

Degenerative Cervical Myelopathy (DCM) is a disease state characterized by compression of the cervical spinal cord, leading to progressive neurological dysfunction. It is the most common cause of spinal cord dysfunction in the adult population worldwide, with a prevalence of approximately 605 individuals per million in North America. This condition typically affects individuals over the age of 50 and can develop slowly or rapidly. However, DCM is not exclusively found in the older population and can affect younger adults as well. Symptoms may include pain, weakness, numbness in the upper and lower extremities, gait disturbances, and bladder or bowel dysfunction.

History
<ul style="list-style-type: none"> • Patients with DCM may experience bowel/bladder changes (e.g., retention, incontinence, urgency), changes in fine motor movements (e.g., difficulty opening a jar, buttoning clothes, writing), balance changes, and neck pain. • Common symptoms include decreased manual dexterity, pain, and weakness or numbness in the extremities. • Additional signs may include increased falls or fear of falling, and neck stiffness or decreased range of motion.

Physical Exam Findings
<ul style="list-style-type: none"> • Physical examination may reveal an inability to perform tandem gait, hyperreflexia, and positive neurological tests (e.g., Tromner test, Hoffman's sign, Babinski sign, ankle clonus). • Increased reflexes and pathological reflexes may be present, and neurological examination may show signs of upper and lower motor neuron dysfunction. • Neurological tests such as Tromner test and hyperreflexia are among the most sensitive clinical indicators for DCM. • Babinski sign, Tromner test, clonus, and inverted supinator sign are among the most specific findings.

Ancillary Tests
<ul style="list-style-type: none"> • MRI is the gold standard for confirming the diagnosis. It typically shows compression of the spinal cord at the cervical level, often accompanied by signal changes within the cord. • Spinal cord signal changes in DCM may appear as T1 hypo- and T2 hyperintensity, consistent with edema, or T1 and T2 hypointensity, reflecting chronic changes.

Treatment Options
<ul style="list-style-type: none"> • Mild cases of DCM can be managed with rehabilitation or surgical intervention. • Surgical intervention, such as anterior cervical decompression and fusion (ACDF), is recommended in moderate to severe cases of DCM. • Formal postoperative rehabilitation may be beneficial to optimize functional recovery, though is not universally required/recommended.

Clinical Pearls
<p>DCM is the most common cause of spinal cord dysfunction in adults. Symptoms can develop gradually and may be subtle initially. <u>Delayed diagnosis is common with average delays in symptom onset to diagnosis ranging between 2.2-6.3 years.</u> <u>Therefore,</u> early diagnosis is crucial to preserve function and minimize disability that may result from spinal cord compression associated with DCM.</p>

Emerging Technologies
<p>Recent innovations, including advanced imaging modalities, genetic sequencing, and biomarker discovery, offer new opportunities to enhance the diagnosis and management of DCM. Advanced imaging techniques such as quantitative MRI (qMRI), functional MRI (fMRI), MR spectroscopy, myelin imaging, and diffusion tensor imaging (DTI) show promise for early detection of metabolic and microstructural abnormalities in DCM. Additionally, emerging research exploring associations in specific gene loci may facilitate the availability of genetic testing to aid in evaluation and risk stratification of DCM. The identification of serum biomarkers may also represent a potential tool for earlier detection of DCM.</p> <p>Machine learning, including deep learning approaches, is increasingly being explored to assess subtle clinical and imaging patterns that may be overlooked by traditional diagnostic methods. Examples of emerging areas include clinical tests evaluating hand dexterity, and the use of finite element modeling to evaluate postoperative spinal cord stress.</p>

Potential ICD 10 Codes	DDX List for this Condition
<ul style="list-style-type: none"> • G95.9 Spinal cord disorder, unspecified • M50.0 Cervical Disc Disorder with myelopathy • Additional codes may be required depending on the severity and specifics of the diagnosis. 	<ul style="list-style-type: none"> • Cervical Radiculopathy • Multiple Sclerosis • Peripheral Neuropathy • Spinal Tumors • Other Forms of Spinal Cord Compression



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