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Case Report

Unusual presentation of ulnar nerve entrapment and physiotherapy interventions

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SUMMARY

A 50 years old male professional engineer who was complaining of weakness in his left hand with paresthesia in his hypothenar, little and ring finger and wrist extensor muscles weakness for the previous three weeks with no complain of neck, arm or hand pain. The onset developed suddenly after a deep night sleep. No history of fall or trauma was reported by him and he was otherwise healthy person with no familial history of neuropathy. Atrophy of the left hypothenar was striking.

He visited a neurosurgeon several times and had been treated with NSAID'S, corticosteroid and multi vitamins. Surgical option was under consideration based on MRI and electromyography findings. EMG studies were suggestive of cervical root compression at C7 and C8 level. MRI findings were suggestive of multiple level disc broad based disc bulges from C3 to C7.

The patient was assessed thoroughly and his condition was labelled as ulnar nerve neuropraxia at the medial epicondyle level while other diagnoses were rejected. The patient was educated and reassured regarding his condition and appropriate physiotherapy interventions were administered. The interventions helped in complete recovery in 16 weeks.

Key words: Brachial pluxes, ulnerneuropraxia, physiotherapy intervention

CASE PRESENTATION

A fifty years old male patient visited Physical therapy OPD complaining of weakness and numbness in his left hand for the previous 3 weeks. He found his hand clumsy in the morning after a good night sleep. He reported no trauma to the arm and nothing significant the previous day and night other than routine. No previous complaint of neck pain or systemic illness or familial history of neuropathy was reported.

He visited a neurosurgeon various times who prescribed him NSAIDs, corticosteroids and multivitamin but no significant improvement was reported. Patient was also advised surgery by the neurosurgeon on the basis of EMG report which showed C7-C8 radiculopathy and on MRI report in which multiple level disc bulging were reported. Patient was a professional engineer and was self-employed.

The following were the objective findings during clinical examination. No postural abnormality; marked atrophy in the hypothenar with no other significant finding on inspection. Active extension of the wrist and fingers were 2/5. Active flexion of the wrist was 3/5 with radial deviation of the hand. Active radial deviation was 3/5 with observable and palpable contraction in Flexor Carpi Radialis. Ulnar deviation of the wrist was 2/5. Thumb opposition with little finger was impaired. 0/5 power in flexion of little finger was recorded. Thumb extension, index and middle finger flexion was intact and 4/5.Passive ROM in flexion, extension and deviation at wrist and fingers level were intact.Sensation on medial aspect of left hand and finger were decreased both on palmer and dorsal side but was intact above the wrist level. Tinel's sign was negative.

Strength at elbow, shoulder and neck was 5/5. Cervical compression and distraction tests were negative for pain and sensation and ROM was within normal limits.Resisted isometric muscle tests of shoulder, arm and neck were also negative for pain. Reflexes could not be elicited even in sound extremities.

INVESTIGATION

X-Ray of cervical spine revealed mild degenerative changes in cervical spine and slight straightening. MRI reported as straightening of cervical spine, with no evidence of fracture, spondylolisthesis or marrow abnormality. Spinal canal was intact and there was no evidence of spinal canal stenosis throughout cervical region. Degenerative marginal

osteophytes and spondylitic changes were noted at cervical spine. A broad base disc bulge at C3-4 on right side causing mild transiting nerve root entrapment was noted. At C4-5 level broad based centrally bulging disc projecting towards both sides more toward right and causing ventral thecal sac entrapment was observed and C6-7 level broad based bulging disc causing nerve root compression was noted. EMG studies were suggestive of C7-C8 radiculopathy and bloods test were negative.

