REDUCING THE FEAR OF FALLING IN THE ELDERLY BY PREVENTING SYNCOPE

Facts – Aspects - Approaches

> The fear of falling and the prevention of falls

Fall prevention is a hot topic in Geriatrics as nearly one-third of older persons fall each year, and half of them fall more than once.[1] Fear of falling has effects on functional decline in the elderly[2] as "*falls in older adults commonly result in serious physical, psychological, social and economic consequences. In addition to the commonly feared osteoporotic fractures and subdural hematoma, the pathological fear of falling or post-fall syndrome also leads to physical frailty from activity avoidance and depression*".[3]

> Syncope as an underlying cause

The cause for falls and fall related injuries in older adults is quite often syncope, which significantly increases in people aged from 60 years onwards, almost doubling in each decade from 60-80 years to up to 19.5 events per 1000 person-years.[4]. Studies show that 35% of syncopal events result in fall induced injuries, the most serious and common medical problems experienced by older adults.[5]
It is well known, that syncope comes along with negative outcome consequences in all patient groups, but the situation is particularly serious for geriatric patients. Baugh et al. report a mortality rate or serious cardiac outcome of 7% within 30 days in older adults with undifferentiated etiology of syncope in the emergency department.[6] A two-year study by Wong et al. also confirms an increasing mortality rate in such patients raising from "0% in the people from 60-69 to 14%, 22%, and 43% in patients aged 70 to 79 years, 80 to 89 years and over 90, respectively".[4]

> Efficient Syncope assessment as a measure for fall prevention

Efficient Syncope assessment could be a measure to prevent a large proportion of syncope induced falls. However, the assessment and management of syncope in the elderly is very complex due to chronic medical illnesses and multiple medications. "In addition to multi-morbidity and polypharmacy, there are also several age-related changes in cardiovascular structure and function that contribute to the higher incidence and prevalence of syncope in the elderly."[5]

> Common diagnostic practice is often inefficient and costly

There is a claim for a differentiated diagnosis of syncope in the elderly. "A comprehensive geriatric approach that considers an individual's functional and cognitive capacities, as well as medical and psychosocial aspects, would be more appropriate."[4]
On the other hand, studies show how insufficient and inexplicit current diagnostic approaches are, as shown in the study by Baugh et al., who investigated the benefit of the most frequently used tests, such as initial troponin, chest x-ray, head CT or echocardiogram with regard to variation, frequency, yield and cost. For example, nearly half of the patients underwent a costly head CT but only 3.6% of the cases resulted in abnormal results.[6] The echocardiogram had the highest proportion of abnormal results with 22.1%[6], a rate that raises the question of whether less resource intensive and more cost-effective approaches are available providing more targeted results for a better assessment of syncope.

> Is BRS assessment the key for a more efficient diagnosis of syncope?

There is evidence that there are age-related alterations in hemodynamic parameters across the adult life-span. Apart from severe variations in beat-to-beat blood pressure and heart rate, an impaired baroreflex function (expressed by the parameter baroreceptor sensitivity BRS) may lead to dizziness, syncope, or fall associated with postural change-induced hypertension in daily life of older adults.[7] So, the assessment of baroreceptor sensitivity plays a major role in syncope management and several studies have reported it as a helpful marker for the classification of syncope.[8,9,10] There are already easy-to-use tools for the noninvasive measurement of baroreceptor sensitivity available on the market.

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> Easy-to-use and efficient tools for comprehensive syncope assessment available

The Task Force® Monitor (TFM) is one of these state-of-the-art devices, tailored for the comprehensive assessment of the most essential hemodynamic and autonomic markers in the course of syncope diagnosis. For example, the device was used by Yin et al. to evaluate a dedicated falls and syncope service in a teaching hospital in Malaysia. All hemodynamic tests were performed with the TFM in order to classify potential syncope patients for a more efficient treatment. Among other markers, blood pressure, baroreflex sensitivity (BRS), heart rate variability and other parameters were assessed noninvasively and continuously in the course of head-up-tilt testing and autonomic function testing. Out of 205 patients reporting symptoms of dizziness, syncope and injuries due to falls, 26% could be classified with orthostatic hypertension, followed by 23% with reflex syncope and 4% with cardiac syncope. The study also confirmed that there was an overlap of falls, syncope and dizziness in 40% of the patients. These symptoms are commonly treated separately, which might be a possible reason for misleading diagnoses and insufficient treatment of the real underlying causes. The Malaysian team has "*successfully established a falls and syncope service in a busy teaching hospital based in Kuala Lumpur. The majority of patients exceeded the age of 65 years*." and there was a diagnostic yield of 72% for patients with syncope.[7]

This is an impressive result, considering that efficient syncope management could also significantly contribute to the prevention of a large number of falls in the elderly, which is not only of economic importance, but also an essential social and mental factor in coping with the fear of falling.

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