

# Conversion Disorder; an Unusual Etiology of Unilateral Foot Drop

Saeed Bin Ayaz<sup>1</sup>, Sumeera Matee<sup>2</sup>, Riffat Malik<sup>1</sup>, Khalil Ahmad<sup>2</sup>

## Abstract-

**Purpose:** Foot drop is generally a consequence of common peroneal or sciatic nerve injury or L5 radiculopathy but rarely, it can be a manifestation of conversion disorder.

**Case Report:** A 24-year-old male presented with a foot drop on left side that developed overnight. He had difficulty walking with a trunk tilt towards right side and numbness in left leg up to mid-thigh. The initial diagnosis by the general practitioner was common peroneal nerve injury, which was not supported by the subsequent detailed examination in the physiatry department. Routine laboratory investigations, computed tomographic scan of brain and electrophysiological evaluation were normal. In a multidisciplinary team evaluation involving a psychiatrist, he was diagnosed to be suffering from conversion disorder and was advised gait retraining, cognitive and behavioral therapy and tablet venlafaxine. By sixth day of treatment, the patient was able to walk independently with a normal gait pattern and reported complete recovery of his symptoms.

**Conclusion:** In the absence of an identifiable organic cause of foot drop in a patient, conversion disorder may be considered necessitating early intervention by a psychiatrist.

**Key Words:** Conversion disorder, foot drop

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## INTRODUCTION

Weakness in foot dorsiflexion is described as foot drop and is often complemented by weakness in foot eversion and toe extension<sup>(1)</sup>. Causes can be peripheral or central, however common etiologies are peroneal or sciatic neuropathy, L5 radiculopathy and polyneuropathy<sup>(2)</sup>. The confusion is compounded in those patients who do not exhibit clinical features fulfilling the criteria of a specific peripheral or central nervous system syndrome leading to a delay in diagnosis. Such a presentation may be the

manifestation of conversion disorder (CD) which involves dysfunction of sensory perception and/or motor function and that may evolve from a myriad of (usually acute) psychological inciting events<sup>(3)</sup>. We present here report of a 24-year-old male who presented with a rapid onset left sided foot drop and was eventually diagnosed to have a CD.

## CASE REPORT

A 24-year-old male soldier presented in the medical

From the <sup>1</sup>Combined Military Hospital, Okara Cantt, Okara, Pakistan; <sup>2</sup>Armed Forces Institute of Rehabilitation Medicine (AFIRM), Abid Majeed Road, Rawalpindi, Pakistan.

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Correspondence to: Saeed Bin Ayaz, MD. Consultant PM & R; Armed Forces Institute of Rehabilitation Medicine (AFIRM), Abid Majeed Road, Rawalpindi 46000, Pakistan.  
Email: saeedbinayaz@gmail.com

reception center of our hospital with two days history of ascending numbness in left leg and overnight left sided foot drop that affected independent walking. The general practitioner on duty diagnosed the patient provisionally as a case of common peroneal nerve injury and referred the patient to the rehabilitation medicine department for management. The patient stated that he was admitted four days earlier to an indoor facility at a rural hospital for treatment of dyspnea. He was investigated and no abnormality was discovered following which he was discharged without any recommendation for a relaxation in his official duties. Upon further enquiry, he divulged the information that his brother had died recently in a road traffic accident (RTA) in which his lower limbs were severed from rest of his body.

On examination, the apparent power in left sided ankle dorsiflexors and plantar flexors was 0/5 according to the medical research council scale for grading of muscle power (Figure 1.). The power in left iliopsoas, quadriceps, hamstrings, gluteus maximus and gluteus medius was 2/5. Knee and ankle muscle stretch reflexes were intact bilaterally. His systemic examination was unremarkable. When asked to walk, he walked slowly with a trunk tilt towards right side (Figure 2.). His complete blood count, renal and liver function tests, urine routine

examination and muscle enzymes were within normal limits. He was admitted to hospital for further evaluation keeping high suspicion of a functional disorder. The rehabilitative therapy was started meanwhile. Electrical muscle stimulation (EMS) of the weak muscles of the left leg and vitamin B12 as a neuroprotective agent were given for three weeks. The computed tomographic scan of the brain did not reveal any abnormality.

His electrophysiological evaluation was delayed until the third week of presentation considering the fact that physiological effects of axonal damage are not well evident for 10-14 days after injury and electrophysiological assessment during this period yields inaccurate results<sup>(4)</sup>. Even after three weeks of onset of his symptoms, the electrophysiological evaluation was found to be normal (Table 1.). The patient was then discussed in a multidisciplinary team meeting comprising of a psychiatrist, physiatrist, physiotherapist and a psychologist. In the context of previous workup, he was diagnosed to be suffering from psychogenic paralysis, a form of CD. The patient was advised gait retraining, cognitive and behavioral therapy (CBT) and tablet venlafaxine. By sixth day of CBT, the patient was able to walk independently with a normal gait pattern and reported complete recovery of his symptoms (Figure 3.).



