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KABI
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Welcome to Fresenius Kabi’s Quarterly Abstract Bulletin for enteral nutrition. We have reviewed the following journals over the past three months, and selected any nutrition support related articles:

• Age and Ageing
• American Journal of Clinical Nutrition
• Archives of diseases in Childhood
• BMJ
• British Journal of Community Nursing
• British Journal of Nursing
• British Journal of Nutrition
• Clinical Nutrition
• Complete Nutrition
• Critical Care Medicine
• Current Opinion in Clinical Nutrition and Metabolic Care
• Dysphagia
• European Journal of Clinical Nutrition
• Gastrointestinal Nursing
• GUT
• International Journal of Palliative Nursing
• Intensive Care Medicine
• Intensive and Critical Care Nursing
• Journal of Community Nursing
• Journal of Human Nutrition and Dietetics
• Journal of Parenteral and Enteral Nutrition
• Journal of the American Geriatric Society
• Journal of Woundcare
• The Lancet
• Nursing and Residential Care
• Nursing Children and Young People
• Nursing in Practice
• Nursing Older People
• Nursing Standard
• Nursing Times
• Nutrition
• Nutrition in Clinical Practice
• Proceedings of the Nutrition Society

We do recommend that the original article is used for the full details and results.

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A.S.P.E.N. Clinical guidelines: Nutrition support of adult patients with hyperglycemia

M McMahon, E Nystrom, C Braunschweig, J Miles, C Compher and the American Society for Parenteral, Enteral Nutrition (ASPEN) board of directors

Abstract

BACKGROUND: Hyperglycemia is a frequent occurrence in adult hospitalized patients who receive nutrition support. Both hyperglycemia and hypoglycemia (resulting from attempts to correct hyperglycemia) are associated with adverse outcomes in diabetic as well as nondiabetic patients. This American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Clinical Guideline summarizes the most current evidence and provides guidelines for the desired blood glucose goal range in hospitalized patients receiving nutrition support, the definition of hypoglycemia, and the rationale for use of diabetes-specific enteral formulas in hospitalized patients. METHOD: A systematic review of the best available evidence to answer a series of questions regarding glucose control in adults receiving parenteral or enteral nutrition was undertaken and evaluated using concepts adopted from the Grading of Recommendations, Assessment, Development and Evaluation working group. A consensus process was used to develop the clinical guideline recommendations prior to external and internal review and approval by the A.S.P.E.N. Board of Directors. RESULTS/CONCLUSIONS: 1. What is the desired blood glucose goal range in adult hospitalized patients receiving nutrition support? We recommend a target blood glucose goal range of 140–180 mg/dL (7.8–10 mmol/L). (Strong) 2. How is hypoglycemia defined in adult hospitalized patients receiving nutrition support? We recommend that hypoglycemia be defined as a blood glucose concentration of <70 mg/dL (<3.9 mmol/L). (Strong) 3. Should diabetes-specific enteral formulas be used for adult hospitalized patients with hyperglycemia? We cannot make a recommendation at this time.

Purpose of review: Optimal nutritional requirements and nutrient intake composition for patients with acute kidney injury remain a partially unresolved issue. Targeting nutritional support to the actual protein and energy needs improves the clinical outcome of critically ill patients, yet very few data are currently available on this topic in acute kidney injury. In this specific clinical condition the risk for underfeeding and overfeeding may be increased by factors interfering on nutrient need estimation, such as rapidly changing body weight due to fluid balance variations, nutrient losses and hidden calorie sources from renal replacement therapy. Moreover, as acute kidney injury is now considered a kidney-centered inflammatory syndrome, the renoprotective role of specific pharmaconutrients with anti-inflammatory properties remains to be fully defined. This review is aimed at discussing recently published results concerning quantitative and qualitative aspects of the nutritional approach to acute kidney injury in critically ill patients.  RECENT FINDINGS: Nutrient needs in patients with acute kidney injury can be difficult to estimate, and should be directly measured, especially in the ICU setting. In fact, recent findings suggest that hidden calorie sources not routinely taken into account – for example, calories from anticoagulants and replacement solutions for renal replacement therapy – could be quantitatively relevant in these patients. Moreover, recent experimental data indicate a possible role for some pharmaconutrients with anti-inflammatory effects (glutamine, and omega-3 fatty acids), in both the prevention of renal function worsening, and in the fostering of renal function recovery after an episode of acute kidney injury. SUMMARY: Acute kidney injury includes a highly heterogeneous group of patients with widely varying nutrient needs and intakes. Nutritional requirements, in their quantitative and qualitative aspects, should be frequently assessed, individualized, and carefully integrated with renal replacement therapy, in order to avoid both underfeeding and overfeeding, as well as to exploit possible positive pharmacologic effects of specific nutrients.
Gastrointestinal dysmotility: evidence and clinical management

