Oral communications

CO56-001-e
Age-dependent gains after balance training in ataxic neuropathies
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Keywords: Balance; Proprioception; Aging; Neuropathy; Ataxia

Objective.– A rehabilitation program including foot sensory stimulation, balance and gait training with limited vision was performed by 22 patients with ataxic neuropathy.

Methods.– Patients were divided in two subgroups corresponding to a middle-age group (median age = 55 y) and an older adults group (m = 75 y).

Results.– At the end of this program, balance control assessed using the Berg Balance Test, timed Up and Go and Functional Reach Test improved similarly in both groups (P < 0.001). By contrast, only middle-age adults were able to increase the contribution of sensory afferent with a significant reduction of Romberg sign (Khi² = 6.6, P = 0.01).

Discussion.– These results show that ataxic patients can improve their balance with better results in dynamic than static conditions whatever their age. Nevertheless, an age effect can be pointed out as older adults unless younger do not succeed to improve sensory integration during static balance. This study gives news insights for the interest of proprioceptive rehabilitation in ataxic patients as an insufficient contribution of neuronal plasticity may be suggested to explain a decrease in static balance ability when improving dynamic balance remains a realistic goal even in older patients.

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CO56-002-e
Postural control and vibrations: A plan-dependent effect?
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Keywords: Sensory-motor integration; Proprioception; Ageing; Hemispheric treatment

Objective.– To compare the effect of the age of a hemispheric cerebral lesion on the utilization of proprioceptive information during a basic postural task.

Methods.– In standing position, we applied vibrations (during 20 s at 80 Hz, to imitate a muscular stretch) on ankle (Achilles or Peroneus) tendons of 15 healthy senior adults and 19 stroke patients: 11 with a left/9 with a right cerebral lesion. Standard posturographic parameters were recorded.

Results.– Peroneus and Achilles vibrations lead to a backward shift of the Center of Pressure. The postural reaction for senior adults permits to dissociate the right hemispheric lesion as dominant for controlling the situation. Patients with a right hemispheric lesion are the most instable with vibrations and are the most sensitive to medio-lateral vibrations. After vibrations, they show a particular reaction to medio-lateral oscillations.

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Proprionception and cortical hemispheric treatment
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Keywords: Sensory-motor integration; Postural control; Hemiparesis; Paretic limb; Instability

Objective.– To determine the proprioceptive sensitivity of the cerebral hemispheres and their plays in the sensory-motor integration process required for the postural control.

Methods.– At this day, we applied vibrations on Achilles or Peroneus tendons (20 s, 80 Hz) on the paretic or on the “non-affected” lower limb (LL) of 19 stroke patients (8 with a right [RHL]/11 with a left [LHL] hemispheric lesion), in standing position. Standard posturographic parameters were recorded.

Results.– RHL patients are more instable than LHL patients, what is increased by vibrations. Vibrations applied on the paretic LL for LHL patients lead to no displacement of the center of pressure. On the contrary, the postural reaction is significant for RHL patients. Both groups of patients react in a similar way to vibrations on their “non-affected” LL.

Discussion.– The postural instability is still a dominant aspect of the right hemispheric lesion (left hemiparesis). Our results suggest that the proprioceptive integration by the right cortical hemisphere is more sensitive and reactive for standing postural control. Organizational strategies of postural reactions are depending on the stimulated hemisphere, in the adaptive reactivity related to the perturbation as well as in post-effects at the suspension of vibrations.

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Ankle deformities, rather than spasticity, impair activities and participation of adult stroke patients
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Keywords: Stroke; Gait; ICF; Spasticity; Instrumental indices

Background.– In the gait of hemiparetic patients, body functions and structures (F&S) impairments of the affected side may not directly cause activities and participation (A&P) limitations, as a result of contralateral side compensatory contributions. Thus, we investigated the relationships between scores of F&S, walking ability (WA) and A&P.

Methods.– We retrospectively analyzed 26 stroke patients. F&S evaluations: passive and active ankle dorsiflexion (pDF, aDF), triceps surae (TS) spasticity. A&P assessments: Functional Ambulation Categories (FAC), Rivermead Mobility Index (RMI) and Walking Handicap Scale (WHS). WA assessments: walking speed, dynamic loading and propulsion ability (DLA and DPA) calculated as in [1]. The relationships were assessed by Spearman’s correlation coefficient.

Results.– TS spasticity did not affect any of the A&P and WA measurements. aDFs were correlated with all A&P measurements and pDFs were correlated with FAC and WHS. The strongest correlations were found between the DLA and DPA indices and all A&P scores. DLA was correlated with aDF and DPA with pDF.

Conclusions.– Adult stroke patients’ A&P depends more upon ankle deformities than spasticity. S&F impairments altering foot prepositioning at contact and tibia forward rotation during stance should be considered from the early rehabilitation stage.