Analysis of Subjective Postural Vertical in Pitch Plane in Patients with Pusher Behavior

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[Background] Subjective Postural Vertical (SPV) reflects perceived upright position with respect to gravity. Pusher Behavior (PB) is thought to orient their body toward a disturbed internal reference of verticality in roll plane. However, PB is not only occurred in roll plane, but also indicate movement of pitch plane such as transfer and walking. The purpose of present study was to clarify the characteristic of SPV in pitch plane for PB.

[Methods] Forty-nine patients with stroke (period from onset: 16.1 (mean) days) participated. The diagnosis of PB was assessed using (SCP). According to SCP, 26 patients were non-PB (age: 66.1, SCP: 0.1), 23 patients were PB (age: 67.5, SCP: 3.7). The control group was composed of 15 elderly subjects (age: 67.1). This study was approved by the ethics committee, and all participants provided written informed consent. SPV was measured by a Vertical Board (VB). The subjects seated on the VB, with eyes closed. The VB was tilted toward opposite position until the subjects feel upright position. Eight trials were performed, four from front to back and four from back to front. The SPV orientation was calculated the value of average (PV: mean) and standard deviation (PV:uncert). The data defined as the negative value was a backward orientation. The differences of vertical parameter between groups were compared by one-way analysis of variance and Bonferroni methods.

[Results] PV-mean was no significant for 3 groups (control: -2.5, non-PB: -2.2, PB: -1.1). The analysis of Variance showed a significant effect of groups for PV-uncert (control: 3.3, non-PB: 3.7, PB: 5.8). PV-uncert in PB was significantly higher than other groups.

[Discussion] This suggests that patients with PB are disturbed internal reference of verticality in pitch plane. Therefore, it is necessary for PB to adapt cognitive approach in pitch plane.