

Unusual Painful Guillain-Barre Syndrome Associated with Scrub Typhus: A Case report

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Introduction

Guillain-Barre syndrome (GBS) is an illness characterized by areflexic ascending paralysis with minimal sensory involvement. Most cases are sporadic. Two-thirds of patients have previous infection due to *C. jejuni*, cytomegalovirus, Epstein Barr virus or *M. pneumoniae* within previous 6 weeks. Few cases of GBS associated to scrub typhus infection and one case of Miller-Fisher syndrome have been reported. However, there was no Case report of GBS associated with scrub typhus and neuropathic pain. In this Case report, we present progression and recovery course of painful GBS associated to scrub typhus infection with electrodiagnostic follow up.

Case report

A 66-year old man was referred to the department of infection, Daejeon St. Mary's hospital due to poor oral intake, general weakness, hematuria, and elevate liver enzymes. One week earlier, he had visited the local clinic due to myalgia and was clinically suspected as scrub typhus. He had taken doxycycline for 4 days. In the history taking, he had been going to the countryside to pick up the persimmon ten days before. On physical examination, dark colored rashes were on his chest, and an eschar was found on the medial thigh of right leg. In initial laboratory Result, serum *O. tsutsugamushi* antibody titer was positive (1:5120). Manual muscle test (MMT) revealed right upper extremity, 4/5; left upper extremity, 5/5; both lower extremities, 4/5. However, initial brain computed tomography and magnetic resonance imaging Results showed no acute infarction or hemorrhage. On the evening of hospital day (HD) 2, tetraplegia was worsening (MMT; right upper extremity, 2-/5; in left upper and both lower extremities, 2/5). Intravenous immunoglobulins (IVIG) were administrated for five days (30g, 400mg/kg/day). On HD 19, electrodiagnostic study revealed demyelinating peripheral neuropathy, clinically acute inflammatory demyelinating polyradiculoneuropathy (Table 1, 3). The patient complained tingling sensation on all extremities, and started to be treated gabapentin 600 mg. On HD 28, his motor power gradually improved (MMT; both upper extremities, 5/5; both lower extremities, 4/5), and he was able to walk under supervision. On HD 29, however, his neuropathic pain was getting worse. The total dose of gabapentin increased to 1200 mg. On HD 40, he was discharged with mild gait disturbance and neuropathic pain. 2 weeks after discharge, the second follow up of electrodiagnostic study showed significant improvements (Table 2, 3). 2 months after discharge, numbness still remained on the fingertips of left hand and gabapentin was maintained. 4 months after discharge, the patient was fully recovered from weakness and neuropathic pain disappeared completely.

Conclusion

We report a rare case of painful GBS related to the scrub typhus with describing the detailed electrodiagnostic study as well as clinical manifestation.

Table 1. First NCS and F wave study (onset after 20 days)

Nerve	Stimulation	Right			Left		
		Latency (ms)	Amplitude (mV)	CV (m/s)	Latency (ms)	Amplitude (μ V)	CV (m/s)
Motor							
Median APB	Wrist	9.2 \uparrow	1.0 \downarrow	-	6.7	1.4 \downarrow	-
	Elbow	15.5 \uparrow	0.8 \downarrow	35.7 \downarrow	13.0	1.0 \downarrow	36.0 \downarrow
Ulnar ADM	Wrist	3.7 \uparrow	2.0 \downarrow	-	6.4	1.0 \downarrow	-
	Below elbow	6.6 \uparrow	1.0 \downarrow	39.2 \downarrow	12.4	0.7 \downarrow	37.5 \downarrow
Peroneal EDB	Ankle	16.2 \uparrow	0.2 \downarrow	-	No response		
	Fibular head	43.8 \uparrow	0.1 \downarrow	11.3 \downarrow	No response		
Peroneal TA	Ankle	9.4 \uparrow	0.4 \downarrow	-	7.6	0.9 \downarrow	-
	Knee	14.0 \uparrow	0.1 \downarrow	34.8 \downarrow	11.4	0.4 \downarrow	27.6 \downarrow
Tibial	Ankle	17.6 \uparrow	0.4 \downarrow	-	10.0	0.4 \downarrow	-
	Popliteal fossa	32.3 \uparrow	0.2 \downarrow	25.7 \downarrow	24.7	0.2 \downarrow	23.8 \downarrow
F wave							
Median APB		59.6 \uparrow	-	-	43.6 \uparrow	-	-
Ulnar ADM		50.8 \uparrow	-	-	49.2 \uparrow	-	-
Tibial AH		79.2 \uparrow	-	-	99.0 \uparrow	-	-
Nerve	Stimulation	Right			Left		
		Latency (ms)	Amplitude (μ V)	CV (m/s)	Latency (ms)	Amplitude (μ V)	CV (m/s)
Sensory							
Ulnar	wrist	4.5 \uparrow	4.2 \uparrow	-	Not evoked		
Sural	Calf	4.4 \uparrow	4.0 \uparrow	-	4.1 \uparrow	6.7 \downarrow	-
Superficial peroneal	Lateral leg	Not evoked			Not evoked		

