

Background

- Brachial plexitis is a type of peripheral neuropathy characterized by acute shoulder pain followed by neurological symptoms such as weakness and sensory loss of the affected upper extremity.¹
- Two main types: idiopathic and hereditary
- Pathophysiology: Immune mediated: increased lymphocyte exposure to the brachial plexus or antibodies against myelin sheath

Case Description

- 60-year-old male with a past medical history of diabetes mellitus and renal transplant (therefore immunosuppressed) was diagnosed with shingles on left posterior arm and left thumb .
- He was treated with valacyclovir.
- Soon after, he developed severe left upper extremity (LUE) pain, which was managed with gabapentin.
- After four months, he developed LUE numbness and weakness.
- On examination, he had atrophy of his left deltoid, biceps, triceps, shoulder girdle and intrinsic hand muscles, a left wrist and finger drop, a positive Forment’s sign, and a resting tremor. Sensation to light touch was symmetrical except in the left forearm.
- Consequently, he was diagnosed with left brachial plexopathy.

Discussion

- Brachial plexitis can occur after infections such as Smallpox, Coxsackievirus, Cytomegalovirus, Typhoid fever, Influenza, Parvovirus B19, HIV, Borrelia burgdorferi.
- Is a diagnosis of exclusion
- MRI: can reveal diffuse T2 signal hyperintensities
- Electromyography (EMG): Best study for evaluation of demyelination of the brachial plexus, may show positive sharp waves and fibrillation potentials. Should be performed 2-3 weeks after symptom onset.
- Treatment: conservative with analgesia and physiotherapeutic rehabilitation. This includes kinesiotherapy, transcutaneous electrical nerve stimulation, deep dermal therapy, cryotherapy and/or functional electric stimulation. Analgesia includes NSAIDs. Steroids may be used in the early phase.
- Our patient developed brachial plexitis after a Herpes zoster virus (HZV) infection that caused shingles.

NCS and EMG Findings

Muscle	Nerve	Roots	Spontaneous				MUAP				Recruit Pattern
			Fib	PSW	Fasc	CRD	Amp	Dur.	PPP		
L. Extensor digitorum communis	Radial	C7-C8	4+	None	None	None	Normal	Normal	Normal	Normal	
L. Extensor carpi ulnaris	Posterior interosseous	C7-C8	4+	None	None	None	Normal	Normal	Normal	Normal	
L. Flexor carpi radialis	Median	C6-C7	1+	None	None	None	Normal	Normal	Normal	Normal	
L. Flexor digitorum profundus, dig 5	Ulnar	C8-T1	None	None	None	None	Normal	Normal	Normal	Normal	
L. Triceps brachii (Long head)	Radial	C6-C8	None	None	None	None	Normal	Normal	Normal	Normal	
L. Biceps brachii	Musculocutaneous	C5-C6	None	None	None	None	Normal	Normal	Normal	Normal	
L. Deltoid	Axillary	C5-C6	None	None	None	None	Normal	Normal	Normal	Normal	
L. Infraspinatus	Suprascapular	C5-C6	None	None	None	None	Normal	Normal	Normal	Normal	
L. Abductor pollicis brevis	Median	C8-T1	4+	None	None	None	Normal	Normal	Normal	Normal	

Motor NCS

Nerve / Sites	Muscle	Latency ms	Amplitude mV	Amp %	Segments	Distance cm	Lat Diff ms	Velocity m/s
R Median - APB								
Wrist	APB	4.3	8.1	100	Wrist - APB	7		
Elbow	APB	9.1	4.4	54.6	Elbow - Wrist	21	4.7	44
L Median - APB								
Wrist	APB	5.2	1.4	100	Wrist - APB	7		
Elbow	APB	12.3	0.3	temporal dispersion 21.4	Elbow - Wrist	21	7.2	29
R Ulnar - ADM								
Wrist	ADM	5.9	2.0	100	Wrist - ADM	8		
B. Elbow	ADM	12.3	1.6	84	B. Elbow - Wrist	22.5	6.5	35
L Ulnar - ADM								
Wrist	ADM	3.4	4.9	100	Wrist - ADM	8		
B. Elbow	ADM	7.8	4.3	87	B. Elbow - Wrist	21	4.3	49

Nerve / Sites	Rec. Site	Onset Lat ms	Peak Lat ms	NP Amp µV	Segments	Distance cm	Peak Diff ms	Velocity m/s
L Median - Digit III (Antidromic)								
Wrist	Dig III	4.1	4.8	2.2	Wrist - Dig III	14		34
R Median, Radial - Thumb comparison								
Median Wrist	Thumb	2.4	3.3	13.0	Median Wrist - Thumb	10		41
Radial Wrist	Thumb	3.0	3.5	7.4	Radial Wrist - Thumb	10		33
L Median, Radial - Thumb comparison								
Median Wrist	Thumb	2.8	3.3	9.6	Median Wrist - Thumb	10		36
Radial Wrist	Thumb	NR			Radial Wrist - Thumb	10		107
L Radial - Anatomical snuff box (Forearm)								
Forearm	Wrist	2.4	3.4	3.3				
R Radial - Anatomical snuff box (Forearm)								
Forearm	Wrist	2.6	3.2	5.9	Forearm - Wrist	10		39
R Lateral antebrachial cutaneous - Forearm (Elbow)								
Elbow	Forearm	2.8	3.7	10.9				
L Lateral antebrachial cutaneous - Forearm (Elbow)								
Elbow	Forearm	3.3	4.5	18.0	Elbow - Forearm	14		42

EMG showed abnormal sensory nerve conduction study (NCS) in the left antebrachial cutaneous, radial and median nerves, abnormal motor NCS in the left median and ulnar nerve with axonal loss and fibrillations in multiple LUE muscles.

Shingles

- A unilateral painful vesicular eruption within a dermatome
- Often presents in adults over 50 or in the immunocompromised.
- Shingles results from reactivation of latent HZV within the dorsal root ganglion and its axoplasmic transport to nerve terminals which causes the segmental cutaneous rash and neuralgic pain.²
- Complications include post-herpetic neuralgia, meningoencephalitis, transverse myelitis, vision loss, cranial nerve palsies and deafness
- Motor paresis seen with HZV is likely due to both proximal and distal spread of the virus to the spinal nerve/ventral root
- While mononeuropathy may be seen with HZV, polyradiculopathy is rare.

Conclusion

Though rare, clinicians should consider HZV radiculopathy in immunosuppressed patients with motor weakness following a cutaneous HZV infection.

References

- 1 Feinberg, Joseph H, and Jeffrey Radecki. "Parsonage-turner syndrome." HSS journal : the musculoskeletal journal of Hospital for Special Surgery vol. 6,2 (2010): 199-205. doi:10.1007/s11420-010-9176-x
- 2 Wareham, David W, and Judith Breuer. "Herpes zoster." BMJ (Clinical research ed.) vol. 334,7605 (2007): 1211-5. doi:10.1136/bmj.39206.571042.AE