**Figure 1.** Figure showing foot drop on left side



**Figure 2.** Figure showing tilt of trunk towards right side while walking

**Table 1.** Table showing the electrophysiological evaluation on nerve conduction studies and electromyography

Nerve conduction studies														
Nerve stimulated	Stimulation site	Recording site	Amplitude			Latency (ms)			Conduction velocity(m/s)			F-Wave (ms)		
			Motor=mv	Sensory=μv		Rt	Lt	N	Rt	Lt	N	Rt	Lt	N
Common peroneal nerve	Ankle Below Fibula Lateral ankle	EDB*	3.5	3.1	N*	5.2	4.1							
		EDB	3.4	3.0	≥2	12.1	10.3	≤6.5	47	49	≥44	46	47	≤56
		EDB	3.2	2.9		16.5	14.2		48	50	≥44			
Tibial nerve	Ankle Popliteal fossa	AHB*	12.1	11.0	≥4	4.5	4.3	≤5.8	51	50	≥41	40	41	≤56
		AHB	10.8	9.9		13.4	12.9							
Superficial peroneal nerve	Lateral calf	Ankle	15.2	14.5	≥6	3.2	3.6	≤4.4	43	47	≥40			
Sural nerve	Calf	Posterior ankle	10.1	12	≥6	3.7	3.9	≤4.4	41	45	≥40			

\*Rt – right, Lt – left, N – normal, EDB - extensor digitorum brevis, AHB - abductor hallucis brevis.  
 Note: All sensory latencies are peak latencies; all sensory conduction velocities are calculated using onset latencies; the F-wave latencies represent the minimum F-wave latencies

Electromyography								
Muscle	Insertional activity	Spontaneous activity		Voluntary motor unit action potentials				
		Fibrillation potentials	Fasciculations	Activation	Recruitment	Configuration		
						Duration	Amplitude	Polyphasia
Lt* tibialis anterior	N*	0	0	N	N	N	N	N
Lt extensor hallucis longus	N	0	0	N	N	N	N	N
Lt medial gastrocnemius	N	0	0	N	N	N	N	N
Lt biceps femoris – long head	N	0	0	N	N	N	N	N
Lt biceps femoris – short head	N	0	0	N	N	N	N	N
Lt gluteus medius	N	0	0	N	N	N	N	N
Lt L <sub>5</sub> paraspinal	N	0	0	N	N	N	N	N
Lt S <sub>1</sub> paraspinal	N	0	0	N	N	N	N	N

\*Lt – left, N – normal

**Figure 3.** Figure showing absence of foot drop and normal standing ability after five days of cognitive and behavioral therapy

## DISCUSSION

Physical symptoms that result from psychological stressors and cannot be fully explained by any organic pathology constitute a CD<sup>(3)</sup>. Presenting features can be paralysis, sensory symptoms, seizures, coma, mutism and movement disorders etc<sup>(5)</sup>. Diagnosing such a patient is a challenge for the physician and demands ruling out a wide range of differential diagnoses. A careful history and physical examination can often reveal the psychological etiology of such symptoms.

Symptoms in a CD are not generally intentional or feigned, instead they are an involuntary reflection of a psychological conflict<sup>(6)</sup>. The symptoms are often reinforced by social support from family and friends and by avoidance of confronting the bitter emotional experiences by the patient<sup>(6)</sup>. Each year, 11 to 22 new individuals in 100,000 are diagnosed to have CD<sup>(5)</sup>. Women are two to ten times more susceptible to develop CD than men<sup>(7)</sup>. This disorder is more common in underprivileged communities as compared to affluent societies and nations and is less frequently seen in communities which have appropriate social support and good access to health care facilities<sup>(7,8)</sup>.

CD presenting as paralysis gives some useful clues to the astute clinician. There is usually involvement of one limb or half of the body. The reflexes, muscle tone and sphincter functions are invariably normal unless there is some co-existing pathology. Plantars are also down-going<sup>(9)</sup>. The pattern of motor weakness is irrespective of any anatomic pattern and is irreproducible on repeated examinations.

Patients with CD deserve the same compassionate treatment as any other patient. Instead of being ridiculed, such patients should be provided appropriate professional care, time and reassurance to facilitate their early return to normal function. The management involves a multifaceted approach incorporating antidepressant medications, CBT, relaxation techniques, mirror visual feedback and biofeedback<sup>(7)</sup>.

The chances of recovery are good if appropriate management is started timely especially in patients who are young, have short duration of symptoms and recognizable life stressors<sup>(10)</sup>. The individual symptoms are usually self-limiting and do not lead to lasting disabilities;

however, patients with psychogenic tremors or seizures, concomitant medical illnesses and pending litigation issues generally have a bad prognosis<sup>(10)</sup>.

A significant workload of primary care facilities is due to CD. Estimated ten percent of all medical services provided in the United States (US) is for patients who have no evidence of organic disease<sup>(11)</sup>. An estimated cost of US \$20 billion is incurred annually in the US on these patients, and it does not include cost of time lost from work and disability payments<sup>(12)</sup>. Therefore, prompt diagnosis avoids expensive and potentially dangerous investigational procedures and precious money. However, it is important not to miss rare presentations of organic disease.

In our patient, there was psychological stress of death of his brother with the added trauma of physical disfigurement of lower limbs in the RTA which had cost him his life. The patient responded well to CBT and pharmacological treatment and had an apparent miraculous recovery. This report highlights the importance of early diagnosis of such cases.

## CONCLUSION

CD should be well-thought-out in a patient presenting with foot drop in the absence of an organic cause. Early opinion of a psychiatrist should be sought if suspicion of psychogenic paralysis exists.

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