

The effect of sensory deficit on the gait and balance of patients with supratentorial ischemic stro

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Objective

Sensory deficit is common in patients with stroke and seems to be related to balance and ambulation. The aim of present study is to investigate whether the deficit of sensory confirmed by somatosensory evoked potential (SSEP) of lower extremities affects poststroke gait and balance.

Method

We reviewed medical records for stroke patients who were admitted to the department of rehabilitation medicine from January 1, 2014 to April 30, 2018 and had SSEP done after stroke. We included the patients who received hospitalization within 3 months of stroke and measured by MRC grade 3 or higher of hemiplegic lower limb. Patients with history of previous stroke, visual field defect, hemineglect, spasticity, or peripheral polyneuropathy of lower extremities confirmed by electrophysiologic study were excluded. We divided the enrolled patients into the group with normal SSEP values (latency, and amplitude) and abnormal SSEP values. We evaluated balance function and ability of ambulation of the patients by means of the Berg Balance Scale (BBS) and Functional Ambulation Category (FAC).

Results

A sample of 14 patients was recruited. The mean age of patients was 64.64 years, with 9 men and 9 right hemiplegia, and the mean duration between onset of stroke and evaluation of SSEP was 16.64 days. The scores of BBS and FAC was 41.67 ± 9.69 and 3.67 ± 1.21 in patients with abnormal SSEP latency group and 42.0 ± 14.46 and 3.62 ± 1.85 in the normal SSEP latency subjects. In the abnormal SSEP amplitude group, the scores of BBS and FAC was 41.67 ± 9.64 and 3.78 ± 1.30 , and in normal SSEP amplitude group was 42.20 ± 17.24 and 3.40 ± 2.07 . The difference failed to reach a statistically significant level ($P > 0.05$).

Conclusion

The balance and gait ability in patient with supratentorial ischemic stroke have not relation to latency and amplitude of SSEP. The Results were probably due to small sample size of enrolled patients and insensitivity of reference value of SSEP.

Key words

stroke · evoked potential, somatosensory · gait · balance

Table 1. General Characteristics of the Patients

Characteristics	Values
Age (years)	64.64 ± 11.89
Gender (M / F) (n)	9 / 5
Hemiplegic side (right / left) (n)	9 / 5
Interval between onset of stroke and evaluation of SSEP (days)	16.64 ± 7.90
BBS	41.86 ± 12.20
FAC	3.64 ± 1.55

Table 2. Comparison of BBS and FAC values between the NSLG and ASLG of supratentorial ischemic stroke patients

Characteristics	NSLG (n=8)	ASLG (n=6)	p-value
Age (years)	63.38 ± 11.36	66.33 ± 13.44	0.673
Gender (M / F) (n)	5 / 3	4 / 2	1.000
Hemiplegic side (right / left) (n)	5 / 3	4 / 2	1.000
Interval between onset of stroke and evaluation of SSEP (days)	18.75 ± 9.87	13.83 ± 3.06	0.559
BBS	42 ± 14.46	41.67 ± 9.69	0.746
FAC	3.62 ± 1.85	3.67 ± 1.21	0.839

Table 3. Comparison of BBS and FAC values between the NSAG and ASAG of supratentorial ischemic stroke patients

Characteristics	NSAG (n=5)	ASAG (n=9)	p-value
Age (years)	69.20 ± 12.83	62.11 ± 11.27	0.334
Gender (M / F) (n)	4 / 1	5 / 4	0.739
Hemiplegic side (right / left) (n)	3 / 2	6 / 3	1.000
Interval between onset of stroke and evaluation of SSEP (days)	16.40 ± 12.70	16.78 ± 4.55	0.081
BBS	42.20 ± 17.24	41.67 ± 9.64	0.423
FAC	3.40 ± 2.07	3.78 ± 1.30	0.944