Poster #64

Evaluation of upper extremity function recovery using the hand function test (STEF) after laminoplasty

INTRODUCTION: Clumsy hand is one of the common symptoms in cervical myelopathy. The purpose of this study is to show postoperative recovery of upper extremity function after laminoplasty by evaluating clumsiness using a simple test for evaluating hand functions (STEF) and to show which patients attain high STEF scores after surgery.

METHODS: A total of 88 patients who underwent laminoplasty were examined in this study. The hand function test (STEF) was performed according to Kaneko and Muraki's previously published method (Development and standardization of the hand function test. 1990). The battery consists of 10 subtests, and ten points (1 to 10) are awarded for each subtest, with the left and right hands evaluated separately. STEF scores indicate the sum of 10 subtests. Before surgery, all the patients had an estimated STEF score, i.e. STEF (before), JOA scoring systems, especially for the upper extremity motor function score (JOA (u/m)), grip and release test (10-second test), deltoid muscle weakness (estimated manual muscle test), and gasping power. STEF was readministered 6 months after surgery (STEF (f/u)). Patient history of traumatic tetra paresis (trauma) and diabetes mellitus (DM) was confirmed. Plausible predictors (age, trauma, DM, JOA (u/m), 10-second test, grasping power, and STEF (before)) were included in the original model. Best subset regression was performed and the final regression model was selected according to Akaike’s Information Criterion.

RESULTS: As previously reported, there were correlations between STEF and the 10-second test. All the relative risks (RRs) are presented with 95% confidence intervals (CIs). The final linear regression model included age (P = 0.08), STEF (before) (P < 0.01), trauma (P = 0.02), DM (P = 0.04), 10-second test (P < 0.01), JOA (u/m) (P = 0.06) as significant variables influencing STEF (f/u). Compared with patients with no history of trauma, the RR for those who have a history of trauma was 14 (95% CI, 1.64–119.88). Also, compared with patients with no history of DM, the RR for those who have history of DM was 5.71 (95% CI, 1.06–30.65).

CONCLUSION: STEF scores in most myelopathy patients improved after surgery. However, some of them did not improve. This finding indicates that irreversible damage of the spinal cord before decompression surgery might affect the recovery process. STEF is a useful tool for monitoring upper extremity function in cervical myelopathy. A history of traumatic tetra paresis and diabetes mellitus in myelopathy patients may greatly influence their recovery after operation. This study provides an improved understanding of the recovery from myelopathy after decompression surgery.