M J Chapman, N Q Nguyen and A M Deane

Abstract

PURPOSE OF REVIEW: Gastrointestinal dysmotility and dysfunction underlie our difficulties in providing adequate nutrition by the enteral route to our critically ill patients. RECENT FINDINGS: Recent studies have quantified gastric emptying and nutrient absorption. Slow gastric emptying is common and probably mediated by cholecystokinin and reduced active ghrelin concentrations. The cause of impaired nutrient absorption is not yet fully understood but may be related to small intestinal blood flow and/or mucosal factors. The absorption of the different macronutrients may be affected in different ways both by critical illness and by therapies. A better understanding of this may optimize the design of nutrient formulations in the future. New treatment modalities for gastrointestinal dysfunction are being investigated and include small intestinal feeding, nonpharmacological options such as acupuncture, and drugs including novel motilin receptor agonists, and opioid antagonists. SUMMARY: We are gradually developing a better understanding of how the gut works during critical illness, which has implications for optimizing the delivery of nutrition and thereby improving nutritional and clinical outcomes.

Optimizing energy and protein balance in the ICU

P J M Weijs and P E Wischmeyer
Current Opinion in Clinical Nutrition & Metabolic Care (2013) 16 (2): 194-201

Abstract

PURPOSE OF REVIEW: Perhaps now more than ever, appropriate nutrition delivery in the ICU is a highly debated issue. Nutrition guidelines for ICU patients by European Society for Clinical Nutrition and Metabolism in Europe, The Canadian Nutrition Guidelines, and American Society for Parenteral and Enteral Nutrition in the USA continue to disagree about the need to feed early and how. Most ICU patients around the world appear to be poorly fed. RECENT FINDINGS: Most studies have focussed on energy supply by enteral or parenteral nutrition. Some studies suggest that late initiation of energy supply could be beneficial. However, studies still not provide the answer as to when and how to feed the patient. A few studies have now also focussed on protein supply. Studies agree on the importance of adequate protein supply, 1.2-2.0g/kg, for outcome. In fact, early protein supply might be more important than energy supply; however, limited data are available. SUMMARY: These findings implicate that optimization of protein balance in ICU patients as well as energy balance will improve outcome. In clinical practice, protein targets for patients should be set and achieved. More research is needed to define when and how to best feed the ICU patient.
**The use of indirect calorimetry in the intensive care unit**

S A McClave, R G Martindale and L Kiraly


**Abstract**

**PURPOSE OF REVIEW:** This review evaluates whether improvements have occurred in the value of predictive equations for use in designing nutritional therapeutic regimens in the ICU. The report also seeks to determine whether emerging strategies for nutrition therapy in the ICU change the need for an accurate measurement of energy requirements by indirect calorimetry. **RECENT FINDINGS:** Predictive equations remain problematic for use in the critically ill patient. Inaccuracy of predictive equations introduces error in the design of a nutritional therapy regimen. The epidemic of obesity renders the calculations of requirements by predictive equations increasingly inaccurate at extremes of BMI. Certain patient populations appear to be hypometabolic, contradicting the traditional notion that critical illness increases energy expenditure. More recent data indicates that determination of which patients benefit from nutritional therapy may be based both on assessment of nutrition risk and delivery of sufficient nutrition therapy. **SUMMARY:** The role of indirect calorimetry in the ICU should be expected to increase in the near future, as predictive equations may be too inaccurate to identify the appropriate goals of nutrition therapy.

