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Herpes Zoster induced Brachial Plexopathy Affecting whole branches: a case report

Tae Jun Min[1*], Si Hyun Kang[1†], Don-Kyu Kim[1], Kyung Mook Seo[1], Jaewon Beom[1]

Chung-Ang University Hospital, Department of Rehabilitation Medicine[1]

Background

Herpes zoster is an infectious disease characterized by vesicobullous skin eruptions in a dermatomal distribution and neurological complication. The most common neurologic complication of herpes zoster is chronic pain, and motor paralysis is a less common complication. Until now, a few cases have been reported about motor paralysis as brachial plexopathy (BPI) after herpes zoster infection. Most of these cases showed BPI involving one or two segments, and in this case report we report a patient with brachial plexopathy involving whole branch confirmed by needle electromyography.

Case

A 88 year old female patient visited the hospital with bullous skin lesion in neck, right whole arm. She complained tingling sense, pain, and swelling on the involved area. Under diagnosis of Herpes zoster, she took the anti-viral agents, and 3 days later, the bullous skin lesion in hands is proceeded to the proximal part of body. She was admitted in the neurology department and her symptoms were improved with proper medication and two months later, pain was much improved and the skin lesion was changed to chronic scar (Fig. 1) However, she was referred for electrodiagnostic study through the orthopedics because she reported that weakness on this right upper extremity had started. On physical examination, muscle power on elbow flexion was grade 4, elbow extension was grade 4, wrist extension was grade 4, finger flexion was grade 3, finger abduction was grade 3, finger extension was grade 3. She showed difficulties in fine motor control and during performing fine motor task she showed mild tremor. She also had tingling sensation and hypothesia on this whole arm. To evaluate this delayed weakness, we performed electrodiagnostic study [Table 1] [Table 2]. In motor nerve conduction study, conduction velocity of median, ulnar and radial nerve was decreased. Amplitude of sensory responses was decreased in median, ulnar, superficial radial, lateral antebrachial cutaneous, and medial antebrachial cutaneous nerve. Needle electromyography showed abnormal spontaneous activities in the muscles innovated from axillary, musculocutaneous, median, ulnar, radial nerves. Synthesizing the clinical symptoms, physical examination and eletromyography, she was diagnosed as the brachial plexopathy, whole branch involved, after herpes zoster infection. We performed magnetic resonance imaging (MRI) study, and it showed diffuse swelling of entire right brachial plexus. The patient was enrolled to the occupational therapy and continued medication (steroid). After one month of rehabilitation, weakness and sensory symptoms were much improved.

Conclusion

Severe herpes zoster infection could cause not only skin lesion/sensory symptom but also motor weakness. Whole branch involving BPI after herpes zoster infection is a rare case, and electrodiagnostic study is helpful for accurate diagnosis. Proper rehabilitation program would be needed also to improve the motor weakness.

Fig. 1. Bullous skin lesion of right upper extremity in 88 year old female

Table 1. Nerve conduction study

Motor Conduction Study

Nerve		Segment	Distal latency(ms)	Amplitude(mV)	Conduction velocity(m/h)
Rt	Median	APB	4.17	5.2	
		Elbow	8.54	4.1	43.4
		Axillary	13.65	2.6	41.1
	Ulnar	ADM	2.50	8.0	
		Elbow	6.98	5.8	42.4
		Axillary	12.71	5.1	43.6
	Radial	EIP	1.67	2.1	
		Elbow	5.78	1.3	38.9
		Axillary	10.57	1.1	43.8
Lt	Median		4.48	5.0	45.7
	Ulnar	Wrist	2.81	7.7	56.5
	Radial	EIP	1.88	2.4	
		Elbow	4.69	1.8	53.3
		Axillary	8.59	1.4	51.2

Sensory Conduction Study

Nerve		Segment	Distal latency(ms)	Peak latency(ms)	Amplitude(uV)	Conduction velocity(m/s)
Rt	Median	Thumb	3.59	4.11	2.4	
		3rd	3.70	4.32	6.2	37.9
		Palm	1.77	2.08	2.0	39.5
		4th	No response			
	Ulnar	4th	2.86	3.65	3.1	
		5th	2.60	3.07	6.1	
	Sup. Radial	Thumb	1.67	1.98	2.1	
		Snuff box	1.04	1.35	9.8	
	LAC		1.46	2.08	11.0	
	MAC		2.45	3.07	10.8	
Lt	Median	Thumb	3.13	3.85	12.0	
		3rd	3.85	4.69	6.3	36.3
		Palm	1.93	2.24	5.3	36.3
		4th	3.75	4.64	9.7	
	Ulnar	4th	2.97	3.54	5.0	
		5th	2.50	3.28	10.2	
	Sup. Radial	Thumb	2.06	2.86	12.1	
		Snuff box	1.67	2.14	17.3	
	LAC		1.56	2.45	15.6	
	MAC		2.19	2.86	12.5	

Table 2. Needle Electromyography

Muscles		Insertional Activity	Spontaneous Activity				Voluntary Motor Unit Action Potential			Recruitment Pattern
			PSW	Fib.	CRD	Fas.	Amp.	Dur.	PPP	
Rt	C4-C5		0	0	0	0				
	C5-C6		0	0	0	0				
	C6-C7		0	0	0	0				
	C7-T1		0	0	0	0				
	Deltoid	Inc.	0	0	0	0	N	N	+	R
	Biceps	Inc.	0	0	0	0	N	N	+	R
	Triceps	Inc.	+	+	0	0	N	N	++	R
	Ext. Carpi Radialis longus	Inc.	+	+	0	0	N	N	N	R
	Flex. Carpi Radialis	Inc.	+	+	0	0	N	N	N	R
	Flex. Carpi Ulnaris	Inc.	+	+	0	0	+	N	N	R
	Ext. Indicis Propinus	Inc.	+	+	0	0	N	N	N	R
	1st Dorsal Interossei	Inc.	+	+	0	0	+	N	N	R
	Abductor Pollicis Brevis	Inc.	+	+	0	0	N	N	N	R
	Abductor Digiti Minimi	Inc.	+	+	0	0	+	N	N	R-S
	Vastus Medialis		0	0	0	0	N	N	N	C
	Tibialis Anterior		0	0	0	0	N	N	N	C
	Gastrocnemius		0	0	0	0	N	N	N	C
Lt	Biceps		0	0	0	0	N	N	N	C
	Flex. Carpi Radialis		0	0	0	0	N	N	N	C
	Flex. Carpi Ulnaris		0	0	0	0	N	N	N	C