	0	**Rapid**	Nml	
Left	Ext Dig Brev	Dp Br Peron	L5-S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	MedGastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	Peroneus Long	Sup Br Peron	L5-S1	Incr	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	First Dors Int	Lat Plantar	S1-2	Incr	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	

Paraspinal EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	L3-4	DPR	L3-4	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Right	L4-5	DPR	L4-5	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Right	L5-S1	DPR	L5-S1	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Left	L4-5	DPR	L4-5	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Left	L5-S1	DPR	L5-S1	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	

Summary of Findings

- Summarize findings of each nerve or muscle examined
  - Note first what is Abnormal then Normal and order by what is most significant is NCS:
  - NCS:
    - Latency-normal or prolonged
    - Amplitude-normal or diminished
    - Velocity-normal or slowed
    - Conduction Block
  - EMG:
    - Insertional Activity/Resting activity
    - Motor Unit Morphology
    - Recruitment
    - Interference Pattern

Summary of Findings

- Organize Summary by most to least important…for each nerve and for each condition identified.
  - Eg. In suspected CTS, Identify abnormal median motor/sensory latencies, amplitudes, NCVs abnormal. Then, components of normal median NCS findings. Finally, what is normal that is not median neuropathy related.
  - Be Comprehensive, but Concise!

'The bilateral median sensory latencies are delayed to digits I and III with slowed transcarpal velocities and normal amplitudes. The bilateral median motor latencies are mildly delayed with slowed transcarpal velocities, normal amplitudes and normal proximal velocities in the forearms and brachii.

Bilateral ulnar motor (with F waves), ulnar sensory and radial sensory nerve conduction parameters are within normal limits.'

NCS Summary of Findings

NERVE CONDUCTION SUMMARY

Using surface electrodes and percutaneous stimulation selected left lower extremity nerves were tested. Testing included motor and sensory tests and H reflex tests. All nerves tested exhibited normal latencies, amplitudes and conduction velocities except:

1. **The left medial & lateral plantar sensory responses were not recordable,**
2. **The left tibial motor transtarsal NCV was mildly slowed.**

Nerve Conduction:
The left medial and lateral plantar sensory nerves are not elicited. There are also focal delays of the left medial and lateral plantar motor nerve transtarsal segments with no significant evidence of conduction block. The right medial and lateral plantar sensorimotor studies and the traditional study of the bilateral tibial motor nerves to the abductor hallicus muscles are WNL with normal CMAP amplitude and leg velocities. The left peroneal motor nerve is WNL as are the bilateral sural sensory nerves. There is evidence of an accessory peroneal nerve at the posterior left malleolus. The bilateral tibial H-reflexes and the left peroneal F-waves are WNL.

Summary of Findings

- EMG:
  - Note what is Normal & what is Abnormal
  - Insertional activity
    - Normal, Increased, Decreased
    - Spontaneous activity
      - Fibs/PSWs, CRDs, Myokymia, Fasciculations, Myotonic Discharges
    - quantify 1+, 2+, 3+, 4+
  - Motor unit configuration
    - Amplitude-reduced, normal, increased
    - Duration-decreased, normal, prolonged
    - Polyphasicity-1+, 2+, 3+, 4+
    - Distorted

Pattern EMG Findings By EDX Condition

	Insertion	Rest	Morphology	Recruitment
Normal	Nml	Nml	Nml	Full
Acute Neuropathy	Incr	Fibs/PSWs	Nml	Nml, Reduced, Rapid Firing
Ongoing Neuropathy	Incr	Fibs/PSWs	Long-Duration, Polyphasic, Large Amplitude	Nml, Reduced, Rapid Firing
Chronic Neuropathy	Nml, Decr	Nml vs. Small Amp <100uV Fibs/PSWs, CRDs	Large Amplitude, Long-Duration Polyphasics	Nml, Reduced, Rapid Firing
Myopathy	Nml, Decr	Fibs/PSWs, CRDs, Myotonic Discharges	Small Amplitude, Short Duration, Polyphasic	Nml, Early

Summary of Findings

- Recruitment
  - Frequency (Hz) – Normal, Rapid, Early, Variable
- Interference
  - Partial, Full, Variable, Isolated Motor Units
  - May indicate as a % - <25%, <50%, <75%, Full

- Eg…In Cervical Radiculopathy

'Several muscles from the R upper extremity representing the C7 myotomes (including the lower cervical paraspinals) show evidence of acute and ongoing denervation characterized with increased insertion, fibrillations, PSWs, several long-duration polyphasic motor units and a few larger than normal amplitude MUAPs. There was slightly reduced and rapid-firing recruitment in the R triceps and flexor carpi radialis muscles.

Remaining muscles in the sample representing the R C3-6 and C8-T1 myotomes show normal activities with insertion, rest and volitional testing.'

EMG Summary of Findings

ELECTROMYOGRAPHY SUMMARY

Using a sterile monopolar needle electrode selected proximal and distal muscles of the left lower extremity were examined. All muscles examined exhibited normal insertional activity, electrical silence at rest and normal motor unit configuration and recruitment.

ELECTROMYOGRAPHY SUMMARY

Using a sterile monopolar needle electrode selected proximal and distal muscles of the bilateral lower extremities and lumbosacral paraspinals were examined. All muscles examined exhibited normal insertional activity, electrical silence at rest and normal motor unit configuration and recruitment except:

1. **The right posterior tibialis exhibited a few positive sharp waves.**

Electromyography:
Using a monopolar needle electrode, sampling consisted of the bilateral ventral primary rami innervated muscles of the lower extremities representing the L2-S2 myotomes and the related dorsal primary rami innervated paraspinals. There are fibrillations and motor unit morphologic changes suggesting acute and ongoing denervation noted in the left lateral and medial plantar innervated FDI and AH muscles. There are no further abnormalities noted in any of the extremity or paraspinal muscles representing the remaining sample.

Impression

- Although the electrodiagnostic impression is formulated last, it is recommended that it be placed on the first page of the report, where it can be reviewed quickly by the referring physician

- What is it?
- What is it NOT?
- Emulate the Narrative Summary of the EMG/NCS

- Many referral sources only look at the impression & want to avoid lost time looking for the impression within a lengthy report

Impression

- State if results of the examination are Normal or Abnormal
- Is it Neuropathic or Myopathic?
- Use Electrophysiologic Terms
  - "Focal mononeuropathy…", "Axonal pathology…", "Sensorimotor polyneuropathy…", "Myopathic process…"
- Avoid Medical Diagnoses
  - "Diabetic polyneuropathy", "Carpal tunnel syndrome"
- May Quantify Severity
  - Mild, moderate, severe
- Identify Acuity vs. Chronicity
  - Acute, Ongoing, Chronic

Word as clearly & concisely as possible to impart as much information as possible & to avoid confusion

Impression

- Additional Statements or Recommendations:
  - May Estimate Prognosis for Recovery
  - Additional Imaging if appropriate
  - Additional Diagnostic Tests if appropriate
  - Follow-up Electrodiagnostic Testing to quantify improvement or progression of the disease

  - Avoid recommendations for medical treatment such as surgery, injections, medications, etc…but depends on the relationship with referring provider.
  - May recommend conservative treatment such as rest, PT, immobilization or splinting, etc.