**Effect of gastric versus post-pyloric feeding on the incidence of pneumonia in critically ill patients: observations from traditional and Bayesian random-effects meta-analysis**

J Jiyong, H Tiancha, W Huiqin and J Jingfen


**Abstract**

**BACKGROUND & AIMS:** Administration of enteral feeding is associated with a higher risk of nosocomial pneumonia. Herein, we systematically review the impact of gastric versus post-pyloric feeding on the incidence of pneumonia. **METHODS:** We searched the MEDLINE, EMBASE, Web of Science, and CCTRD (1966 to August 2011) for studies comparing gastric and post-pyloric feeding in critically ill patients. Two reviewers reviewed the quality of the studies and performed data extraction independently. Main outcome measures were the incidence of nosocomial pneumonia, aspiration, and vomiting. The meta-analysis was performed using traditional and Bayesian random-effects model. **RESULTS:** Our initial searches yielded 563 studies. Of these, we identified 15 randomized clinical trials enrolling 966 participants. Post-pyloric feeding was associated with reduction in pneumonia compared with gastric feeding (relative risk [RR] 0.63, 95% confidence interval [CI] 0.48-0.83, p = 0.001; I² = 0%). The risk of aspiration (RR, 1.11; 95% CI, 0.80-1.53, p = 0.55; I² = 0%) and vomiting (RR, 0.80; 95% CI, 0.38-1.67, p = 0.56; I² = 65.3%) were not significantly different between patients treated with gastric and post-pyloric feeding. **CONCLUSIONS:** Comparing with gastric feeding, postpyloric route can reduce incidence of pneumonia in critically ill patients.
One year outcomes in patients with acute lung injury randomised to initial trophic or full enteral feeding: prospective follow-up of EDEN randomised trial

D M Needham, V D Dinglas, O J Bienvenu, E Colantuoni, A W Wozniak, T W Rice and R O Hopkins

British Medical Journal (2013) 346: f1532

Abstract

**OBJECTIVE:** To evaluate the effect of initial low energy permissive underfeeding (“trophic feeding”) versus full energy enteral feeding (“full feeding”) on physical function and secondary outcomes in patients with acute lung injury. **DESIGN:** Prospective longitudinal follow-up evaluation of the NHLBI ARDS Clinical Trials Network’s EDEN trial. **SETTING:** 41 hospitals in the United States. **PARTICIPANTS:** 525 patients with acute lung injury. **INTERVENTIONS:** Randomised assignment to trophic or full feeding for up to six days; thereafter, all patients still receiving mechanical ventilation received full feeding. **MEASUREMENTS:** Blinded assessment of the age and sex adjusted physical function domain of the SF-36 instrument at 12 months after acute lung injury. Secondary outcome measures included survival; physical, psychological, and cognitive functioning; quality of life; and employment status at six and 12 months. **RESULTS:** After acute lung injury, patients had substantial physical, psychological, and cognitive impairments, reduced quality of life, and impaired return to work. Initial trophic versus full feeding did not affect mean SF-36 physical function at 12 months (55 (SD 33) v 55 (31), P=0.54), survival to 12 months (65% v 63%, P=0.63), or nearly all of the secondary outcomes. **CONCLUSION:** In survivors of acute lung injury, there was no difference in physical function, survival, or multiple secondary outcomes at 6 and 12 month follow-up after initial trophic or full enteral feeding.

Preoperative nutrition status and postoperative outcome in elderly general surgery patients: a systematic review

M F M van Stijn, I Korkic-Halilovic, M S M Bakker, T van der Ploeg, P A M van Leeuwen and A P J Houdijk


Abstract

**BACKGROUND:** Poor nutrition status is considered a risk factor for postoperative complications in the adult population. In elderly patients, who often have a poor nutrition status, this relationship has not been substantiated. Thus, the aim of this systematic review was to assess the merit of preoperative nutrition parameters used to predict postoperative outcome in elderly patients undergoing general surgery. **METHODS:** A systematic literature search of 10 consecutive years, 1998-2008, in PubMed, EMBASE, and Cochrane databases was performed. Search terms used were nutrition status, preoperative assessment, postoperative outcome, and surgery (hip or general), including their synonyms and MeSH terms. Limits used in the search were human studies, published in English, and age (65 years or older). Articles were screened using inclusion and exclusion criteria. All selected articles were checked on methodology and graded. **RESULTS:** Of 463 articles found, 15 were included. They showed profound heterogeneity in the parameters used for preoperative nutrition status and postoperative outcome. The only significant preoperative predictors of postoperative outcome in elderly general surgery patients were serum albumin and ≥10% weight loss in the previous 6 months. **CONCLUSIONS:** This systematic review revealed only 2 preoperative parameters to predict postoperative outcome in elderly general surgery patients: weight loss and serum albumin. Both are open to discussion in their use as a preoperative nutrition parameter. Nonetheless, serum albumin seems a reliable preoperative parameter to identify a patient at risk for nutrition deterioration and related complicated postoperative course.
Micronutrient, antioxidant, and oxidative stress status in children with severe cerebral palsy

