

Peroneal nerve palsy due to intraneural ganglion cyst

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Introduction

Foot drop is common symptoms that a physiatrist could meet at electrodiagnostic lab. To confirm the affected region, electromyogram (EMG) is significant and useful. The lesion would be exist from the anterior horn cell at the lumbar spinal cord through lumbosacral plexus to peroneal nerve. The peroneal nerve palsy could be caused by traumata or occur insidiously by mass lesion or metabolic syndromes. In this case, peroneal nerve palsy at or around fibular head was diagnosed by EMG at emergency room. The physition could intervene early which is fundamental to prevent permanant gait abnormality.

Case Report

60-year-old woman visited the emergency room on July 7th, 2017. She complained of the right foot drop 3 days ago. She had medical history of diabetes mellitus and Graves' disease and had both total knee replacement 5 years ago. There was no history of trauma. The primary physition and the neurosurgeon suspected lumbar radiculopathy, so ordered the magnetic resonance imaging of lower back. There was no evidence of disc herniation or root compression. Therefore she was referred to the deparment of rehabilitation medicine for an EMG test. On the manual muscle test (MMT), the right ankle dorsiflexion was T, ankle eversion was P, great toe extension was T and 2nd to 5th toes were T grade. There was a palpable mass around the right fibular head and Tinel sign was positive. On EMG, compound muscle action potentials (CMAPs) of the deep peroneal nerve stimulated at the ankle and around the fibular head were normal. However, the CMAP stimulated at the popliteal fossa showed decreased amplitude. Findings were compatible with the conduction block of right peroneal nerve (Fig 1). On ultrasonography, the cystic mass was observed around the right fibular head (Fig 2). Excision of the cyst was delayed to 10 days after the diagnosis, July 24th, 2017, due to the risk of thyrotoxicosis and poor control of blood glucose level. In the operation field, bulging cyst was found on the fascia and the cystic mass inside the nerve sheath along the common peroneal nerve. After dissecting the cyst from the nerve, the atrophy of the nerve was not seen. On the follow-up EMG was done on July 24th and August 10th 2017 showed improvement of interference of motor units of the tibialis anterior muscle (Fig 2, 3). The MMT of ankle dorsiflexion improved as F grade compared with T grade at first.

Discussion

Since the ganglion cyst in the lower extremity is very rare, the diagnosis of the ganglion cyst around the fibular head in this case would have been very difficult. However, proper history taking, physical examination and the EMG made the diagnosis exactly. It made possible the early intervention to relieve the symptom and the patient was able to

recover motor weakness. This case demonstrated usefulness of the EMG in the emergent situation such as sudden motor weakness.

Site	NR	Onset (ms)	Peak (ms)	O-P Amp (mV)	P-T Amp (mV)	Dist (cm)	Vel (m/s)
Left Peroneal Motor (Ext Dig Brev)							
Ankle		4.30		2.2	3.8	28.0	40.3
B Fib		11.25		2.1	3.7	4.0	39.2
Poplt		12.27		2.1	4.1		
Right Peroneal Motor (Ext Dig Brev)							
Ankle		3.75		1.4	2.3	29.0	41.7
B Fib		10.70		1.2	2.0	2.0	41.0
Poplt		10.86		0.6	0.9	2.0	7.7
Site 4		13.44		0.2	0.4		
Left Tibial Motor (Abd Hall Brev)							
Ankle		4.45		10.7	16.8	32.0	42.2
Knee		12.03		8.1	12.7		
Right Tibial Motor (Abd Hall Brev)							
Ankle		4.61		8.7	13.5	33.0	43.1
Knee		12.27		5.8	8.8		
Left Sup Peron Sensory (Ant Lat Mall)							
Calf		2.31	2.91	8.2	12.5	14.0	48.1
Right Sup Peron Sensory (Ant Lat Mall)							
Calf		2.25	3.09	15.2	10.2	14.0	45.3
Left Sural Sensory (Lat Mall)							
Leg		2.53	3.25	21.0	24.5	14.0	43.1
Right Sural Sensory (Lat Mall)							
Leg		2.47	3.16	16.6	11.9	14.0	44.3

