

Vitamin status and cognitive function in a long term care population

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BMC Geriatrics 2005,5:16

Background: Ageing can be associated with poor dietary intake, reduced nutrient absorption, and less efficient utilization of nutrients. Loss of memory and related cognitive function are also common among older persons. This study aimed to measure the prevalence of inadequate vitamin status among long term care patients and determine if an association exists between vitamin status and each of three variables; cognitive function, vitamin supplementation, and medications which alter gastric acid levels.

Methods: Seventy five patients in a long term care hospital in Guelph, Ontario were recruited to a cross-sectional study. 28 male and 47 female patients were enrolled with mean age of 80.7 (± 11.5) years, ranging from 48 to 100 years. Blood was used to measure levels of vitamins B12 (cobalamin), B6 (pyridoxal-5'-phosphate/PLP), erythrocyte folate, vitamin B3 (niacin) and homocysteine (Hcy). The Standardized Mini-Mental State Examination (SMMSE) was administered to measure cognitive function. A list of medications and vitamin supplementation for each patient was provided by the pharmacy.

Results: The prevalence of low vitamin (B12, B6, erythrocyte folate, niacin) or high metabolite (homocysteine) levels among 75 patients were as follows: B12 $\frac{c}{\lambda}$ 148 pmol/L in 5/75 (6.7%); B12 between 148 and 221 pmol/L in 26/75 (34.7%); B6 $\frac{c}{\lambda}$ 30 nmol/L in 4/75 (5.3%); erythrocyte folate <370 nmol/L in 1/75 (1.3%); niacin ratio <1 in 20/75 (26.7%); homocysteine >13.3 μ mol/L in 31/75 (41.3%). There was no significant difference among residents grouped into marked (n = 44), mild (n = 14), or normal (n = 9) cognitive function when evaluating the effect of vitamin status. There were no significant differences in mean B12 and homocysteine levels between users and non users of drug therapy (Losec, Zantac, or Axid). Compared to vitamin supplement non users, supplemented residents had significantly higher mean B12 (p < 0.0001) and erythrocyte folate (p < 0.05) concentrations and significantly lower mean homocysteine (p < 0.01) levels; 229.1 versus 423.6 pmol/L for B12, 882.9 versus 1043.6 nmol/L for

erythrocyte folate and 14.4 versus 12.0 imol/L for homocysteine.

Conclusion: Given the prevalence data on vitamin status in this sample population, the possible benefits of vitamin supplementation should be considered in clinical intervention studies using these populations of elderly.

Gait disorders are associated with non cardio vascular falls in elderly people: a preliminary study

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BMC Geriatrics 2005, 5:15

Background : The association between unexplained falls and cardiovascular causes is increasingly recognized. Neurally mediated cardiovascular disorders and hypotensive syndromes are found in almost 20 percent of the patients with unexplained falls. However, the approach to these patients remains unclear. Gait assessment might be an interesting approach to these patients as clinical observations suggests that those with cardiovascular or hypotensive causes may not manifest obvious gait alterations. Our primary objective is to analyze the association between gait disorders and a non-cardiovascular cause of falls in patients with unexplained falls. A second objective is to test the sensitivity and specificity of a gait assessment approach for detecting non-cardiovascular causes when compared with intrinsic-extrinsic classification.

Methods: Cross sectional study performed in a falls clinic at a university hospital in 41 ambulatory elderly participants with unexplained falls. Neurally mediated cardiovascular conditions, neurological diseases, gait and balance problems were assessed. Gait disorder was defined as a gait velocity < 0.8 m/s or Tinetti Gait Score <9. An attributable etiology of the fall was determined in each participant. Comparisons between the gait assessment approach and the attributable etiology regarding a neurally mediated cardiovascular cause were performed. Fisher exact test was used to test the association hypothesis. Sensitivity and specificity of gait assessment approach and intrinsic extrinsic classification to detect a non cardiovascular mediated fall was calculated with 95%

confidence intervals (CI95%).

Results: A cardiovascular etiology (orthostatic and postprandial hypotension, vasovagal syndrome and carotid sinus hypersensitivity) was identified in 14% of participants (6/41). Of 35 patients with a gait disorder, 34 had a non-cardiovascular etiology of fall; whereas in 5 out of 6 patients without a gait disorder, a cardiovascular diagnosis was identified ($p < 0.001$). Sensitivity and specificity of the presence of gait disorder for identifying a non cardiovascular mediated cause was 97.1% (CI95% = 85–99) and 83% (CI95% = 36–99), respectively.

Conclusion: In community dwelling older persons with unexplained falls, gait disorders were associated with non cardiovascular diagnosis of falls. Gait assessment was a useful approach for the detection of a non cardiovascular mediated cause of falls, providing additional value to this assessment.

Risk factors for delirium in acutely admitted elderly patients: a prospective cohort study

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BMC Geriatrics 2005, 5:6

Background: Delirium is a neuropsychiatric syndrome frequently observed in elderly hospitalised patients and can be found in any medical condition. Due to the severe consequences, early recognition of delirium is important in order to start treatment in time. Despite the high incidence rate, the occurrence of delirium is not always identified as such. Knowledge of potential risk factors is important. The aim of the current study is to determine factors associated with the occurrence of a prevalent delirium among elderly patients acutely admitted to an internal medicine ward.

Methods: All consecutive patients of 65 years and over acutely admitted to the Department of Internal Medicine of the Academic Medical Centre, Amsterdam, a university hospital, were asked to participate. The presence of delirium was determined within 48 hrs after admission by an experienced geriatrician.

Results: In total, 126 patients were included, 29% had a prevalent delirium after acute admission. Compared to patients without delirium, patients with delirium were older, more often were cognitively and physically impaired, more often were admitted due to water and electrolyte disturbances, and were less often admitted due to malignancy or gastrointestinal bleeding.

Independent risk factors for having a prevalent delirium after acute admission were pre-morbid cognitive impairment, functional impairment, an elevated urea nitrogen level, and the number of leucocytes.

Conclusions: In this study, the most important independent risk factors for a prevalent delirium after acute admission were cognitive and physical impairment, and a high serum urea nitrogen concentration. These observations might contribute to an earlier identification and treatment of delirium in acutely admitted elderly patients.

Foot pressure distribution during walking in young and old adults

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BMC Geriatrics 2005, 5:8

Background: Measurement of foot pressure distribution (FPD) is clinically useful for evaluation of foot and gait pathologies. The effects of healthy aging on FPD during walking are not well known. This study evaluated FPD during normal walking in healthy young and elderly subjects.

Methods: We studied 9 young (30 ± 5.2 years), and 6 elderly subjects (68.7 ± 4.8 years). FPD was measured during normal walking speed using shoe insoles with 99 capacitive sensors. Measured parameters included gait phase characteristics, mean and maximum pressure and force, and relative load.

Time-series measurements of each variable for all sensors were grouped into 9 anatomical masks.

Results: Elderly subjects had lower normalized maximum pressure for the medial and lateral calcaneal masks, and for all medial masks combined. In the medial calcaneus mask, the elderly group also had a lower absolute maximum and lower mean and normalized mean pressures and forces, compared to young subjects. Elderly subjects had lower maximum force and normalized maximum force and lower mean force and normalized mean forces in the medial masks as well.

Conclusion: FPD differences between the young and elderly groups were confined to the calcaneus and hallux regions and to the medial side of the foot. In elderly subjects, weight bearing on the lateral side of the foot during heel touch and toe-off phases may affect stability during walking.