

Supplementary Methods

Statistical analysis

All statistical analyses were performed using the SPSS software for Windows version 23.0 (IBM Co., Armonk, NY, USA). Data were presented as number (%), mean \pm standard deviation, or median (interquartile range). Univariable analysis was performed using the Pearson chi-square test or Fisher's exact test for categorical variables or the independent t-test or Mann-Whitney

test for continuous variables, as appropriate. Multivariable logistic regression analysis was performed to determine the factors associated with substantia nigra degeneration. Multivariable linear regression analysis was performed to determine the factors associated with the percent improvement in the National Institutes of Health Stroke Scale (NIHSS) score. Age, sex, and other variables ($P<0.05$) on the univariable analyses were entered for multivariable analysis. All statistical analyses were two-tailed, and statistical significance was set at $P<0.05$.