Session I

Pathophysiology and natural history of CSM

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부산대

Cervical spondylotic myelopathy (CSM) refers to spinal cord dysfunction caused by degenerative changes of the cervical spine. CSM is most common cause of cervical myelopathy in patients over 55 years old.

Table 1. Causes of cervical myelopathy

Extradural	Intradural	Intramedullary
Cervical Spondylosis HCD Trauma Tumor (MM, Meta) CVJ anomalies Infection Hematoma	Tumor (NF, Meningioma, Lipoma, Sarcoma, Meta) Arachnoiditis Sarcoidosis Cervical meningitis AVM Leukemic infiltration Arachnoid cyst	Syrinx Tumor (Ependymoma, Astrocytoma, Hemagioblastoma) Hematomyelia

Cervical spondylosis usually starts earlier in men (50 years) than in women (60 years). Radio-logically, the condition is present in 13% of men in the third decade and almost 100% of men over the age of 70. In women the disease presents later, with 5% showing radiographic changes in the fourth decade going up to 96% in women over the age of 70.

Most people with degenerative changes of the cervical spine remain asymptomatic. There are three main symptom complexes related to cervical spondylosis including neck pain, radiculopathy and myelopathy. In CSM, symptomatic onset is usually insidious, with long periods of fixed disability and episodic worsening. The first sign is commonly gait spasticity, followed by upper-extremity numbness and loss of fine motor control in the hands. The proximal motor groups of the legs are more involved than the distal groups which is the opposite of the pattern with lumbar stenosis.

Table 2. Clinical presentation of CSM

Symptoms	Signs
Neck Stiffness (Early Sx) Leg weakness, stiffness Gait abnormality Clumsy hands Fine motor (hand) difficulty Bladder/bowel dysfunction	Abnormal reflex Hyperactive DTR Clonus Spasticity Babinski sign Hoffman sign Lhermitte's sign Finger escape sign

Cervical spondylosis may lead to cord damage in three ways.

1. Static-mechanical compression of the cord
2. Dynamic-mechanical compression of the cord
3. Vascular circulation impairment

Spinal stenosis caused by disc height loss, uncovertebral and facet joint stress lead to compression of the spinal cord. Degenerative spondylosis and physiological narrowing of canal diameter with neck extension related to exacerbation of spinal cord compression. Finally, ischemia of spinal cord and break down of blood–spinal cord barrier. Pathological features of DCM include gray and white matter degeneration, anterior horn cell loss, cystic cavitation, and Wallerian degeneration of the posterior columns adjacent to the site of compression.

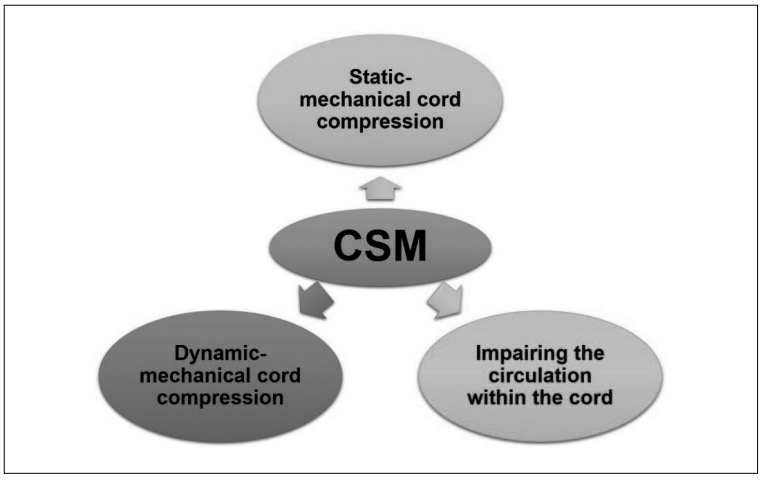

Fig 1. The pathophysiology of CSM