

Correlation between the body balance and functional capacity from elderly with chronic vestibular disorders

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Abstract

Vestibular disorders are common among the elderly, mainly resulting in dizziness and imbalance - symptoms which can impact daily routine activities.

Aim: To study the correlation between body balance and functional capacity and a comparison of risk of falls, actual falls and the functional capacity of the elderly with chronic vestibular dysfunctions.

Materials and Methods: A cross-sectional, clinical and experimental study with 50 senior citizens - 60 to 86 years, with chronic peripheral vestibular dysfunction. These participants underwent body balance assessment by the Dynamic Gait Index (DGI) and functional capacity assessment by the Functional Independence Measure (FIM). The data was tested using the Spearman correlation and comparison tests, Mann-Whitney and Kruskal- Wallis, being $\alpha=5\%$ (0.05).

Results: There was a significant correlation between the total DGI score and all FIM scores, especially the total score ($r=0.447$; $p<0.001$) and loss of functional capacity in elderly patients with the highest risk of falling ($p<0.001$).

Conclusion: There is a positive correlation between body balance and functional capacity in elderly patients with peripheral vestibular disorders, that is: the better the balance, the better the individual's functional capacity. In addition, a worse functional capacity increases the individual's risk of falling.

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INTRODUCTION

With the current growth in the incidence of chronic diseases, thanks to population aging, vestibular disorders have acquired a greater epidemiological relevance, considering that the dysfunctions and their multiple associated neurotological symptoms, such as vertigo, dizziness, body instability, hearing loss and tinnitus are directly associated with advanced age¹.

The vestibular system contributes as a reference system, to which the other systems (visual and somatosensorial) may compare to in sensorial conflict situations. This system provides information to the Central Nervous System (CNS) on the orientation of the body in space, together with somatosensorial information. Thus, when the vestibular system is compromised with aging, such as, for example, through progressive degeneration and reduction in the number of labyrinthine hair cells and vestibular receptor ganglion cells, the CNS has difficulties in dealing with reduced or conflicting sensorial information².

Moreover, many complaints are frequent among the elderly, and we highlight dizziness, vertigo and unbalance. In more than half the cases, balance disorders starts between 65 and 75 years of age, and in about 30% of the aged have this disorder at this age, which represents limiting factors in their lives³. This clinical finding is considered a geriatric syndrome of multifactorial causes, which happens in multiple system deficits, causing the elderly major vulnerability facing daily challenges⁴.

By 65 years of age, dizziness is considered the second most prevalent symptom worldwide; after 75 years of age it becomes the number one symptom in prevalence, reaching 80% of the individuals in this category¹.

One of the most disabling symptom of dizziness and body balance disorder is falls. These are defined as a non-intentional event resulting from the individual's change of position to a lower level in relation to the initial position, without an intrinsic determining factor such as a syncope, stroke or unavoidable accident⁵.

It is important to consider that most of the elderly develop along their lives some chronic disease caused by the continuous loss of function in organs or biological systems. This loss may or may not impair functional capacity which, in its turn, may trigger functional limitation and, ultimately, cause the elderly disabilities in doing the essential activities of daily life⁶.

A household survey with the elderly population of the city of São Paulo (SP), reported that only 53% of the individuals assessed had total autonomy to perform their daily activities, such as: prepare meals, clean the house, take their medication at the right time, comb one's hair, walk on a flat surface, eat, shower, among others. Moreover, 29% required partial or full help to finish up

to three activities and 10% required help in more than three of the activities mentioned. These results suggest that longevity may no longer be an achievement, and it may become a nuisance as long as the increase in life expectancy is not matched by good health, autonomy and independence to perform daily activities⁷.

A cross-sectional study assessed the importance of motor performance in maintaining one's independence concerning daily activities such as travelling, shopping, preparing meals and cleaning the house. Results have shown that there is a strong association between less balance and a loss in the execution of instrumental activities by the elderly in the community⁸. Nonetheless, there were no explanations as to the degree of correlation between balance and the functional capacities of senior citizens with vestibular diseases, assessed by the Functional Independence Measure (FIM), in regards of basic daily-life activities, such as dressing, showering, undergoing postural transfers, and others.

Having said that, this study aimed at investigating the correlation between body balance and functional capacity in the elderly with chronic peripheral vestibular disorders and to compare the risk of falls and the occurrence of falls with the functional capacity of these individuals.

MATERIALS AND METHODS

We carried out a cross-sectional, descriptive and analytical study with 50 senior citizens (N = 50), between 60 and 86 years of age, from both genders, with peripheral vestibular dysfunctions.

Inclusion criteria for participation were: elderly individuals with 60 years or more of age; men and women; with vestibular disorders, dizziness and reduction in body balance and stunning or a feeling of unspecific dizziness, with peripheral etiology and daily occurrence, - weekly, monthly or sporadic, for at least three months.

From this study, we took off those individuals who had sensorial, cognitive or physical disabilities, which prevented the execution of body balance assessment, as well as having incapacity to understand simple verbal commands and questions associated to FIM.

We also took off the elderly with vertigo spells; patients with severe vision and hearing impairment - considered incapable to perform their daily activities, even with corrective lenses or hearing aids; elderly with amputation of the upper and/or lower limbs; patients unfit for walking independently, and those in a body balance rehabilitation program for at least six months before this study was carried out.

This study was previously approved by the Ethics in Research Committee (Protocol # 032/2009) and only

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