Impression

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. Mild to moderate sensory & motor, axonal & demyelinating neuropathy affecting the left posterior tibial nerve at or about the medial ankle (tarsal tunnel).

There was no electrophysiologic evidence of additional focal nerve pathology, proximal nerve, plexus or nerve root pathology, myopathy, polyneuropathy or motor neuron pathology. Clinical correlation is suggested.

Focal Entrapment

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. Axonal pathology affecting the left lower lumbosacral nerve roots, most evident at the left S1 nerve root level.

There was no electrophysiologic evidence of focal nerve pathology, proximal nerve or plexus pathology, myopathy, polyneuropathy or motor neuron pathology. Clinical correlation with imaging studies is suggested.

Radiculopathy

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. Sensorimotor axonal & demyelinating polyneuropathy, electrophysiologically severe, evident in both lower extremities and that worsens distally.

There was no electrophysiologic evidence of focal nerve pathology, proximal nerve, plexus or nerve root pathology, myopathy or motor neuron pathology. Clinical correlation is suggested.

Polyneuropathy

Impression

Impression: (Abnormal Study)

1. Evidence suggests very severe median focal neuropathic processes at the wrists, bilaterally.
    a. This includes motor and sensory axonopathy with complete motor conduction block at the wrists.
    b. Today's findings show significant progression of neuropathic changes from prior study in October 2004.
2. There are no findings to suggest any superimposed processes such as ulnar neuropathic processes at the elbows or wrists, cervical radiculopathic processes, brachial plexopathic process or more generalized polyneuropathic processes.

Focal Entrapment

Impression: (Abnormal Study)

1. Evidence suggests mild acute right C6 cervical radiculopathic process.
    a. This involves both ventral and dorsal primary rami.
2. There are no findings to suggest any superimposed focal/mononeuropathic processes, brachial plexopathic process or polyneuropathic process.

Radiculopathy

Impression: (Abnormal Study)

1. Evidence suggests moderate primary axon loss > demyelinating, motor and sensory polyneuropathic process.
2. Symptoms are worse in the distal > proximal lower extremities. Given the diffuse changes, this examination cannot reliably rule in/out the presence of any superimposed lumbosacral radiculopathic processes.

Polyneuropathy

Focal Entrapment

ELECTRONEUROMYOGRAPHY CONSULTATION

Patient:
Date: **Weight:** 194 lbs
Patient ID: 50681XX **Date of Birth:** 4/26/1958
Sex: Female **Age:** 57 Years 1 Months
Height: 5 feet 5 inch **Physician:** Heilig

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. **Moderate sensory & motor, axonal & demyelinating neuropathy affecting the right median nerve at or about the wrist (carpal tunnel),**
2. **Mild primarily motor demyelinating neuropathy affecting the right ulnar nerve at or about the elbow (cubital tunnel).**

There was no electrophysiologic evidence of additional focal nerve pathology, proximal nerve, plexus or nerve root pathology, myopathy, polyneuropathy or motor neuron pathology. Clinical correlation is suggested.

HISTORY & PHYSICAL EXAMINATION SUMMARY

The patient's medical record, medical and surgical history, medications and diagnostics were reviewed.

Ms Rxxxx presents today with a chief complaint of right arm and hand pain and numbness. Symptoms date to several months ago and are progressive. Physical examination reveals no significant atrophy, edema or bony abnormality. ROM is normal throughout. Strength is 4+/5 to 5/5 throughout. MSRs are intact in the uppers. Sensation to light touch is diminished in the median distribution. No clonus or spasticity is present. Hoffman's is negative. Spurling's is negative. Tinel's is positive at the wrist and positive at the elbow. Phalen's is positive. Median compression is negative. Elbow flexion is negative.

NERVE CONDUCTION SUMMARY

Using surface electrodes and percutaneous stimulation selected right upper extremity nerves were tested. Testing included motor and sensory tests. All nerves tested exhibited normal latencies, amplitudes and conduction velocities except:

Diagnosis:
Carpal Tunnel Syndrome 354.0
Request EMG/NCS to assess CTS and rule out involvement of the ulnar nerves at the elbows or Guyon's canal.

Complaint:
Pt has long history of known CTS. Prior study performed in October 2004 indicated moderate to severe median neuropathy at the right wrist. He's not undergone any surgical intervention since that time and indicates that it has progressively worsened to the point that he has no sensation in digits I-III bilaterally and severe atrophy of the bilateral thenar muscles. There is also gout related joint deformities in the fingers (worse digits IV-V) that seem to be affecting his ability to flex those IP and DIP joints of the hands. He denies known DM, thyroid disease, autoimmune disorders, ETOH, Vit deficiencies, CA, ETOH, COPD or exposures. There is otherwise good intrinsic (ulnar C8-T1) hand strength as well as the bilateral FPL's (median/AIN C7-8) and more proximal myotomes C5-7 from the axillary, radial, suprascapular, musculocutaneous and median nerves. Phalen's and Tinel's at the wrists are + bilaterally. Spurling's is negative bilaterally. Froment's and Finklestein's are negative. Cervical and shoulder ROM is WNL and special testing for outlet impingement and labral loading does not provoke any Sx. Light touch sensory assessment is normal in all distributions except to digits I-III and the radial ½ of digits IV (median nerve distribution). MSR's are 2+ and symmetric in the biceps, triceps, brachioradialis, knees and ankles. Hoffman's is negative and there is no clonus. Skin temp is maintained above 31 C in the palms throughout testing.

Plan for Study: Perform NCS of the bilateral upper extremities with special attention to the median and ulnar nerves in order to assess neurophysiologic integrity distal to, across and above the carpal tunnels, tunnel of Guyon and cubital tunnels and to screen the brachial plexus. Include EMG assessment of the upper extremities to address the clinical questions above as well as screening of the brachial plexus and cervical nerve roots.

