



Teaching Case

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## Chronic Peripheral Neuropathy versus Cervical Spondylotic Myelopathy

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Received: 23 October 2016

Revised: 14 November 2016

Accepted: 13 December 2016

### ARTICLE INFO

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[babakmirzashahi@yahoo.com](mailto:babakmirzashahi@yahoo.com)Keywords:  
Spinal cord compression;  
Neck pain;  
Gait disorder

### ABSTRACT

Cervical spondylotic myelopathy is the result of degenerative spinal disease of the cervical spine and may lead to significant clinical morbidity. Our patient complained of upper limb weakness and non-dermatomal numbness and gait disorder, which were treated as Guillain-Barre syndrome and chronic peripheral neuropathy. He was assessed in our clinic and with the diagnosis cervical of spondylotic myelopathy, underwent decompression surgery. His symptom was dramatically relief. So, the aim of this report is to emphasize consider cervical myelopathy as the differential diagnosis for cervical pain, upper limb weakness, and numbness and gait disorder.

**Citation:** Khabiri SS, Mirzashahi B, Farzan M. **Chronic Peripheral Neuropathy versus Cervical Spondylotic Myelopathy.** Case Rep Clin Pract 2016; 1(4): 118-21.

### Introduction

Cervical spondylosis is the most common nontraumatic cause of myelopathy in the cervical spine (1). Diagnosing patients with cervical cord compressive myelopathy in a timely manner can be challenging due to varying clinical presentations, the absence of pathognomonic findings, and symptoms that are usually insidious in nature characterized by disability levels that may not significantly change for long periods (2).

Signs and symptoms of cervical

myelopathy are variable and progressive, and differ from patient to patient (3, 4). Symptoms may include neck pain, reduced cervical range of movement, global muscle weakness, loss of fine motor control of the hands, unsteady gait, the urgency of the bladder, and bilateral or unilateral limb pain. Examination findings are consistent with upper motor neuron syndrome, including hyperreflexia, global motor weakness, sensory loss, spasticity, gait disturbances, positive Hoffman's test, Clonus sign, and extensor plantar response to the Babinski test (5).

## Case Report

A 62-year-old man presented with a complaint of gait disturbance to our clinic. Patient's symptoms had begun about 3 years before, with gait change and poor balance control. At the beginning of the symptoms, he had urinary incontinence. The patient did not have any neck or lumbar pain. And there was no history of any trauma. After 2 weeks, according to the development of numbness and tingling in his both hands, he was admitted and treated as Guillain-Barre Syndrome by medical agents such as hydrocortisone.

After that, despite resolving urinary incontinence, his gait instability and numbness increased; so he was treated by high-dose corticosteroids and immune modulator anti-rheumatoid drug (MARD) and then, with the diagnoses by chronic peripheral neuropathy. The patient experienced the periodic improvement and getting worse. When he presented to our clinic he has moon face, with the weight of 140 kg, unable to walk without assistance, and with complaint of weakness and decreased manual dexterity.

In physical examination, he had rounded puffy face and prominent flushed cheeks that told us about high-dose corton therapy. Weakness in distal upper and lower limb was evident; so he could not grasp forceful and he could not force dorsal/plantar flexion. Increased deep tendon reflex (DTR) in upper

and lower limb, decreased pain sensation in the upper limb, and nondermatomal paresthesia were revealed in physical examination. The symptom and sign of myelopathy hand were detected in physical examination.

In finger escape tests, his 2<sup>nd</sup> medial finger escaped after 6 seconds; the patient was unable to do grip and release test more than 10 seconds. Snapping patient's distal phalanx of middle finger led to spontaneous flexion of all other fingers (positive Hoffman test). Triceps and biceps DTR were increased and he had inverted radial reflex.

In the lower limb, decreased knee DTR with negative Babinski test was recorded. No evidence of Clonus sign was detected. Romberg test was positive. The cervical exam was done (Table 1).

Regard to the history and physical examination, we suspected to cervical myelopathy. So, upper and lower limb electromyogram (EMG) and nerve conduction velocity (NCV), and total spine X-ray and magnetic resonance imaging (MRI) were requested for the patient.

Routine lab data were normal and lead poisonings and vitamin B<sub>12</sub> deficiency were ruled out.

EMG-NCV reported upper and lower motor neuron injury confirming on cervical myelopathy. X-ray showed us cervical spondylosis (Figure 1) and in MRI, 3 level cervical stenosis and myelomalacia were detected (Figure 2).

