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Analysis of verticality in patients with Pusher behavior and unilateral spatial neglect (USN)

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【Purpose】 In stroke physical therapy, it has been reported that Pusher behavior was negative factor to maintain their upright posture and balance. Relationships of visual and postural verticality and this symptom were discussed in recent studies. However there have been no study to clarify the relationship Pusher and USN as to verticality. The purpose of present study was to investigate the subjective postural verticality (SPV) in patients with Pusher behavior in relation to USN.

【Methods】 A total of 56 stroke patients (mean age of 65.8 years, 51.9 days from onset), and 13 normal adults (61.8 years old) were enrolled in this study. Scale for contraversive pushing (SCP) was adopted as criteria for presence (more than 1.75 point) of Pusher behavior. Our originally developed vertical board (VB) was used in measurement of SPV. After subjects seated on the VB and eyes closed, we rotated the VB in 1.5 degree per second from 15 degrees tilted to the right or left position. When a subject judged their body was upright, we recorded the angle deviation of the VB by electric angle monitor. Plus value of angle means deviation to the non-hemiparetic side, minus value to the hemiparetic side.

【Results】 Pusher with USN (n = 12) patients showed -0.4 degree, USN without Pusher patients (n = 12) -1.5 degree, Pusher without USN (n = 4) +0.6 degree, and no Pusher and no USN (n = 28) indicated -0.2 degree in directional error (constant error). Absolute error in patients were 5.05, 5.43, 3.69, 2.74, showed significantly larger than that of normal subjects 1.91 (p < .05)

【Discussion】 Results of this study suggest that SPV in Pusher would be modulated by presence of USN. If neglect is associated with Pusher, the direction of SPV would be changed to hemiparetic side.