N C Schoendorfer, L Vitetta, N Sharp, M DiGeronimo, G Wilson, J S Coombes, R Boyd and P S W Davies


Abstract

BACKGROUND: Markers indicative of micronutrient and antioxidant status in children with cerebral palsy (CP) were explored due to these children’s well-documented issues with food intake and the limited biochemical literature. MATERIALS AND METHODS: Children aged 4 to 12 years with marked CP (n = 24) and controls (n = 24) were recruited. The CP group represented orally (O) or enterally fed (E) children. Concentrations of red cell folate (RCF), magnesium, superoxide dismutase (SOD), glutathione reductase, and peroxidase were measured, as well as serum methylmalonic acid and vitamin C. Plasma hemoglobin, C-reactive protein, α-tocopherol, cholesterol, zinc, protein carbonyls, and total antioxidant capacity were also quantified. RESULTS: Data are reported as mean (SD) and z scores where values differ with age. Many similarities existed, but zinc z scores were reduced in O (–1.10 [0.83]) vs controls (–0.54 [0.54]) (P < .05), as well as for glutathione reductase in O (10.15 [1.69]) vs E (12.22 [2.41]) and controls (11.51 [1.67]) (P < .05). RCF was greatly increased in E (1422 [70]) vs O (843 [80]) and controls (820 [43]) (P < .001). SOD was decreased in E (24.3 [1.4]) vs controls (27.0 [2.8]) (P < .05). CONCLUSION: Considering their vast impact on physiology, micronutrients should be routinely monitored in orally fed children with swallowing disorders and dietary limitations. Excessive intakes, particularly long term in enterally fed children, should also be monitored in view of their potential for competitive inhibition, particularly at high levels.

Psychometric properties of the structured satisfaction questionnaire with gastrostomy feeding (SAGA-8) for caregivers of children with gastrostomy tube nutritional support

C Martínez-Costa, C Calderón, C Pedrón-Giner, S Borraz and L Gómez-López


Abstract

BACKGROUND: To analyse the psychometric properties of the structured Satisfaction Questionnaire with Gastrostomy Feeding (SAGA-8) in parents/caregivers of children with home enteral nutrition (HEN) by gastrostomy tube (GT). METHODS: Eighty-six caregivers (mothers) of paediatric patients with HEN by GT were recruited. Patients suffered from neurological disease (61.6%) and other chronic diseases. The SAGA-8 scale, a structured questionnaire to explore satisfaction with HEN by GT, and the Caregiver Burden Inventory (Zarit) were completed. The discriminating power of each of the SAGA-8 items, internal consistency and external validity were evaluated. An exploratory factor analysis and Kaiser-Meyer-Olkin (KMO) was performed as well. RESULTS: Eighty-four percent of the families expressed high satisfaction with GT feeding. All eight items of SAGA-8 gave additional information. The exploratory factor analysis revealed that a significant part of the items’ variability could be explained by two independent factors: Factor 1 (direct benefit), which compiled the variables related to the perception of children’s overall improvement by GT feeding; Factor 2 (indirect benefit), which grouped the variables related to a decrease in respiratory infections, feeding time and institutional support. Results from KMO (0.628) indicated the high adequacy of the items assessed in the factorial analysis. Moreover, the questionnaire presented high internal consistency (0.76), and the external validation analysis confirmed the correlation between SAGA-8 and Zarit, thereby emphasising the appropriate use of the SAGA-8 to detect carers’ satisfaction. CONCLUSIONS: The SAGA-8 questionnaire has a high discriminatory power to assess the degree of satisfaction experienced by parents/caregivers of children with HEN by GT and, subsequently, the patients’ wellbeing.
Omega-3 fatty acids in cancer

A Laviano, S Rianda, A Molfino, F Alessio and F R Fanelli
Current Opinion in Clinical Nutrition & Metabolic Care (2013) 16 (2): 156-161

Abstract

PURPOSE OF REVIEW: Significant achievements have been obtained in cancer treatment, but the clinical relevance of drug approach in daily practice remains questionable due to the high costs, limited efficacy, and negligible influence on quality of life. A new concept is emerging which is based on the early combination of chemotherapy and nutrition therapy.