DIFFERENTIAL DIAGNOSIS

- Radial nerve palsy (Saturday night palsy)
- Compression ofposterior cord of brachial plexus
- compression of C6-C7 nerve root
- Multiple level Prolapsed inter vertebral disc
- Cervical spondylosis with spinal stenosis
- Ulnar nerve entrapment/compression around medial epicondyle
- Guyon's tunnel syndrome

TREATMENT

The patient remained on medication for initial couple of weeks with no improvement. Physiotherapy interventions were directed to prevent disuse atrophy; deconditioning; mobilization of the radial, ulnar and median nerves; to prevent muscle shortening; to strengthen muscles and to improve function. Interventions used were active assisted exercises, galvanic current stimulation, wrist night splint, active free exercise of the wrist extensor, postural correction with the help of taps and safe physiotherapy intervention reported by Keramat & Aisling.[1]

The patient attended physiotherapy session for 4 month, 5 sessions per week. Over this period continuous improvement; proximal to distal pattern both in strength and sensation was observed. Strength of wrist extensors returned first followed by wrist and finger flexors. 5/5 strength was recorded at the time of discharge with minimal sensation deficits at the tips of little and ring fingers. The patient was reviewed after a year with no residual deficits.Key learning points

-Finding of clinical assessment should be considered on priority compare to high-tech investigation Meticulous assessment is of vital importance in entrapment neuropathies Patient education and reassessment play a vital role in overall management; and Surgical option should only be considered when the conservative the conservative management fails.

DISCUSSION

Sudden overnight onset, absence of trauma, negative family history of neuropathies, Significant loss of muscle strength in in extensor carpi ulnaris, marked atrophy of hypothenar muscles, paresthesia in one and half finger on dorsal and palmer aspect of the hand and absence of paresthesia on medial forearm were the conclusive findings which guided out us to labeled the patient with ulnar nerve lesion above the wrist and reject the peripheral lesion such as Guyon's tunnel syndrome[2], Saturday night palsy, brachial plexus compression neuropathy and cervical region root pathologies.

Ulnar nerve compression neuropathy at above the wrist level present itself as loss of strength in Flexor Carpi Ulnaris and tendon of the Flexor Digitorum Profundus for ring and index finger along with major loss of strength in the intrinsic muscle which gives the appearance of claw hand[3]. A radial nerve lesion will present itself as total or partial loss of strength in wrist extensor muscles[4,5]. A median nerve lesion will manifest itself as partial or total loss of strength in wrist and fingers along with paranesthesia in the lateral three and half fingers along with muscle atrophy in the thenar eminence. Paresthesia and pain in the hypothenar eminence will be pointing towards ulnar nerve entrapment/lesion around the tunnel of Guyon(2). A lesion at the level of brachial plexus at cord level will be presented in the specific dermatome and myotomes.[6,8] The current case in the light of above neurological facts presented a diagnostic challenge. Our case was reporting a mixture of all of these symptoms.

A careful and meticulous subjective & objective assessment in relation to occupation, onset of symptoms, duration, changing functional status6 over the time and a good knowledge of anatomy is needed and plays a vital role in establishing the

etiology, nerve involve and site of nerve lesion. Weakness and disuse atrophy of the innervated muscles complicate the manual muscles assessment and to a greater extent further confuses the electromyography and MRI findings.[8,9]

Positive MRI findings should always be correlated with clinical manifestations such as in this case. In most instances positive MRI findings are misleading[10] and significant disc protrusions at various levels in our case were false positive. Our case has no painful symptoms and objective assessment of the cervical spine was negative for the discal pathologies. EMG findings such as reduced velocities on the distribution median and radial nerve may be attributed to subject to subject variation. The findings on EMG could have been valuable and true positive if the neck was painful and the onset was traumatic and not overnight[9,11]

The total recovery period followed the course consistent with compression neuropathy of the ulnar nerve with significant contribution in recovery to the physiotherapy interventions which minimized the adverse effect of on denervated muscles and deconditioning of the enervated muscles. Safe physiotherapy interventions[1] were also administered for the cervical disc protrusion to prevent the occurrence of radiculopathy and myelopathy as the patient seemed vulnerable.

CONCLUSION

Meticulous clinical assessment and re-assessment during the treatment sessions outweigh the role of costly investigation. However, MRI and EMG findings should be seen as adjunct to the clinical diagnosis rather than the sole diagnosis based on the their findings

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