ELECTRONEUROMYOGRAPHIC SUMMARY

Nerve Conduction:
Bilateral median sensory nerves are not elicited at digits I or III bilaterally. Bilateral median motor nerves show complete motor conduction block at the wrists with confirmed response from palm-APB muscles at low amplitude on the left and amplitude at the lower limits of normal on the right. The bilateral ulnar motor (ADM, FDI, F waves) nerves show normal conduction across the wrists, forearms and elbows with normal amplitudes. The bilateral ulnar sensory and radial sensory nerve studies are WNL.

Electromyography:
Using a monopolar needle electrode, sampling consisted of ventral primary rami innervated muscles from the bilateral upper extremities representing the C5-T1 myotomes and the related dorsal primary rami innervated cervical paraspinals on the right. There are reduced insertional activities (<200ms) with 2+ trains of PSWs and fibrillations and very reduced, rapid and distorted MUAPs in the bilateral median APB muscles. All other muscles in the sample show normal activities with insertion, rest and volitional testing.

Impression: (Abnormal Study)

1. **Evidence suggests very severe median focal neuropathic processes at the wrists, bilaterally.**
   a. **This includes motor and sensory axonopathy with complete motor conduction block at the wrists.**
   b. **Today's findings show significant progression of neuropathic changes from prior study in October 2004.**
2. **There are no findings to suggest any superimposed processes such as ulnar neuropathic processes at the elbows or wrists, cervical radiculopathic processes, brachial plexopathic process or more generalized polyneuropathic processes.**

Radiculopathy

ELECTRONEUROMYOGRAPHY CONSULTATION

Patient:
Date: **Weight:** 180 lbs
Patient ID: 64969XX **Date of Birth:** 3/19/1971
Sex: Male **Age:** 44 Years 2 Months
Height: 5 feet 9 inch **Physician:** Heilig

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. **Axonal pathology affecting the left mid to lower cervical nerve roots, most evident at the left C7 nerve root level.**

There was no electrophysiologic evidence of focal nerve pathology, proximal nerve or plexus pathology, myopathy, polyneuropathy or motor neuron pathology. Clinical correlation with imaging studies is suggested.

HISTORY & PHYSICAL EXAMINATION SUMMARY

The patient's medical record, medical and surgical history, medications and diagnostics were reviewed.

Mr presents today with a chief complaint of neck and shoulder pain and left triceps and arm weakness. Symptoms date to an MVA in April 2015. MRI scheduled for later this week. Physical examination reveals no significant atrophy, edema or bony abnormality. ROM is normal throughout. Strength is 4+/5 to 5/5 throughout except triceps and pronation at 4/5. MSRs are intact in the uppers except left triceps at trace. Sensation to light touch is intact. No clonus or spasticity is present. Hoffman's is negative. Spurling's is negative. Tinel's is negative at the wrist and negative at the elbow. Phalen's is negative. Median compression is negative. Elbow flexion is negative.

NERVE CONDUCTION SUMMARY

Using surface electrodes and percutaneous stimulation selected left upper extremity nerves were tested. Testing included motor and sensory tests. All nerves tested exhibited normal latencies, amplitudes and conduction velocities.

Diagnosis:
Right upper extremity pain and parasthesias 729.5, 782.0
Request EMG/NCS for suspicious cervical radiculopathy vs. CTS 723.4, 354.0

Complaint:
Pt developed insidious onset of right shoulder pain with referred parasthesias to the forearm and hand a little over 4 weeks ago. She denies specific neck pain. She indicates that working makes her more tired in the arm with difficulty coordinating holding objects like a pen to write, her tools to work or a clipboard and symptoms seem to worsen with head movements. Brief clarifying assessment is performed prior to EMG/NCS. She denies any significant medical history including diabetes, thyroid disease, autoimmune disorders, ETOH, Vit deficiencies, CA, exposures or COPD. Clinical assessment indicates limited CROM in R rotation and extension with + lateral arm pain. Spurling's is + to the right. MMT is WNL and symmetric to myotomes C3-T1, bilaterally. Light touch sensory assessment is symmetrical to all upper/lower extremity dermatomes. MSR's are 1+ R biceps, 2+ L biceps, 2+ and symmetric in the triceps, BR, knees and ankles. Hoffman's reflexes are negative and there is no clonus. Phalen's, Tinel's and anterior compression is negative at the wrists. Froment's, Finklestein's, AC Compression, Neer's, Hawkin's and labral load testing is all negative. Skin temp is maintained above 31 C in the right palm.

Plan for Study: Perform NCS of the right upper extremity with the goal of screening for common entrapment syndromes of the median/ulnar/radial nerves with EMG assessment of the upper extremity to address the clinical question of cervical radiculopathy vs. CTS as well as screening of the brachial plexus.

ELECTRONEUROMYOGRAPHIC SUMMARY

Nerve Conduction:
The right median, radial and ulnar sensory nerve studies are WNL for all latencies, velocities and SNAP amplitudes. The right median, radial and ulnar motor nerve studies are WNL for latencies, segmental velocities and CMAP amplitudes, including the median and ulnar F waves.

Electromyography:
Using a monopolar needle electrode, sampling consisted of ventral primary rami innervated muscles from the right upper extremity representing the C3-T1 myotomes and the related cervical paraspinals. There are some increased insertional activities with a few short trains of PSW's noted in the right deltoid, triceps and C5-6 paraspinals. Motor unit morphology and recruitment is WNL in these muscles. All other muscles in the sample show normal activities with insertion, rest and volitional testing.

Impression: (Abnormal Study)

1. **Evidence suggests mild acute right C6 cervical radiculopathic process.**
   a. **This involves both ventral and dorsal primary rami.**
2. **There are no findings to suggest any superimposed focal/mononeuropathic processes, brachial plexopathic process or polyneuropathic process.**

Polyneuropathy

ELECTRONEUROMYOGRAPHY CONSULTATION

Patient:

Date:	12/16/14	**Weight:**	210 lbs
Patient ID:	12162014-3	**Date of Birth:**	5/10/1963
Sex:	Male	**Age:**	51 Years 7 Months
Height:	6 feet 0 inch	**Physician:**	El Naggar

IMPRESSION

This was an abnormal study. Today's findings are consistent with:

1. **Sensorimotor polyneuropathy, evident in all extremities tested and that worsens distally.**

There was no electrophysiologic evidence of focal nerve pathology, proximal nerve, plexus or nerve root pathology, myopathy or motor neuron pathology. Clinical correlation is suggested.

HISTORY & PHYSICAL EXAMINATION SUMMARY

The patient's medical record, medical and surgical history, medications and diagnostics were reviewed.