RECENT FINDINGS: Inflammation dictates tumour initiation, progression and growth. Omega-3 fatty acids exert anti-inflammatory effects, and therefore recent studies investigated their role in cancer prevention, in cancer cachexia treatment and in enhancement of antitumour therapies. Limited evidence suggests a role for omega-3 fatty acid supplementation in cancer prevention, but they have been shown to preserve muscle mass and function in cancer patients even during active treatment. During chemotherapy, omega-3 fatty acids may contribute to a reduced inflammatory response, but whether cancer treatment toxicity can be prevented remains to be assessed. Finally, small studies showed that omega-3 fatty acids increase response rate to chemotherapy.

SUMMARY: Combination of chemotherapy and omega-3 supplementation appears an effective strategy to enhance the clinical outcome of cancer patients in their curative and palliative clinical trajectory.

Gastrointestinal symptoms and weight loss in cancer patients receiving chemotherapy

K Sánchez-Lara, E Ugalde-Morales, D Motola-Kuba and D Green

Abstract

Cancer patients receiving chemotherapy have a high risk of malnutrition secondary to the disease and treatment, and 40-80 % of cancer patients suffer from different degrees of malnutrition, depending on tumour subtype, location, staging and treatment strategy. Malnutrition in cancer patients affects the patient’s overall condition, and it increases the number of complications, the adverse effects of chemotherapy and reduces the quality of life. The aim of the present study was to evaluate weight-loss prevalence depending on the tumour site and the gastrointestinal (GI) symptoms of oncology patients receiving chemotherapy. We included 191 cancer patients receiving chemotherapy. Files of all patients were reviewed to identify symptoms that might potentially influence weight loss. The nutritional status of all patients was also determined. The cancer sites in the patients were as follows: breast (31·9 %); non-colorectal GI (18·3 %); colorectal (10·4 %); lung (5·8 %); haematological (13·1 %); others (20·5 %). Of these patients, 58 % experienced some degree of weight loss, and its prevalence was higher among the non-colorectal GI and lung cancer patients. Common symptoms included nausea (59·6 %), anorexia (46 %) and constipation (31·9 %). A higher proportion of patients with ≥ 5 % weight loss experienced anorexia, nausea and vomiting (OR 9·5, 2·15 and 6·1, respectively). In conclusion, these results indicate that GI symptoms can influence weight loss in cancer patients, and they should be included in early nutritional evaluations.
Nutritional status, cachexia and survival in patients with advanced colorectal carcinoma. Different assessment criteria for nutritional status provide unequal results

L Thoresen, G Frykholm, S Lydersen, H Ulveland, V Baracos, C M M Prado, L Birdsell and U Falkmer


Abstract

BACKGROUND & AIMS: Different nutrition assessment tools and definitions are proposed for cancer-associated malnutrition and wasting (cachexia). We studied the associations between these assessments and overall survival in stage IV colorectal carcinoma patients. METHODS: Anthropometric measures, energy intake, biochemical variables, nutritional risk screening, assessment of malnutrition, cachexia and body composition from computed tomography images were analysed, in 77 patients from Norway and Canada. Results were dichotomized into presence or absence of nutritional risk, malnutrition, cachexia and sarcopenia (low muscle mass) and associated with survival. RESULTS: Overall, 22% up to 55% of the patients had cachexia according to different cachexia criteria: 34% were malnourished, 42% were at nutritional risk, and 39% were sarcopenic. Forty-four percent of the patients did not meet criteria for any of these conditions. Patients with cachexia defined by Cancer Cachexia Study Group (CCSG) had shorter survival in an unadjusted analysis, [Hazard ratio (HR) = 2.43; 95% confidence interval (CI) 1.32–4.47; P = 0.005]. After adjusting for nation, age and gender, cachexia (HR = 2.26; CI 1.18–4.32; P = 0.014) and malnutrition (HR = 1.83; CI 1.06–3.13; P = 0.029) remained significant predictors of survival. CONCLUSIONS: Nutritional depletion in up to 55% of the patients was found. The lack of concordance between the results obtained by different assessment criteria was obvious. CCSG’s cachexia score was the best prognostic factor for overall survival.