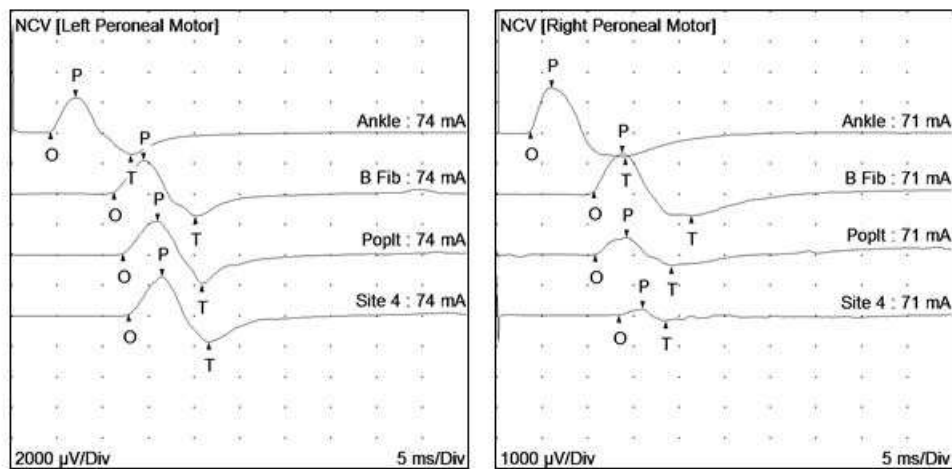


Fig 1. Nerve conduction test findings at first

Side	Muscle	Nerve	Root	Ins Act	Fibs	Psw	Amp	Dur	Poly	Recrt	Int Pat	Comment
July 7th 2017												
Right	VastusMed	Femoral	L2-4	Nml	Nml	Nml	Nml	Nml	Nml	Nml	Nml	
Right	AntTibialis	Dp Br Peron	L4-5	Incr	1+	1+	Nml	Incr	Nml	Decr	Decr	MU=1
Right	TensorFascLat	SupGluteal	L4-5, S1	Nml	Nml	Nml	Nml	Nml	Nml	Nml	Nml	
Right	ExtHallLong	Dp Br Peron	L5, S1	Incr	2+	2+						MU=0
Right	Peroneus Long	Sup Br Peron	L5-S1	Incr	1+	1+	Nml	Incr	Nml	Decr	Decr	MU=3
Right	BicepsFemS	Sciatic	L5-S1	Nml	1+	Nml	Nml	Nml	Nml	Nml	Nml	
Right	Flex Dig Long	Tibial	L5-S2	Nml	Nml	Nml	Nml	Nml	Nml	Nml	Nml	
Right	Gastroc	Tibial	S1-2	Nml	Nml	Nml	Nml	Nml	Nml	Nml	Nml	
Right	L4-L5 Parasp	Rami	L4	Nml	Nml	Nml						
Right	L5-S1 Parasp	Rami	L5	Nml	Nml	Nml						
August 10th 2017												
Right	AntTibialis	Dp Br Peron	L4-5	Incr	2+	2+	Nml	Incr	Incr	Decr		MU=4-5
Right	ExtHallLong	Dp Br Peron	L5, S1	Incr	3+	3+						MU=Z
Right	Peroneus Long	Sup Br Peron	L5-S1	Incr	3+	3+	Nml	Incr	Incr	Decr		MU=4

Fig 2. Needle electromyographic findings

Site	NR	Onset (ms)	O-P Amp (mV)	P-T Amp (mV)	Dist (cm)	Vel (m/s)
Right Peroneal Motor (Ext Dig Brev)						
Ankle		4.30	0.4	0.6	28.0	40.8
B Fib		11.17	0.2	0.3	6.0	24.8
Poplt		13.59	0.3	0.3		

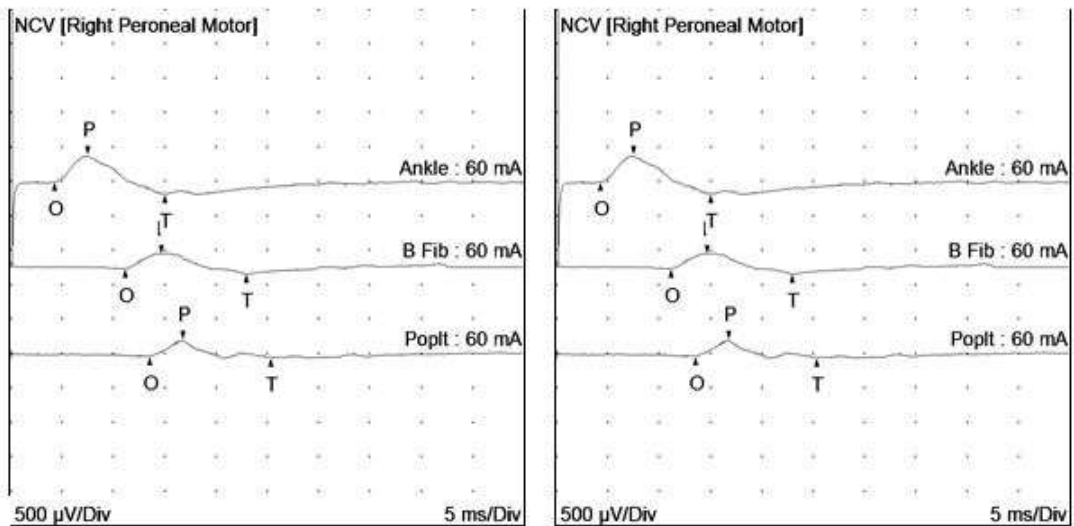


Fig 3. Nerve conduction test findings after surgery