Mr presents with a chief complaint of bilateral leg and foot pain, burning and paraesthesias. Symptoms also include the upper extremity. No history of injury. Long term history of low back pain with low back surgery in 2011. He is not diabetic. Symptoms are constant. Physical examination reveals no atrophy, edema or bony abnormality. Movement patterns are normal. Gait is mildly antalgic. ROM is essentially normal throughout the low back & lowers. Strength is 4+/5 to 5/5 throughout. MSRs are absent in the lowers. Sensation to light touch is diminished distally in the lower extremities and to a lesser extent in the hands. No clonus or spasticity is present. SLRs are negative in sitting. Tinel's is negative at the fibular heads and negative at the medial ankles. Slump test is negative.

NERVE CONDUCTION SUMMARY

Using surface electrodes and percutaneous stimulation selected bilateral lower extremity and left upper extremity nerves were tested. Testing included motor and sensory tests and H reflex tests. All nerves tested exhibited normal latencies, amplitudes and conduction velocities except:

Diagnosis:
Right > left lower extremity parasthesias 782.0
Request EMG/NCS for suspicious peripheral polyneuropathy 356.9

Complaint:
Pt reports parasthesias in the R>L distal lower extremities with difficulty balancing and occasional 'giving-way' feelings in the legs that began insidiously about 1 year ago and has been slowly worsening. Parasthesias are worse at night and better when up and walking about. He denies any proximal complaints in the knees, hips, lower back, hands, elbows, shoulders or neck. Brief clarifying assessment is performed prior to EMG/NCS. He denies known DM, thyroid disease, autoimmune disorders, CA, or exposures. He indicates recent identification of decreased Vit B-12 and just started injections. He also reports ETOH of about 4-6 drinks daily x 50 years. He ambulates with a mild steppage type gait pattern, but no obvious foot drop or slap. There is normal ROM in the extremities, cervical and lumbar spine without provocation of Sx with neuroforaminal compression. MSR's are absent at the ankles, 1+ and symmetric at the knees and 2+ in the biceps, triceps. Hoffman's reflexes are negative and there is no clonus. Tinel's is negative at the ankles, fibular head, wrists and ulnar grooves. Phalen's is negative. SLR is negative, FABER is negative. MMT is symmetric in the L2-S2 myotomes with symmetric muscle girth and 4+ strength throughout the uppers and lowers. There is no specific weakness appreciated with manual resistance. Light touch sensory assessment is normal, but cold recognition is unreliable in the distal lowers. Skin temp is maintained above 30 C on the dorsum foot and right palm.

Plan for Study: Perform NCS of the bilateral lower extremities with special attention to include distal motor, sensory and late responses from 3 limbs in addressing the clinical question above. Also, plan to include EMG assessment proximal and distal muscles from 3 limbs and the thoracic paraspinals to meet criteria in the assessment of suspicious polyneuropathy.

ELECTRONEUROMYOGRAPHIC SUMMARY

Nerve Conduction:

Sensory NCS:	Right superficial peroneal response is not elicited. Bilateral sural nerves are low in amplitude with normal latencies. Right median nerve is low in amplitude and delayed in latency across the wrist.
Motor NCS:	Bilateral tibial CMAP amplitudes are low with mildly slowed leg velocity on the right and normal distal latencies. Right peroneal and ulnar nerves are WNL for latencies, segmental velocities and amplitudes.
Late Responses:	Right tibial H reflexes are not elicited and left are mildly delayed. Right peroneal and bilateral tibial F waves are mildly delayed. Right ulnar F waves are WNL.

Electromyography:
Using a monopolar needle electrode, sampling consisted of muscles from the bilateral lower extremities, right upper extremity and right thoracic/lumbar paraspinals. There are findings of mild ongoing denervation noted in all muscles sampled. This is characterized by increased insertional activities with/without PSWs/Fibs and the presence of larger than normal amplitude motor units which collectively indicate findings of mild ongoing axonopathy with evidence of motor unit remodeling due to collateral axonal sprouting. There is no particular myotome, plexus or peripheral nerve distribution to these findings.

Impression: (Abnormal Study)

1. **Evidence suggests moderate primary axon loss > demyelinating, motor and sensory polyneuropathic process.**
2. **Symptoms are worse in the distal > proximal lower extremities. Given the diffuse changes, this examination cannot reliably rule in/out the presence of any superimposed lumbosacral radiculopathic processes.**

You Write the Summary and Impression – Case 1

Nerve Conduction Studies

Anti Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Sup Peron Anti Sensory (Ant Lat Mall)											
14 cm		3.8	<4.2	10.3	>2.0	14 cm	Ant Lat Mall	3.8	14.0	37	
Left Sural Anti Sensory (Lat Mall)											
Calf		2.7	<4.2	12.0	>5.0	Calf	Lat Mall	2.7	12.0	44	
Right Sural Anti Sensory (Lat Mall)											
Calf		3.0	<4.2	13.2	>5.0	Calf	Lat Mall	3.0	12.0	40	

Ortho Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Medial/Lateral Plantar Ortho Sensory (Med Mall)											
1-2 MT		2.9		9.5					14.0	48	>35
4-5 MT		3.1		4.1					14.0	45	>35

Motor Summary Table

Site	NR	Onset (ms)	Norm Onset (ms)	O-P* Amp (mV)	Norm O-P Amp	Neg Dur (ms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Peroneal Motor (Ext Dig Brev)												
Ankle 8cm		3.1	<6.2	3.6	>0.700	7.03	B Fib	Ankle 8cm	7.2	33.0	46	>38
B Fib		10.3		2.8		6.88	Poplt	B Fib	1.6	8.0	50	>39
Poplt		11.9		2.8		7.03						
Left Tibial Motor (Abd Hall Brev)												
Ankle 8cm		4.1	<6.1	8.7	>2.8	6.41	Knee	Ankle 8cm	7.6	38.0	50	>38
Knee		11.7		6.8		7.34						
Right Tibial Motor (Abd Hall Brev)												
Ankle 8cm		4.2	<6.1	7.1	>2.8	5.47	Knee	Ankle 8cm	7.5	38.0	51	>38
Knee		11.7		7.0		6.56						

F Wave Studies

NR	F-Lat (ms)	Lat Norm (ms)	L-R F-Lat (ms)
Left Peroneal (Mrkrs) (EDB)			
	46.69	<60	

H Reflex Studies

NR	H-Lat (ms)	Lat Norm (ms)	L-R H-Lat (ms)	L-R Lat Norm
Left Tibial (Gastroc)				
	33.29	<36	1.62	2.0
Right Tibial (Gastroc)				
	31.67	<36	1.62	2.0