The impact of refeeding on blood fatty acids and amino acid profiles in elderly patients: a metabolomic analysis

Y Dror, S Almashanu, E Lubart, B Sela, L Shimoni and R Segal


Abstract

BACKGROUND: Refeeding of elderly frail patients after food deprivation is commonly associated with a high mortality rate. Objective: To evaluate the effect of refeeding on metabolite fluctuation of blood carnitine fatty acids (15 compounds) and free amino acids (14 compounds). METHODS: Metabolite fluctuation was followed up in an exploratory, cohort, and noninterventional study in elderly and frail patients (84.5 ± 5 years) after a long period of food deprivation. Patients in the study group were refed by enteral nutrition (EN) and were followed up during 7 days for blood metabolites (n = 27). Patients in the control group (n = 26) had been fed by EN for more than 3 months. Refeeding was initiated with 10 kcal/kg/d and gradual increases of 200 kcal/d for 3 days afterwards. Blood metabolites were assayed in a sample of 25 µL. RESULTS: On food deprivation, the concentrations of all even monocarboxylic carnitine fatty acids were much higher in the study group than in the EN control group (P < .01). Upon refeeding, a remarkable decrease in all carnitine fatty acids was observed. In addition, significant daily fluctuations were observed for most metabolites in the study group of the refed patients as compared with the EN control group (P < .01). The highest fluctuations were observed following refeeding in the 7 patients who later died. CONCLUSION: A significant metabolic instability is observed on refeeding even with a slow refeeding schedule of 10 kcal/kg/d. Measurement of metabolomics parameters may be used for the evaluation of malnutrition, refeeding status, and optimization of the enteral formula.
Sarcopenia and mortality risk in frail older persons aged 80 years and older: results from iSIRENTE study

F Landi, A J Cruz-Jentoft, R Liperoti, A Russo, S Giovannini, M Tosato, E Capoluongo, R Bernabei and G Onder
Age and Ageing (2013) 42 (2): 203-209

Abstract

BACKGROUND AND AIMS: Sarcopenia has been indicated as a reliable marker of frailty and poor prognosis among the oldest individuals. We evaluated the impact of sarcopenia on the risk of all-cause death in a population of frail older persons living in community. METHODS: We analysed data from the Aging and Longevity Study, a prospective cohort study that collected data on all subjects aged 80 years and older residing in the Sirente geographic area (n = 364). The present analysis was conducted among those subjects who were between 80 and 85 years of age at the time of the baseline assessment (n = 197). The main outcome measure was all-cause mortality over 7-year follow-up. According to the European Working Group on Sarcopenia in Older People (EWGSOP) criteria, the diagnosis of sarcopenia required the documentation of low muscle mass and the documentation of either low muscle strength or low physical performance. Cox proportional regression models were used to estimate crude and adjusted hazard ratios and 95% confidence intervals of death by the presence of sarcopenia. RESULTS: Using the EWGSOP-suggested criteria, 43 subjects with sarcopenia (21.8%) were identified. During the 7-year follow-up, 29 (67.4%) participants died among subjects with sarcopenia compared with 63 subjects (41.2%) without sarcopenia (P < 0.001). After adjusting for potential confounders including age, gender, education, activities of daily living (ADL) impairment, body mass index, hypertension, congestive heart failure, chronic obstructive pulmonary disease, number of diseases, TNF-α, participants with sarcopenia had a higher risk of death for all causes compared with non-sarcopenic subjects (HR: 2.32, 95% CI: 1.01–5.43). CONCLUSIONS: Our results obtained from a representative sample of very old and frail subjects show that sarcopenia is associated with mortality, independently of age and other clinical and functional variables.

New horizons in the pathogenesis, diagnosis and management of sarcopenia

A A Sayer, S M Robinson, H P Patel, T Shavlakadze, C Cooper and M D Grounds
Age and Ageing (2013) 42 (2): 145-150