CV, conduction velocity; APB, abductor pollicis brevis; ADM, abductor digiti minimi; EDB, extensor digitorum brevis; TA, tibialis anterior; and AH, abductor hallucis

Table 2. Second NCS and F wave study (onset after 2 months)

Nerve	Stimulation	Right			Left		
		Latency (ms)	Amplitude (mV)	CV (m/s)	Latency (ms)	Amplitude (µV)	CV (m/s)
Motor							
Median APB	Wrist	4.8 ↑	3.1 ↓	-	5.4 ↑	3.6 ↓	-
	Elbow	10.1	2.8 ↓	43.2 ↓	9.8	3.4 ↓	50.0
Ulnar ADM	Wrist	3.5 ↑	4.3 ↓	-	4.9 ↑	1.4 ↓	-
	Below elbow	7.9	2.7 ↓	51.1	9.6	0.9 ↓	44.8 ↓
Peroneal EDB	Ankle	8.8 ↑	0.3 ↓	-	No response		
	Fibular head	20.6	0.3 ↓	22.9 ↓	No response		
Tibial	Ankle	8.6 ↑	1.4 ↓	-	10.3 ↑	0.5 ↓	-
	Popliteal fossa	17.3	1.0 ↓	40.2	20.9 ↑	0.3 ↓	25.5 ↓
F wave							
Median APB		35.8 ↑	-	-	38.4 ↑	-	-
Tibial AH		69.4 ↑	-	-	66.4 ↑	-	-
Nerve	Stimulation	Right			Left		
		Latency (ms)	Amplitude (µV)	CV (m/s)	Latency (ms)	Amplitude (µV)	CV (m/s)
Sensory							
Ulnar	Palm	Not evoked			Not evoked		
	wrist	Not evoked			Not evoked		
Sural	Calf	4.4 ↑	3.5 ↓	-	4.1 ↑	4.1 ↓	-
Superficial peroneal	Lateral leg	Not evoked			Not evoked		

Table 3. Electromyographic Results

Muscle	IA	FIB	PSW	MUAP	Interferential pattern
First electromyography (onset after 20 days)					
Right biceps brachii	Normal	None	1+	Normal	Reduced
Right flexor carpi radialis	Normal	2+	1+	Polyphasic	Reduced
Right first dorsal interosseous	Normal	None	1+	Normal	Reduced
Right abductor pollicis brevis	Normal	None	None	Normal	Reduced
Right gluteus maximus	Normal	None	None	Normal	Reduced
Right gluteus medius	Normal	None	None	Normal	Reduced
Right vastus medialis	Normal	None	None	Normal	Reduced
Right tibialis anterior	Normal	None	1+	No MUAP	No MUAP
Right Gastrocnemius (medial)	Normal	None	1+	No MUAP	No MUAP
Left biceps brachii	Normal	None	1+	Normal	Reduced
Left flexor carpi radialis	Normal	None	1+	Normal	Reduced
Left first dorsal interosseous	Normal	None	None	Normal	Reduced
Left abductor pollicis brevis	Normal	None	1+	Normal	Reduced
Left gluteus maximus	Normal	None	None	Normal	Reduced
Left gluteus medius	Normal	None	None	Normal	Reduced
Left vastus medialis	Normal	None	None	Normal	Reduced
Left Tibialis anterior	Normal	None	1+	No MUAP	No MUAP
Left Gastrocnemius (medial)	Normal	None	1+	No MUAP	No MUAP
Second electromyography (onset after 2 months)					
Right biceps brachii	Normal	None	None	Normal	Reduced
Right flexor carpi radialis	Normal	None	None	Polyphasic	Reduced
Right extensor digitorum communis	Normal	None	None	Normal	Reduced
Right first dorsal interosseous	Normal	None	None	Normal	Reduced
Right iliopsoas	Normal	None	None	Normal	Reduced
Right gluteus medius	Normal	None	None	Normal	Reduced
Right vastus medialis	Normal	None	None	Normal	Reduced
Right tibialis anterior	Normal	None	1+	7mV, 15-20ms	Reduced
Right Gastrocnemius (medial)	Normal	None	1+	3mV, 15ms	Reduced

IA, insertional activity; FIB, fibrillation; PSW, positive sharp wave; and MUAP, motor unit action potential.