Simple Foot Tapping Test as a Quantitative Objective Assessment of Cervical Myelopathy

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FROM ABSTRACT:

This is a clinical and cohort study to investigate the value of a simple foot tapping test (FTT) in a large healthy population and to elucidate the validity of FTT as a quantitative assessment of lower extremity motor function for cervical compressive myelopathy.

The FTT is the simplest and easiest method for a quantitative analysis of lower limb motor dysfunction in the upper motor neuron diseases.

The authors evaluated 252 patients with cervical myelopathy and 792 healthy volunteers.

The mean value of FTT was 23.8 +/- 7.2 in myelopathic patients, which was significantly lower than 31.7 +/- 6.4 in healthy controls.

The FTT results correlated with other tests for cervical myelopathy, and the FTT scores were improved by surgery.

The FTT is an easy and useful quantitative assessment method for lower extremity motor function in patients with cervical myelopathy, especially those who cannot walk.

KEY POINTS FROM THIS STUDY:

1) “Cervical compressive myelopathy may cause abnormal neurologic status and present with disability of upper and lower extremity motor function and urinary dysfunction.”

2) Patients with cervical compressive myelopathy may have a walking disturbance caused by spastic palsy, ataxia, change of muscle tonus, exaggerated deep tendon reflexes, and sensory loss.

3) “A simple foot tapping test (FTT) is the simplest and easiest method for a quantitative analysis of lower limb motor dysfunction.”
4) Foot Tapping Test
The participant was seated on a chair with comfortable posture (hips and knees at \( \sim 90^\circ \)). The value of FTT was measured bilaterally by having the sole of the foot tap as many times as possible for 10 seconds while keeping the heel in contact with the floor.

5) “We performed FTT for evaluating lower extremity motor function quantitatively in patients with cervical compressive myelopathy. FTT is simple, requires no instruments, and is useful even for nonambulatory cases.”

6) “Slowness of foot tapping was reported to be a more useful sign than Babinski sign for identifying UMN weakness.”

7) Cervical compressive myelopathy is an UMN syndrome and the gait disturbance is mainly caused by UMN weakness, which includes spasticity, hyperreflexia, and slowness of voluntary movements.

8) “In this study, we demonstrated that the number of foot taps was significantly reduced in patients with cervical compressive myelopathy compared with healthy controls.”

9) The value of FTT decreased with age in healthy people.

10) The mean value for the FTT was 31.7 in 792 normal participants who had not suffered from myelopathy.

11) “A FTT of less than 18 times indicates the possibility of cervical compressive myelopathy if no other diseases that influence the lower extremity motor function are present.” [Key Point]

12) “Slowness of foot tapping is a phenomenon that reflects UMN weakness with cerebral or spinal cord disorders.”

13) “We demonstrated that FTT is a valid quantitative assessment of lower extremity motor function for cervical compressive myelopathy, which has been widely performed in UMN diseases [Parkinson’s, Amyotrophic lateral sclerosis, multiple sclerosis, traumatic brain injury].”

14) “This test is the simplest and easiest objective quantitative method that has ever been reported for cervical myelopathy.”

15) FTT “is an easy and useful quantitative test for patients with cervical myelopathy, especially those who cannot walk.”