Abstract

Sarcopenia is the age-related loss of skeletal muscle mass and function. It is now recognised as a major clinical problem for older people and research in the area is expanding exponentially. One of the most important recent developments has been convergence in the operational definition of sarcopenia combining measures of muscle mass and strength or physical performance. This has been accompanied by considerable progress in understanding of pathogenesis from animal models of sarcopenia. Well-described risk factors include age, gender and levels of physical activity and this knowledge is now being translated into effective management strategies including resistance exercise with recent interest in the additional role of nutritional intervention. Sarcopenia is currently a major focus for drug discovery and development although there remains debate about the best primary outcome measure for trials, and various promising avenues to date have proved unsatisfactory. The concept of ‘new tricks for old drugs’ is, however, promising, for example, there is some evidence that the angiotensin-converting enzyme inhibitors may improve physical performance. Future directions will include a deeper understanding of the molecular and cellular mechanisms of sarcopenia and the application of a lifecourse approach to understanding aetiology as well as to informing the optimal timing of interventions.
Efficacy of erythropoietin combined with enteral nutrition for the treatment of anemia in Crohn’s disease. A prospective cohort study

S Liu, J Ren, Z Hong, D Yan, G Gu, G Han, G Wang, H Ren, J Chen and J Li

Abstract

BACKGROUND: Anemia is a common and serious complication in patients with inflammatory bowel disease. The present study was dedicated to evaluate the therapeutic efficacy of erythropoietin (EPO) combined with enteral nutrition (EN) in anemic Crohn’s disease (CD) patients, in terms of hemoglobin level, treatment success rate, adverse events, and predictor of this therapy. MATERIALS AND METHODS: We performed a prospective study in CD patients. On the basis of hemoglobin level, all enrolled patients were divided into anemic and nonanemic groups. The anemic group was further divided into EPO and non-EPO subgroups, depending on whether EPO was prescribed. Hematological and other parameters were measured initially and in the first 4 weeks after starting treatment. RESULTS: In total, 109 patients (49 nonanemic and 60 anemic, including 38 EPO and 22 non-EPO) were included. The prevalence of anemia in CD was 55.05%. Age, disease behavior, Crohn’s Disease Activity Index scores, C-reactive protein, and erythrocyte sedimentation rate were significantly different between anemic and nonanemic groups. An increase in hemoglobin level and a significant decrease in C-reactive protein level were observed in the EPO treatment group. Treatment success rate was 63.16% in the EPO group, whereas none of patients achieved treatment success in the non-EPO group. CONCLUSION: EPO combined with EN can improve the hemoglobin level in anemic CD patients.

Nutrition assessment in advanced heart failure patients evaluated for ventricular assist devices or cardiac transplantation

A Aggarwal, A Kumar, M P Gregory, C Blair, S Pauwaa, A J Tatooles, P S Pappas and G Bhat

Abstract

BACKGROUND: Malnutrition has been shown to affect clinical outcomes in patients with heart failure. The aim of this study was to analyze the incidence of malnutrition and to assess its prognostic significance in patients with advanced heart failure (AHF) (being evaluated for left ventricular assist device [LVAD] or cardiac transplant) based on nutrition status as assessed by the Mini Nutritional Assessment (MNA). METHODS: A retrospective analysis was conducted on 154 patients. During evaluation, a complete nutrition assessment was performed, and diagnosis of malnutrition and risk of malnutrition was done with the MNA. Its possible independent association with mortality was assessed. RESULTS: The mean (SD) age of the patients was 59.3 (14.1) years, with 76% men. Twenty-two percent were classified as malnourished, 68% at risk of malnutrition, and 10% well nourished. The mortality in the 3 groups was 26.5%, 42.0%, and 6.7%, respectively (P = .02). In the multivariate logistic regression analysis, the undernutrition state (malnourished + at risk) was an independent predictor of mortality (odds ratio, 7.9; confidence interval, 1.01–62.30; P = .04). CONCLUSIONS: The state of undernutrition is an independent predictor of mortality in patients with AHF. Early recognition of undernutrition through use of the MNA may affect the long-term prognosis of these patients by enabling early intervention.
Improving adherence to a care plan generated from the Malnutrition Universal Screening Tool

