

Otorhinolaryngology

Plantar cutaneous sensitivity as a risk for falls in the elderly

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The risk factors for falls in the elderly are many and may be due to syncope and pre-syncope caused by cardiovascular diseases; neurological diseases, such as epilepsy and Parkinson's disease; dementia disorders; and dependence in activities of daily life¹. Other risk factors that also cause syncope and fall include the adverse effect or inappropriate use of several concurrent medications, drugs which are central nervous system-depressant, or act on the cardiocirculatory system¹. Systemic diseases combined with sensorineural degeneration and neuromuscular disorders due to aging accentuate the risk of falling, particularly in the frail elderly. Vertigo and imbalance are also frequent causes of falls, often associated with metabolic disorders, mainly uncontrolled diabetes without the well-known clinical manifestations of the disease^{2,3}. Diabetes leads to glucose fluctuations in metabolically active structures of the inner ear, interfering with the sodium-potassium pump activity. This pump creates the electrical potentials of the cochlear and vestibular neuroepithelial cells that, when altered, produce auditory and vestibular signs and symptoms.

Among the causes of change in body balance there are also the reduced number of mechanoreceptors located in the feet, and the increase in the vibrational excitation threshold of the plantar cutaneous mechanoreceptors due to aging. Plantar sensitivity is an important source of information for balance control, as it codifies the changes in pressure under the feet, especially during gait. This information reaches the brain, which senses the body position and, if necessary, generates postural reflexes to maintain an upright position⁴. This sensitivity loss may be due to several diseases, particularly diabetes⁵. About 50% of diabetic patients over 60 years of age have this disorder, with or without complaint. Moreover, even the healthy elderly may have subclinical neuropathy. It has been widely dem-

onstrated that this loss plays an important role in balance disorders in the elderly population⁴⁻⁶. Change in plantar cutaneous sensitivity is an independent predictor of falls; 30% of the elderly people aged 65, and 40% of those aged 75 and over have fallen at least once⁷. Two or more falls in six months significantly increases the risk of falls in the frail elderly. Quality of life is compromised by a sense of instability that causes fear of falling, especially if the elder has fallen recently⁷. Fear of falling leads to reduced mobility, increasing sedentary lifestyle and creating a vicious cycle that further increases the risk^{7,8}. Frequent falls often result in long-stay institutionalization of the elderly.

Clinicians who attend diabetics and/or the elderly usually perform proprioceptive and skin sensitivity tests^{5,6}. Professionals who work with balance disorders use balance tests specifically for the elderly^{3,7,8}. As a routine, clinicians who perform sensitivity tests need to be alert and ask their patients about imbalance and falls. In such cases, they should refer patients to specialists for balance assessment and postural rehabilitation or preventive counseling.

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