You Write the Summary and Impression – Case 1

EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Left	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	PostTibialis	Tibial	L5, S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	Ext Dig Brev	Dp Br Peron	L5, S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	MedGastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	AbdHallucis	MedPlantar	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	First Dors Int	Lat Plantar	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	

You Write the Summary and Impression – Case 2

Nerve Conduction Studies

Anti Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Right Median Anti Sensory (3rd Digit)											
Palm		2.1	<2.2	14.9	>10	Palm	3rd Digit	2.1	7.0	33	
Wrist		**5.3**	<3.6	12.6		Wrist	Palm	3.2	7.0	**22**	>39
Right Ulnar Anti Sensory (5th Digit)											
Wrist		2.9	<3.4	22.7	>10	Wrist	5th Digit	2.9	12.0	41	

Motor Summary Table

Site	NR	Onset (ms)	Norm Onset (ms)	O-P* Amp (mV)	Norm O-P Amp	Neg Dur (ms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Right Median Motor (Abd Poll Brev)												
Wrist		**4.7**	<4.2	8.7	>2.8	5.94	Wrist	Elbow	4.5	24.0	53	>50
Elbow		9.2		8.5		5.94						
Right Ulnar Motor (Abd Dig Minimi)												
Wrist 8cm		2.8	<3.6	9.7	>4.2	6.88	B Elbow	Wrist 8cm	3.6	19.0	53	>49
B Elbow		6.4		9.6		6.56	A Elbow	B Elbow	1.4	8.0	57	>47
A Elbow		7.8		9.6		6.56						

Comparison Summary Table

Site	NR	Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)
Right Median/Radial Comparison (Digit 1)							
Median 10cm		**4.0**	12.1	>7uV	Median 10cm	Radial 10 cm	**1.7**
Radial 10 cm		2.3	10.8				

F Wave Studies

NR	F-Lat (ms)	Lat Norm (ms)	L-R F-Lat (ms)
Right Ulnar (Mrkrs) (Abd Dig Min)			
	27.59	<36	

You Write the Summary and Impression – Case 2

EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	Abd Poll Brev	Median	C8-T1	Nml	Nml	Nml	Nml	**Incr**	Nml	0	Nml	Nml	
Right	1stDorInt	Ulnar	C8-T1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	FlexCarRad	Median	C6-7	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	BrachioRad	Radial	C5-6	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	Triceps	Radial	C6-7-8	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	Deltoid	Axillary	C5-6	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	

You Write the Summary and Impression – Case 3

Nerve Conduction Studies

Anti Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Right Sup Peron Anti Sensory (Ant Lat Mall)											
14 cm		3.1	<4.2	5.2	>2.0	14 cm	Ant Lat Mall	3.1	14.0	45	
Left Sural Anti Sensory (Lat Mall)											
Calf		3.5	<4.2	12.3	>5.0	Calf	Lat Mall	3.5	12.0	34	
Right Sural Anti Sensory (Lat Mall)											
Calf		3.3	<4.2	9.2	>5.0	Calf	Lat Mall	3.3	12.0	36	

Ortho Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Medial Plantar Ortho Sensory (Med Mall)											
1-2 MT		3.3		3.3					14.0	42	>35
Right Medial Plantar Ortho Sensory (Med Mall)											
1-2 MT		3.2		2.0					14.0	44	>35

Motor Summary Table

Site	NR	Onset (ms)	Norm Onset (ms)	O-P* Amp (mV)	Norm O-P Amp	Neg Dur (ms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Right Peroneal Motor (Ext Dig Brev)												
Ankle 8cm		4.4	<6.2	3.0	>0.700	5.78	B Fib	Ankle 8cm	6.9	30.0	43	>38
B Fib		11.3		3.1		6.25	Poplt	B Fib	1.8	8.0	44	>39
Poplt		13.1		2.8		5.94						
Left Tibial Motor (Abd Hall Brev)												
Ankle 8cm		4.7	<6.1	9.1	>2.8	5.94	Knee	Ankle 8cm	8.9	36.0	40	>38
Knee		13.6		7.4		6.88						
Right Tibial Motor (Abd Hall Brev)												
Ankle 8cm		4.5	<6.1	9.5	>2.8	6.41	Knee	Ankle 8cm	8.8	36.0	41	>38
Knee		13.3		6.1		7.66						

F Wave Studies

NR	F-Lat (ms)	Lat Norm (ms)	L-R F-Lat (ms)
Right Peroneal (Mrkrs) (EDB)			
	53.27	<60	

H Reflex Studies

NR	H-Lat (ms)	Lat Norm (ms)	L-R H-Lat (ms)	L-R Lat Norm
Left Tibial (Gastroc)				
	33.12	<36	0.65	2.0
Right Tibial (Gastroc)				
	33.77	<36	0.65	2.0

You Write the Summary and Impression – Case 3

EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	MedGastroc	Tibial	S1-2	Incr	Nml	Nml	Nml	Incr	Nml	0	Nml	Nml	
Right	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	Peroneus Long	Sup Br Peron	L5-S1	Nml	Nml	Nml	Nml	Incr	Nml	0	Nml	Nml	
Right	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	RectFemoris	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	GluteusMed	SupGluteal	L4-S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Right	TensorFascLat	SupGluteal	L4-5, S1	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	MedGastroc	Tibial	S1-2	Incr	Nml	1+	Nml	Incr	Nml	0	Nml	Nml	
Left	AntTibialis	Dp Br Peron	L4-5	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	
Left	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	0	Nml	Nml	

Paraspinal EMG

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	L3-4	DPR	L3-4	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Right	L4-5	DPR	L4-5	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Right	L5-S1	DPR	L5-S1	Incr	Nml	1+	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Left	L4-5	DPR	L4-5	Nml	Nml	Nml	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	
Left	L5-S1	DPR	L5-S1	Incr	Nml	1+	CRDs	NT'd	NT'd	NT'd	NT'd	NT'd	

You Write the Summary and Impression – Case 4

Nerve Conduction Studies

Anti Sensory Summary Table

Site	NR	Peak (ms)	Norm Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Median Anti Sensory (3rd Digit)											
Palm		2.3	<2.2	13.3	>10	Palm	3rd Digit	2.3	7.0	30	
Wrist		6.1	<3.6	7.0		Wrist	Palm	3.8	7.0	18	>39
Right Median Anti Sensory (3rd Digit)											
Wrist		4.6	<3.6	8.7		Wrist	3rd Digit	4.6	14.0	30	>39
Right Sural Anti Sensory (Lat Mall)											
Calf		4.3	<4.2	4.1	>5.0						
Left Ulnar Anti Sensory (5th Digit)											
Wrist		3.6	<3.4	8.7	>10	Wrist	5th Digit	3.6	12.0	33	
Right Ulnar Anti Sensory (5th Digit)											
Wrist	NR		<3.4		>10	Wrist	5th Digit		12.0		

