**eTable-1:** Inclusion and exclusion criteria for study participants

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |   |   |   |  |
|  | **Criteria** | **CSM (n=24)** | **HC (n=24)** |  |
|  | **Inclusion** | Aged 21-80 | Aged-matched controls (21-80)  |  |
|  | Symptoms of extremity weakness, poor coordination of extremities | Nurick grade 0 and mJOA 18 only. Subjects with sphincter dysfunction due to prostate or genitourinary disease only (no spinal involvement) would be allowed. |  |
|  | Exam findings of weakness, hyperreflexia, or poor coordination | Able and willing to provide legally obtained Informed Consent |  |
|  | Radiographic signs of cervical spinal compression |  |  |
|  |  Nurick grade I-V and mJOA <17 |  |  |
|  | Pain, if present, isolated only to the neck and/or radicular in nature |  |  |
|  |  Able and willing to provide legally obtained Informed Consent |   |  |
|  | **Exclusion** | Diagnosis of neurodegenerative disease (ex: ALS or MS) | Diagnosis of neurodegenerative disease (ex: ALS or MS) |  |
|  | Pregnant or nursing women | b. Pregnant or nursing women |  |
|  | Active systemic rheumatological disease | Active systemic rheumatological disease |  |
|  | Active peripheral or vascular neuropathy | Active peripheral or vascular neuropathy |  |
|  | Urgent need for surgical decompression | History of spine surgery at any level |  |
|  | Need for non-degenerative compression (tumor, trauma, infection) |  >3 major co-morbid states will be excluded |  |
|  |  History of prior spine surgery (Cervical and Thoracic) |  Medical co-morbidity that prevents the completion of any study-related procedure |  |
|  |  >3 major co-morbid states will be excluded | Current spinal conditions, symptoms of neck pain, or neurological deficit |  |
|  | Medical co-morbidity that prevents the completion of any study-related procedure |   |  |
|  |  |  |  |  |

*mJOA*, modified orthopedic association, *ALS*, amyotrophic lateral sclerosis, *MS*, multiple sclerosis, *CSM*, cervical spondylotic myelopathy, *HC*, healthy controls

**eTable-2:** Summary description of the assessment tests

|  |  |  |
| --- | --- | --- |
|   |   |   |
| **Test Name** | **Test Description**  | **Scores** |
| **NIH Toolbox Motor Battery** |  |  |
| 9-Hole Pegboard Test (9HT)8,19,22 | Assesses fine motor coordination of the fingers and ability to manipulate objects ina timely manner | Scores represent the time required for the participant to accurately place and remove nine plastic pegs into a plastic pegboard; Higher scores signify better fine motor coordination |
| Grip Strength Test8,19,23 | Assesses upper extremity strength and the ability to produce tension and power  | Scores represent the force in pounds that the participant exerts from each hand; Higher scores signifygreater strength |
| Standing Balance Test8,19 | Assesses ability to orient the body and maintain balance while holding both staticand dynamic poses  | Scores represent the amount of postural sway while the participant assumes and maintains five poses;Higher scores signify better balance |
| 4-Meter Gait Walk Test8,19  | Assesses the speed at which participants can walk a distance of four meters at their usualpace | Scores represent the time in seconds required for the participant to walk the distance; Lower scoressignify better locomotion |
| **The Modified Japanese Orthopaedic Association (mJOA)**5,18 | Assesses upper and lower extremity motor function, upper extremity sensory function, and urinary function | Scores are obtained through a questionnaire; Lower scores reflect more severe myelopathy  |
| **Nurick Grade** 17,18 | Assesses a participants difficulty walking  | Higher scores correspond with more severe myelopathy  |
|  |  |  |

*9-HT*, 9-hole pegboard test, *mJOA,* modified orthopedic association score

**Table-3**: Association between Nurick grade, mJOA scores, and the NIHTBm scores.

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| --- | --- | --- |
|   |  **mJOA** |   |
| **Nurick** | **Mean** | **SD** | **Median** | **Range** |   |
| 0 -1 (5) | 15 | 2.35 | 16 | 12 - 17 |   |
| 2 (4) | 14 | 2.45 | 14.5 | 11 - 16 |   |
| 3 (10) | 12.8 | 2.57 | 12 | 9-16 |   |
| 4 (4) | 8 | 2.16 | 8.5 | 5 - 10 |   |
| 5 (1) | 4 | 0 | 4 | ~ |   |
|  |  |  |  |   |  |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| **Nurick** | **Tm-mJOA** |
| **NIHTBm** | **Spearman rho (*ρ)*** | **p-value** | **Spearman rho (*ρ)*** | **p-value** |
| Dexterity | -0.49 | 0.01 | 0.45 |  |
| Grip strength | -0.31 | 0.13 | 0.41 |  |
| Balance | -0.67 | 0.0004 | 0.49 |  |
| Gait | -0.62 | 0.0015 | 0.38 |  |
| mJOA | -0.73 | <0.0001 |  |  |
| tm-mJOA | -0.69 | 0.0002 |  |  |