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Radiation-Induced Brachial Plexopathy Combined with Peripheral Neuropathies: a Case Report.

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INTRODUCTION

Radiation-induced brachial plexopathy (RIBP) is a progressive brachial plexopathy, which mostly occurs years after the radiation exposure, especially in the previously treated patients with lymphomas and breast, lung, and neck cancers. The patients may initially present with sensory symptoms such as paresthesias and numbness, followed by pain, and may progress to motor weakness. Here, we present **a rare case of brachial plexus neuropathy combined with peripheral neuropathies** developed nine years after radiotherapy.

CASE PRESENTATION

Patient information & Present illness

- A 41-year-old female patient
- Diagnosed with breast cancer in 2012
- Underwent right partial mastectomy with axillary node dissection, chemotherapy, and radiotherapy in 2012 and 2013.
- In March 2022, the patient developed hypoesthesia and tingling sense in the right hand, followed by progressive loss of strength in the right hand.
- In October 2022, the patient visited our clinic, with a neuropathic pain, VAS of 8/10.

Physical examination

- Hypoesthesia to light tough and pinprick at entire right palm and dorsal ulnar aspect of hand.
- Muscle strength of the abductor pollicis brevis was grade 2, the abductor digiti minimi and flexor digitorum profundus 1 were grade 3, the first dorsal interosseous and flexor pollicis longus were grade 4.
- DTR : Biceps jerk (++/++), Triceps jerk (++/++), Brachioradialis jerk (++/++)
- No tinel sign around right wrist, elbow or axilla

ELECTROPHYSIOLOGICAL & RADIOLOGICAL FINDINGS

Nerve conduction study

Motor		Stimulation site	Recording site	Latency (msec)	Amplitude (mV)	NCV (m/s)	F wave (msec)
Side	Nerve						
Rt.	Median	Wrist	Abductor pollicis brevis	4.1	10.5	58	NR*
		Elbow		7.9	10.2	54	
		Axilla		10.5	10.0	45*	
		Erb's point		15.2	1.6*		
	Ulnar	Wrist	Abductor digiti minimi	3.2	9.3	56	NR*
		Below elbow		6.7	9.1	53	
		Above elbow		8.6	8.8	48*	
		Axilla		10.7	8.0	36*	
		Erb's point		16.3	3.3*		

Sensory		Stimulation site	Recording site	Latency (msec)		Amplitude (uV)	Distance (cm)
Side	Nerve			Onset	Peak		
Rt.	Median	Wrist	Thumb	1.9	2.5	13*	10
		Wrist	II digit	2.6	3.4	11*	14
		Wrist	III digit	2.8	3.7	14*	14
		Wrist	IV digit	2.7	3.5	8*	14
	Ulnar	Wrist	IV digit	2.7	3.5	5*	14
		Wrist	V digit	2.9	3.7	5*	14
	DUCN	Wrist	4th web space	1.8	2.4	9*	10
	MABCN	Elbow	Forearm	2.0	2.6	5*	10

Needle EMG

Muscle		Insert. activity	Fib/PSW	Motor Unit Action Potentials			Recruitment
				Configuration	Amplitude	Duration	
Rt.	Biceps brachii	N	-	N	N	N	F
	Brahioradialis	N	-	N	N	N	F
	Extensor digitorum	N	-	N	N	N	F
	Pronator teres		Myokimia & Fasc		Large(15mV)	Long	Max R
	Flexor carpi radialis		Myokimia & Fasc				F
	Flexor digitorum superficialis		Myokimia & Fasc	Polys			R
	Abductor pollicis brevis		Myokimia & Fasc				R
	Flexor carpi ulnaris		Myokimia & Fasc	Inc. polys			Min R
	Abductor digiti minimi		Myokimia & Fasc			Long	R

Rt.; Right, N; normal, Polys; polyphasic motor units, Fasc; fasciculation, Inc.; increased, R; reduced, F; full, Max; maximally, Min; minimally

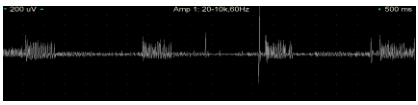

Figure 1. Myokymic discharges and fasciculations of right abductor digiti minimi

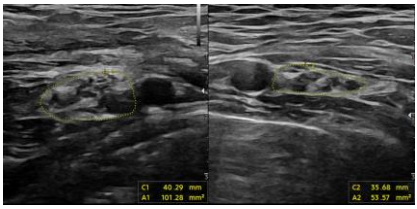

Figure 2. Sonographic examination revealed swelling of right brachial plexus, just below clavicle level

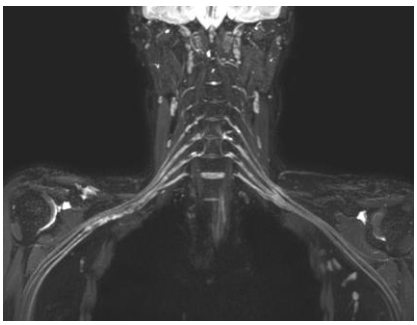

Figure 3. MRI showed diffuse increased signal intensity, thickening and enhancement of the right brachial plexus medial cord and median and ulnar peripheral branches

CONCLUSION

Our case shows that RIBP can be accompanied by peripheral neuropathies. Clinical, electrophysiological, and imaging findings can be helpful for the diagnosis.