Comparison Summary Table

Site	NR	Peak (ms)	O-P* Amp (µV)	Norm O-P Amp	Site1	Site2	Delta-P (ms)
Left Median/Radial Comparison (Digit 1)							
Median 10cm	NR			>7uV	Median 10cm	Radial 10 cm	
Radial 10 cm		2.8	7.4				
Right Median/Radial Comparison (Digit 1)							
Median 10cm		3.6	6.9	>7uV	Median 10cm	Radial 10 cm	0.5
Radial 10 cm		3.1	6.8				

You Write the Summary and Impression – Case 4

Motor Summary Table

Site	NR	Onset (ms)	Norm Onset (ms)	O-P* Amp (mV)	Norm O-P Amp	Neg Dur (ms)	Site1	Site2	Delta-0 (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
Left Median Motor (Abd Poll Brev)												
Wrist		6.7	<4.2	7.9	>2.8	6.25	Wrist	Elbow	4.9	25.0	51	>50
Elbow		11.6		6.8		6.72						
Right Median Motor (Abd Poll Brev)												
Wrist		4.8	<4.2	5.5	>2.8	6.56	Wrist	Elbow	5.5	25.0	45	>50
Elbow		10.3		5.0		7.50						
Right Peroneal Motor (Ext Dig Brev)												
Ankle 8cm		4.8	<6.2	4.4	>0.700	5.47	B Fib	Ankle 8cm	7.5	33.0	44	>38
B Fib		12.3		3.8		6.25	Poplt	B Fib	1.9	8.0	42	>39
Poplt		14.2		3.9		6.25						
Left Ulnar Motor (Abd Dig Minimi)												
Wrist 8cm		4.5	<3.6	3.6	>4.2	4.38	B Elbow	Wrist 8cm	4.1	22.0	54	>49
B Elbow		8.6		2.9		4.38	A Elbow	B Elbow	2.0	8.0	40	>47
A Elbow		10.6		2.7		4.53	Axilla	A Elbow	1.4	8.0	57	>50
Axilla		12.0		2.6		4.69						
Right Ulnar Motor (Abd Dig Minimi)												
Wrist 8cm		4.2	<3.6	3.7	>4.2	5.78	B Elbow	Wrist 8cm	5.0	22.0	44	>49
B Elbow		9.2		2.8		5.31	A Elbow	B Elbow	2.1	8.0	38	>47
A Elbow		11.3		2.5		5.47	Axilla	A Elbow	1.7	8.0	47	>50
Axilla		13.0		2.4		5.47						

F Wave Studies

NR	F-Lat (ms)	Lat Norm (ms)	L-R F-Lat (ms)
Right Median (Mrkrs) (Abd Poll Brev)			
	40.57	<33	
Left Ulnar (Mrkrs) (Abd Dig Min)			
	33.15	<36	

You Write the Summary and Impression – Case 4

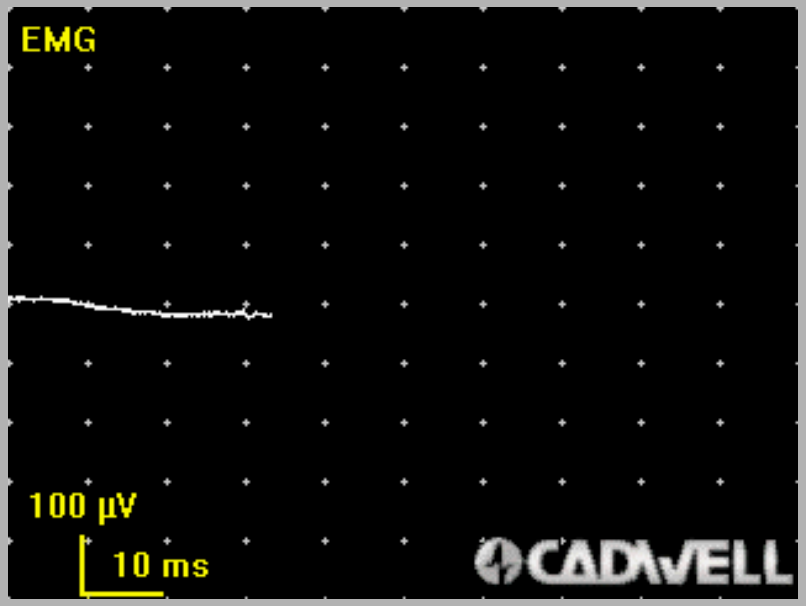
EMG

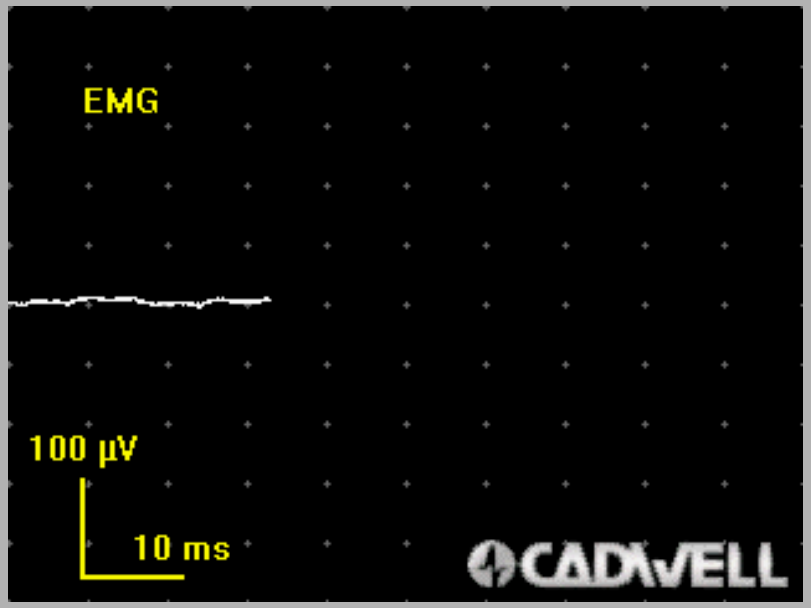
Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	VastusMed	Femoral	L2-4	Incr	Nml	Nml	Nml	Incr	Nml	0	Nml	Nml	
Right	AntTibialis	Dp Br Peron	L4-5	Incr	1+	1+	Nml	Incr	>12ms	1+	Nml	Nml	
Right	MedGastroc	Tibial	S1-2	Incr	Nml	1+	Nml	Incr	>12ms	1+	Nml	Nml	
Right	FlexCarRad	Median	C6-7	Incr	Nml	Nml	Nml	Incr	>12ms	1+	Nml	Nml	
Right	BrachioRad	Radial	C5-6	Incr	Nml	Nml	Nml	Incr	>12ms	1+	Nml	Nml	
Right	FlexPolLong	Median (Ant Int)	C7-8	Incr	Nml	1+	Nml	Incr	>12ms	1+	Nml	Nml	

