REDUCING FALLS AFTER STROKE WITH GAZE STABILITY AND OCULOMOTOR EXERCISES. BETTERBALANCE: A RANDOMIZED CONTROLLED TRIAL

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Introduction

Motor control deficits after stroke are associated with a decrease in recovery potential and falls episodes. Gaze stability and oculomotor exercises through vestibulo-ocular reflex helps to coordinate the movements of the head, trunk and pelvis during walking improving balance.

Purpose

To assess the effect of a domiciliary program of oculomotor and gaze stability exercises on the incidence of falls and on the risk of fall after stroke.

Participants

Patients with stroke diagnosis, older than 60 years, discharged from hospital and refereed to the physiotherapy, were recruited to a randomized controlled trial.

Inclusion Criteria: 3 to 15 months after the diagnosis of stroke; balance deficit (positive Romberg Test); ability to walk alone 3 meters.

Exclusion Criteria: previous balance problems, severe osteo-articular problems, previous exposure to oculomotor or gaze stability exercises.

Register: ClinicalTrials.gov: NCT02280980

Methods

All individuals who accepted to participate were allocated (block randomization by age, balance and functionality) into the current rehabilitation program (control group - CG) or into a supplemental intervention focused on a domiciliary program of oculomotor and gaze stability exercises (intervention group - IG) for three weeks.

•**Primary outcome:** the incidence of falls.

•**Secondary outcome**: the variation of the estimated risk for falls by Berg Balance Scale (BBS) and Timed Up and Go Test (TUG) were (clinical significant changes were considered: minimum difference of 4 seconds in TUG and 4 points in BBS).

•**Data analysis**: Primary outcome was assessed by estimation of risk ratios for positive outcomes with 95% confidence intervals. Logistic regression models were used to explore factors that affect the success of the intervention.

QR Code

Domiciliary program of oculomotor and gaze stability exercises

Results

79 patients were recruited (from 248 referred) and 68 completed the protocol (CG 35; IG 33), aged 60-87 years old (median 73), similarly distributed by age, gender, type of stroke and reported falls before recruitment.

During the intervention period no falls were registered in the IG and 4 patients fell in the CG (Figure 1).

In 11/35 (31.4%) CG patients and in 28/33 (84.8%) IG patients (RR 0.37; 95%CI 0.22–0.62; P < 0.001) clinical significant changes were obtained in BBS and TUG (Figure 2).

All the female participants in the IG but just 50% in the CG reached the combined secondary outcome. The best fitted multiple logistic regression model, identified the intervention, female gender and previous Motor Assessment Scale as significantly affecting the odds for the success of the secondary outcome.

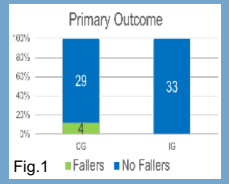

Fig.1

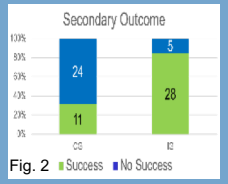

Fig. 2

Discussion and conclusions

The estimated risk of falling significantly decreased after three weeks of a domiciliary program of oculomotor and gaze stability exercises; no falls occurred in the IG.

This study demonstrated the feasibility of domiciliary oculomotor and gaze stability exercises.

These findings encourage further exploration of this promising approach.

Implications

Due the high incidence of falls after stroke and their social and economic impact, the oculomotor and gaze stability exercises can be an efficient complement in the physiotherapy intervention to improve balance and reduce the risk for falls, restoring confidence and empowerment.

Further information

Study approved by the Ethics Committee of CHULC. The authors declare no conflicts of interest, competing or financial. No external funding was granted to this institutional study.

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