**Table 1.** Neurological examination findings

Clinical test	Left side	Right side
Grasp and release test	Unable	Unable
Finger escape test	Positive	Positive
Upper limb (UL) Reflexes	3+	3+
Lower limb (LL) Reflexes	3+	3+
Upper limb sensation	Reduced all finger tips	Reduced all finger tips
Lower limb sensation	Normal	Normal
Hoffman's test	Positive	Positive
Babinski test	No response	No response
Clonus sign	No response	No response



**Figure 1.** Lateral neck X-ray showing decreased joint space and anterior osteophytes

For the patient, cervical spondylotic myelopathy with grade 4 Nurick classification was diagnosed (Table 2).



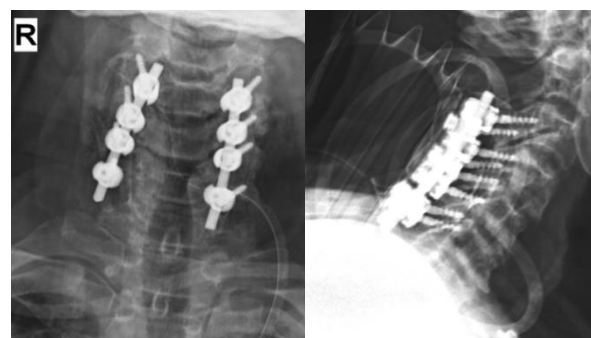
**Figure 2.** Sagittal T2 magnetic resonance imaging (MRI), high signal at C4-5 level indicative of cord compression as a result of posterior buckling of hypertrophied ligamentum flavum showing high intensity changes on T2-weighted sequences named myelomalacia

Then, he scheduled for cervical cord decompression and posterior instrumentation and fusion (Figure 3).

**Table 2.** Nurick classification

Nurick Classification	
Grade 0	Root symptoms only or normal
Grade 1	Signs of cord compression; normal gait
Grade 2	Gait difficulties but fully employed
Grade 3	Gait difficulties prevent employment, walks unassisted
Grade 4	Unable to walk without assistance
Grade 5	Wheelchair or bedbound

The day after operation, dramatically patient's forces increased, his grasp improved normally, and his ankle force got better. The patient expressed feeling better. He got out of bed and explained better balance control and gait. He discharged 3 days after surgery. 2 weeks later, he came with feeling better and walked without assistance, but with a cane, with no evidence of numbness and tingling in the hand.



**Figure 3.** Post operation AP and Lateral X-ray

### Discussion

Cervical spondylotic myelopathy is the result of degenerative spinal disease of the cervical spine and may lead to significant clinical morbidity. If missed, the onset of symptoms is usually insidious, with long periods of fixed disability and episodic worsening events. Differential diagnoses for unsteadiness of gait and/or loss of fine motor control of the hands include cerebral lesions, stroke, carpal tunnel syndrome, neuropathy, Guillain–Barré syndrome, motor neuron disease, spinal cord lesions, vertebral neoplasm, vertebral infection, and inflammatory demyelination. Peripheral neuropathy, for example, Guillain–Barré syndrome, can present with multiple and bilateral nerve involvement but is likely to produce findings of absent reflexes. The presence of hyperreflexia suggested this was unlikely and supported a probable diagnosis of upper motor neuron involvement or spinal cord compression. Missed or delayed diagnosis may lead to a deterioration of neurological symptoms and could progress onto permanent disabling spinal cord damage (6). Furthermore, patients may receive

inappropriate manual treatment which may be contraindicated (7) and put the therapist at risk of potential medico-legal complications. Adverse events from contraindicated treatments, such as thrust manipulation (7) on patients with an undiagnosed cervical myelopathy have not been studied (6).

Hence this is significantly important that when the patients have gait abnormality and upper and lower limb dysfunction, we consider cervical myelopathy as a differential diagnosis; with prove otherwise and testing, physician have a high idea of suspicious cervical myelopathy. With early diagnosis and appropriate treatment, we can prevent permanent spinal cord damage.

Finally, with comprehensive history taking and physical examination and use of diagnostic modulation in patients presenting with abnormal gait, difficulty in fine motor function of hands, nondemratomal paresthesia of upper extremities, cervical myelopathy would be diagnosed earlier and subsequently, proper treatment will be done before the permanent injury of the spinal cord (8).

### Conflict of Interests

Authors have no conflict of interests.

### Acknowledgments

We would like to acknowledge Dr. Mina Sadat Mosavat for her critical editing of the English grammar and syntax of the manuscript.

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