Paraspinal EMG

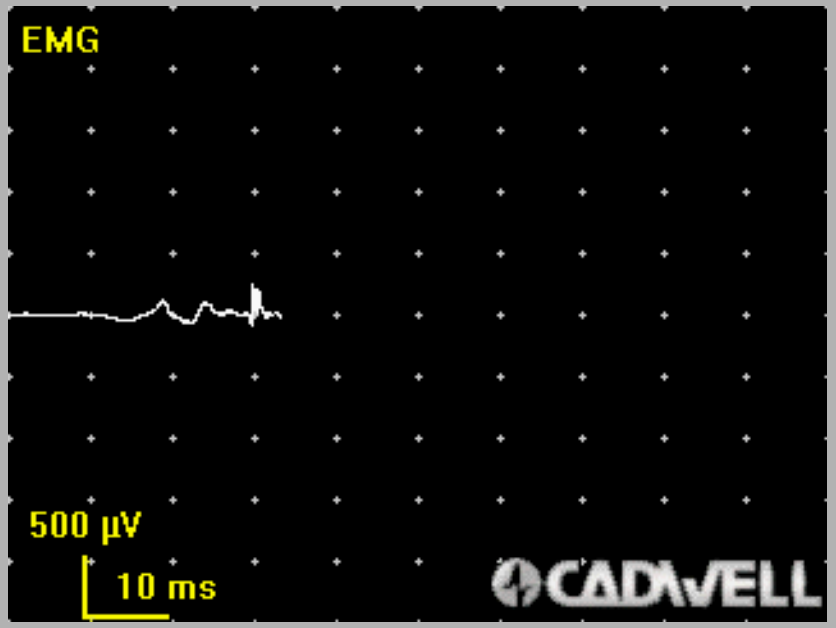
Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Other	Amp	Dur	Poly	Recrt	Int Pat	Comment
Right	Lower Thoracic	DPR	T10-12	Incr	1+	1+	Nml	NT'd	NT'd	NT'd	NT'd	NT'd	

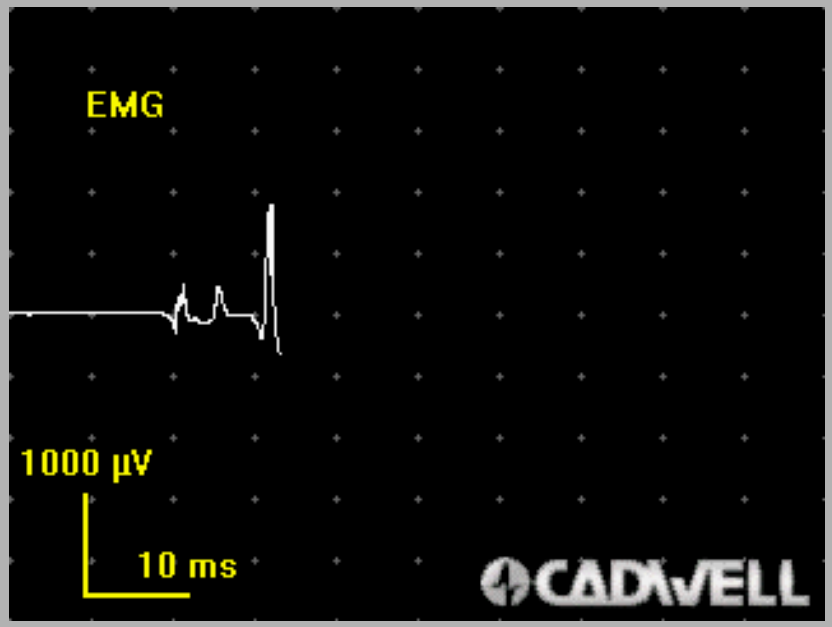
1. Name the findings.
2. What it mean if these are the only EMG findings noted in the R FCR, triceps and C6-7 paraspinals?



