New phenotype of Parsonage-Turner Syndrome involving Radial and Proximal Median Nerve: A Case Report

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CASE REPORT

HISTORY

A 74-year-old woman developed sudden severe left shoulder, arm, and forearm pain that suddenly developed. This pain lasted approximately 2 months. Approximately 1-2 months after the resolution of the first pain she developed a different type of pain which she described as a tingling, burning, pins and needle sensation that radiated from her shoulder past her elbow into the dorsal and palmar aspect of her hand in the thumb, index, and long fingers. Additionally, she developed numbness in her hand along the palmar thumb, index, and long fingers. Two months following the onset of the initial type of pain, she developed left hand weakness that progressively worsened.

PHYSICAL EXAMINATION

- Decreased light touch over the posterior forearm, lateral forearm, absent light touch and pin over the dorsal radial aspect of the thumb, index and long fingers as well as the palmar aspect of thumb, index and longer fingers.
- Absent pronator teres and triceps reflexes.
- Manual muscle testing was 5/5 in strength except as follows in the left upper limb:
  - shoulder external rotators, elbow flexors and flexor digitorum profundus 4/5 in the index and long fingers.
  - elbow extensors 3/5
  - extensor carpi radialis, extensory digitorum communis, flexor carpi radialis, flexor pollicus longus, flexor digitorum superficialis, and abductor pollicus brevis 0/5.

DIAGNOSIS AND TREATMENT

Previous work-up included:

- Inconclusive EMG/NCS performed by a physical therapist,
- MRI of cervical spine which revealed non-focal degenerative changes
- MRI of her left shoulder which revealed moderated tendinosis of the rotator cuff with focal tearing of the distal infraspinatus, mild subacromial bursitis and mild glenohumeral joint osteoarthritis.
- MRI of her left brachial plexus did not show evidence of nerve injury. Patient was referred again for a repeat EMG/NCS.

RESULTS

EDX study, 4 months from onset of symptoms, revealed absent median and radial motor-sensory nerve conduction. EMG revealed complete denervation of FDP in the index and long fingers, as well as the pronator teres, partial reinnervation of the triceps, and no abnormal cervical paraspinal spontaneous activity. See Detailed results in Figure 1.

TEMPERATURE: 32°C

Sensory Conduction	Onset Lat	Peak Lat	Amp	Dist	Vel	Comment
Median.R						
Wrist	ms	ms	µV	140 mm	m/s	No response
Ulnar.R						
Wrist	3.7 ms	4.6 ms	4 µV	140 mm	38 m/s	Prolonged latency and decreased amplitude
Radial.R						
Forearm	2.4 ms	2.7 ms	8 µV	100 mm	42 m/s	Decreased amplitude
Median Mixed .R						
Forearm	3.3 ms	4.2 ms	11 µV	185 mm	56 m/s	Normal
Median.L						
Wrist	ms	ms	µV	140 mm	m/s	No response
Ulnar.L						
Wrist	4.3 ms	4.9 ms	8 µV	140 mm	33 m/s	Prolonged latency and decreased amplitude
Radial.L						
Forearm	ms	ms	µV	100 mm	m/s	No response
Median Mixed .L						
Forearm	ms	ms	µV	140 mm	m/s	No response

Motor Conduction	Latency	Amplitude	Distance	Velocity	Comment
Median.L					
Wrist	ms	mV	80 mm	m/s	No response
Ulnar.L					
Wrist	3.7 ms	4.5 mV	80 mm	m/s	Mild decreased amplitude
Below elbow	7.2 ms	3.5 mV	160 mm	46 m/s	
Above elbow	9.7 ms	2.3 mV	100 mm	40 m/s	Increased temporal dispersion across elbow
Axilla	11.4 ms	2.4 mV	100 mm	59 m/s	
Musculocutaneous. R					
Axilla	1.4 ms	4.3 mV	60 mm	43 m/s	Normal
Erb Point	5.1 ms	3.0 mV	185 mm	50 m/s	
Musculocutaneous.L					
Axilla	1.4 ms	4.1 mV	mm	m/s	Normal
Erb Point	5.2 ms	4.3 mV	mm	m/s	

Needle EMG	Spontaneous		Motor Units				Comments
Muscle	Fibs/PSW	Other	Amp	Dur	Polys	Recruit	Comments
Flex dig profundus (Index).L	4+	None				None	Complete Denerv
Pronator Teres L	4+	None				None	Complete Denerv
Triceps brachii.L	2+	None	Decr.	Decr.	Mod	Gr dec	Partial axonal reinnervation with nascent potentials
Biceps .L	None	None	Normal	Normal	None	Normal	Normal
Cervical paraspinals.L	None	None	Normal	Normal	None	Normal	Normal

Fig. 1 – Detailed Electrodiagnostic Results

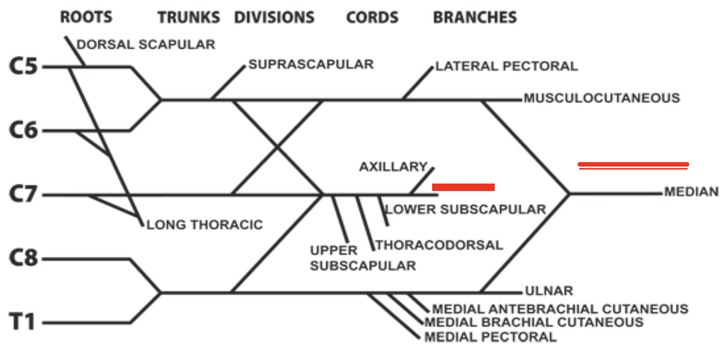

Fig. 2 – Brachial plexus demonstrating lesions at the radial and median nerve. Image used with permission from Gerald J. Herbison from http://jeffline.tju.edu/Education/programs/NEL/

DISCUSSION

This case fits the clinical description of neuralgic amyotrophy of Parsonage and Turner[1,2]. Typically, patients will have sudden severe neuropathic pain that resolves preceding the onset of weakness.[3] Most patients will develop atrophy within the first 5 weeks of onset of symptoms.[3] Alternative diagnosis in this case are less likely for the following reason. It is unlikely to be a concomitant radial neuropathy at the spiral groove and proximal median neuropathy with simultaneous onset. There is no evidence of myelinopathy (ie, demyelinating disease) as there is no conduction block to explain her weakness. Finally, exam and imaging were not consistent with more common neuromusculoskeletal pathologies.

The etiology of neuralgic amyotrophy of Parsonage and Turner remains unclear, but it has been associated with infection, trauma, surgery, strenuous exercise, and vaccinations.[1,3] Often the symptoms begin at night, and are usually asymmetric.[1,3]

The diagnosis is often made by history and physical exam. EMG/NCS is useful in confirming the diagnosis and to localize the lesion or lesions.[4] In some cases, EMG/NCS can also provide information on prognosis and recovery, since many patients will not recover fully from this condition. A large case series described long thoracic, suprascapular, upper trunk of brachial plexus and anterior interosseous nerve involvement attributed to autoimmune phenomenon.[3] To our knowledge, there are no reports of neuralgic amyotrophy of Parsonage and Turner to be presenting with concomitant proximal radial and median nerve involvement.

CONCLUSION

This case demonstrates an unreported phenotype of neuralgic amyotrophy of Parsonage and Turner involving both motor and sensory nerve fibres of the proximal radial and median nerves. This condition is best diagnosed by a careful history and physical exam. Clinicians should have a high index of suspicion for neuralgic amyotrophy of Parsonage and Turner in presentation of upper limb weakness, dysethesias, and parethesias that was preceeded by severe pain.

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