August 14th, 2023

STROKE SPECIAL INTEREST GROUP

Academy of Neurologic Physical Therapy

In this newsletter...

- NEW Article Review! See below for video link to listen!
- Thank you to all who were able to attend our August Membership Meeting!

For an alternative way to review this content, click the video above to hear the below article review!

Completed by: Keith Mausisa, PT, DPT

Summary topic title: A Cohort Study on Longitudinal Changes in Postural Balance During the First Year After Stroke

Article reference: Buvarp D, Rafsten L, Abzhandadze T, Sunnerhagen KS. A cohort study on longitudinal changes in postural balance during the first year after stroke. *BMC Neurology*. 2022;22(1). doi:10.1186/s12883-022-02851-7

Link to the full article: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9425943/

Operational Definitions: Postural balance – a combination of static balance and dynamic balance to produce the ability to maintain varied body positions.
Moderate stroke – based on multidimensional variable attributed from several clinical assessments with the corresponding scores: mean [SD] Fugl-Meyer Assessment-LE, 30; median [Interquartile range] total Barthel Index scores, 60 [55–70]; median [IQR] modified Rankin Scale, 3 [2-3].
Mild stroke - based on multidimensional variable attributed from several clinical assessments with the corresponding scores: mean [SD] FMA-LE, 32 [3]; median [IQR] total BI scores, 90 [85–95]; median [IQR] mRS, 2 [1-2].

Purpose of the article: Impaired postural balance is a commonly recognized residual impairment after stroke. It has been reported to be associated with falls and increased social isolation, and therefore plays a factor in decreased physical activity and mobility that directly affects a patient's quality of life. This study aimed to observe changes in postural balance between different stroke severities by means of longitudinal analysis during the first year after stroke onset.

Methods of interest: This study recruited 135 post-stroke patients and divided them into two clusters by their baseline measurements of: Fugl-Meyer Assessment, modified Rankin Scale, National Institutes of Health Stroke Scale, Barthel Index, and Montreal Cognitive Assessment. Participants were also assessed using Berg balance Scale (BBS) as the primary determinant for the postural balance outcome. Postural balance was assessed at 5 days, 1, 2, and 3 months, and 1-year post-stroke. Outcome assessments were done while all participants were continuously receiving rehabilitation sessions.

Results of interest: This study had 93 participants included in the longitudinal analysis, stratified to mild stroke cluster I (n=51) and moderate stroke cluster II (n=42). Forty-two participants withdrew or were lost to follow-up. The study found that improvement in postural balance was noted to continuously increase up until the 3 months from the onset of stroke for both clusters, but the moderate stroke group deteriorated after that. It was also noted that 39 out of 93 participants had a BBS score of <45 (moderate stroke, n=31 and mild stroke, n=8), which is indicative of high risk of falling during the first year of stroke. Advanced age, poor motor-sensory function of the lower extremities, and difficulty of transfers were concluded to be the top three baseline predictors of subjects who had a resultant score of BBS <45 points.

Discussion, take-home message: According to the study, both mild and moderate stroke clusters showed increase in recovery for the first three months of stroke, with a significant deterioration of postural balance thereafter for the moderate stroke group. This finding suggests that it is imperative to undergo thorough reassessment and increase physical therapy sessions to recognize specific needs of the patient that may contribute to balance impairment. Other studies suggest that the eventual decline of balance outcomes after the 3rd month may be attributed to diminished spontaneous recovery and ended the effect of rehabilitation, although the mechanism behind this remains unclear and may need further study. Among the evaluated variables, higher age and poor cognition were associated with more severe balance impairments and slower recovery. This could potentially affect the construction of a plan of care to post-stroke patients bringing emphasis on the level of cognition in setting the focus of the program in addressing balance problem.

The data collected from this study indicates that the peak of rehabilitation outcome, specifically for balance, can be achieved by the 3rd month. This may be the best time

for reevaluation to recalibrate the rehabilitation goals of the patient. Nevertheless, recovery is still possible beyond the first year of stroke onset, but utilization of different evaluation tools could be more appropriate. To further strengthen and confirm the study's findings and widen its generalizability, production of additional research studies consisting of patients with different levels of stroke severity (mild, moderate, and severe) would be valuable.

Additional references:

- Outcome Measures: https://www.sralab.org/rehabilitation-measures
- Modified Rankin Handicap Scale (mRS) – overall disability assessment
- National Institutes of Health Stroke Scale (NIHSS) – assessment for neurological deficit
- Barthel Index (BI) – assessment for dependency for ADLs
- Fugl-Meyer Assessment (FMA) – assessment for motor-sensory function
- Montreal Cognitive Assessment (MoCA) – assessment for cognitive function
- Hospital Anxiety and Depression Scale (HADS) – assessment for psychological distress
- Berg Balance Scale: https://neuropt.org/docs/default-source/cpgs/core-outcome-measures/core-measure-berg-balance-scale-(bbs)_final-2019.pdf?sfvrsn=6e845043_0

Thank you to those who attended our August Membership Meeting!

We had great discussions surrounding our SIG initiatives. If interested in volunteering or learning about our current initiatives, please email strokesig@gmail.com

APTA American Physical Therapy Association

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