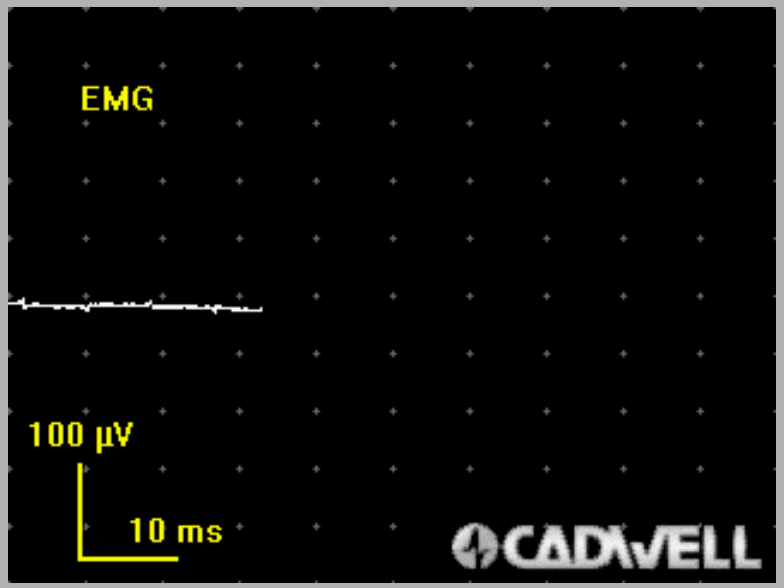


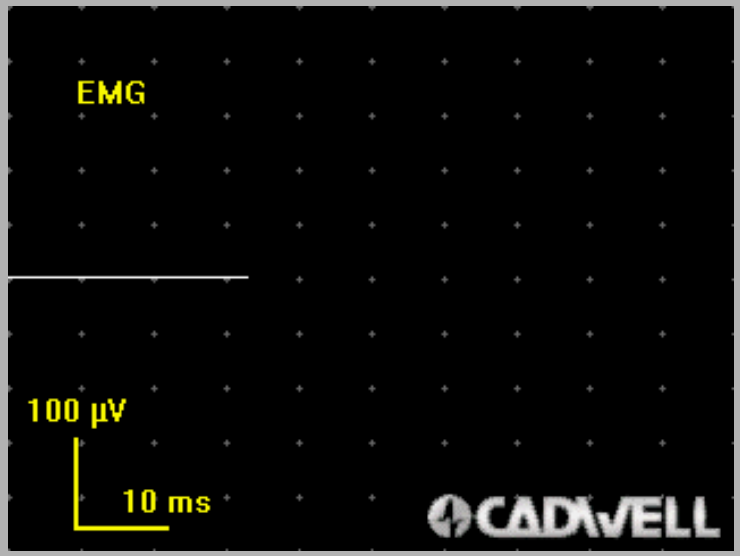
1. Name the findings.
2. Interpret the significance if these are the only abnormal findings noted in the anterior tibialis, posterior tibialis and tensor fascia lata muscles.

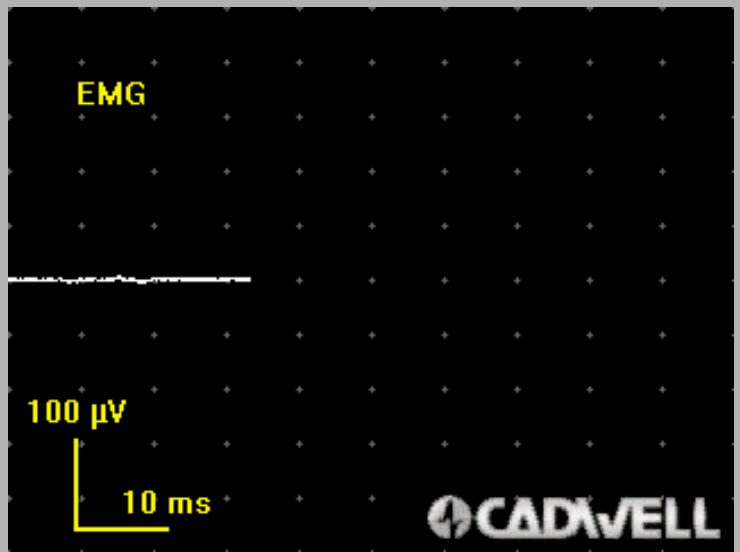




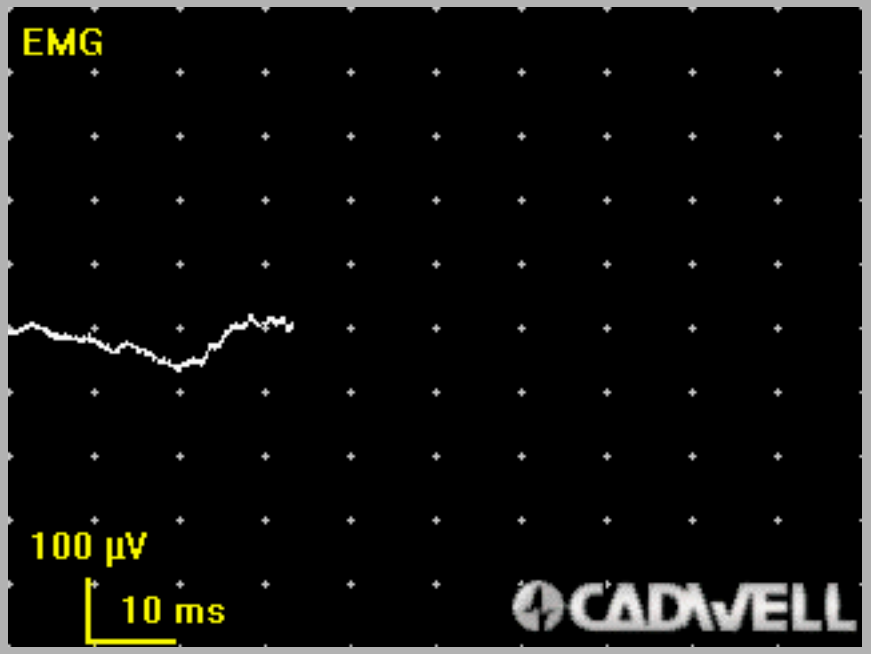
1. Name the findings.
2. Interpret the significance noted throughout a sample of muscles.

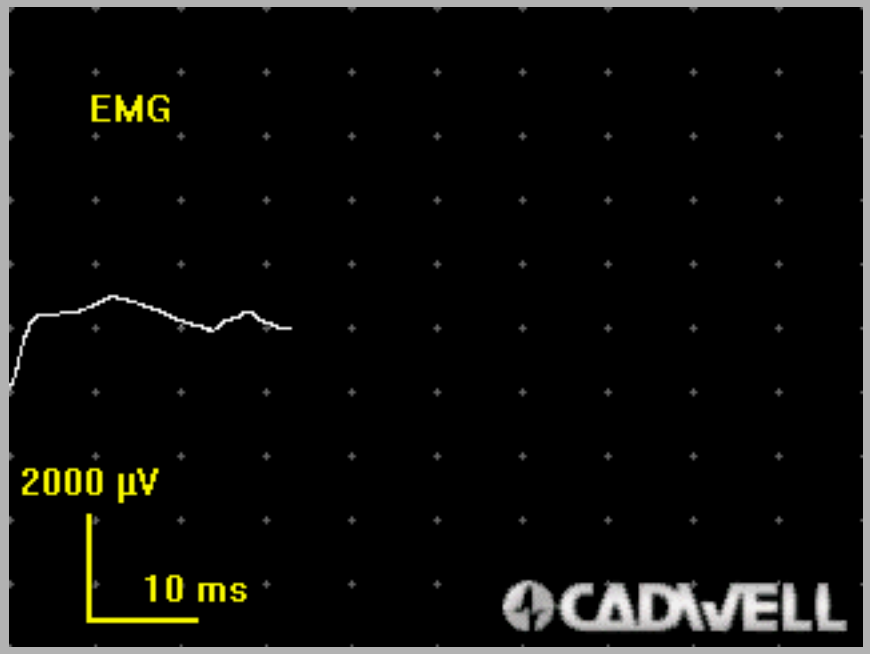






1. Name the findings.
2. What's the significance if only in the APB?
3. What do you think the motor and sensory NCS looks like?





1. Name the findings.
2. What's the significance if noted in the deltoid, upper trapezius, gluteals and throughout all paraspinal levels.
3. Motor and sensory NCS is all WNL.