C Cooper, E R Brierley and S T Burden

Abstract

BACKGROUND/OBJECTIVES: Recommendations state that all hospital patients should be screened for malnutrition and for each level of risk, a suitable care plan should be available. This study investigates current practice at ward level regarding adherence to a care plan generated from a nutrition screening tool, and then aims to improve basic nutritional support actions by modifying a care plan and finally evaluates change in practice. SUBJECTS/METHODS: Pro formas were completed on nutrition care plans of 100 patients. Subsequently, 7 focus groups were conducted, which included 30 ward staff and 6 dietitians. Care plans were re-designed using information from focus groups, followed by a second set of pro formas on the care plans of 103 patients. RESULTS: Themes regarding barriers and facilitators for completion of care plans were derived from the focus groups including: ‘duplication’, ‘time pressures’, ‘leadership support’, ‘operational issues’, ‘document style’ and ‘training’. Pro formas before and after re-design showed that nutritional support actions increased from 13 (9%) to 98 (52%) for patients at moderate or severe risk of malnutrition (P=0.033). CONCLUSIONS: Focus groups allowed engagement with ward staff to explore how care plans were used, which assisted in re-designing the care plan, while the pro formas identified limitations of initial procedures and then evaluated change. Subsequently, basic nutritional support actions that resulted from screening improved. The suitability of care plans to facilitate basic nutritional support and documentation was enhanced. However, improvements are still required, emphasising the necessity for continued training and a strategic approach to the delivery of basic nutritional care.

Impact of protein pulse feeding on lean mass in malnourished and at-risk hospitalized elderly patients: a randomized controlled trial

O Bouillanne, E Curis, B Hamon-Vilcot, I Nicolis, P Chrétien, N Schauer, J Vincent, L Cynober and C Aussel

Abstract

BACKGROUND & AIMS: Aging is associated with a blunted anabolic response to dietary intake, possibly related to a decrease in systemically available amino acids (AAs), which in turn may stem from increased splanchnic AA metabolism. This splanchnic sequestration can be saturated by pulse feeding (80% of daily protein intake in a single meal), enabling increased protein synthesis. This study aimed to evaluate the efficacy of a new nutritional strategy, termed protein pulse feeding. METHODS: This prospective randomized study (registration number NCT00135590) enrolled 66 elderly malnourished or at-risk patients in an inpatient rehabilitation unit. All were given a controlled diet for 6 weeks. In a spread diet (SD) group (n = 36), dietary protein was spread over the four daily meals. In a pulse diet (PD) group (n = 30), 72% of dietary protein (1.31 g/kg weight/d on average) was consumed in one meal at noon. The patients were evaluated at admission and at 6 weeks for body composition [lean mass (LM), appendicular skeletal muscle mass (ASMM), and body cell mass (BCM) indices, measured by X-ray absorptiometry combined with bioelectrical impedance analysis] (primary outcome), hand grip strength, and activities of daily living (ADL) score. RESULTS: Protein pulse feeding was significantly more efficacious than protein spread feeding in improving LM index (mean changes from baseline for PD group: +0.38 kg/m²; 95% confidence interval (CI), [0; 0.60]; for SD group: −0.21 kg/m²; 95% CI, [−0.61; 0.20]; p = 0.005 between the two groups), ASMM index (+0.21 kg/m²; 95% CI, [0; 0.34] and −0.11 kg/m²; 95% CI, [−0.20; 0.09]; p = 0.022), BCM index (+0.44 kg/m²; 95% CI, [0.08; 0.52] and −0.04 kg/m²; 95% CI, [−0.09; 0.10]; p = 0.004). There was no significant effect for hand-grip strength or ADL score. CONCLUSIONS: This study demonstrates for the first time that protein pulse feeding has a positive, clinically relevant effect on lean mass in malnourished and at-risk hospitalized elderly patients.
Reproducibility of measurements of mid-upper arm circumference in older persons

H A H Wijnhoven, M R de Boer, M J van Maanen, D M van Dongen, S F Kraaij, T Smit and M Visser


Abstract

BACKGROUND: Mid-upper arm circumference (MUAC) is used as an alternative measure for body mass index to determine thinness in older persons. However, there are limited data on the reproducibility of this measurement in an older population. The present study examined the reproducibility of MUAC measurements in older persons, as well as the influence of different body positions and clothing.

METHODS: A cross-sectional reproducibility study was performed in a nursing home (n = 43; age 65–96 years) and swimming pool facilities (n = 107; age 65–88 years). A different pair of observers independently measured the MUAC of each participant in the upright position on two occasions within 1 week. In the nursing home, measurements were also performed for each participant in the laying position and with clothes covering the upper arm.

RESULTS: Mean differences and the 95% limit of agreement for inter-observer reproducibility of MUAC were 0.0 cm (−2.6 to 2.5 cm) for the swimming pool facilities and 0.3 cm (−0.6 to 1.3 cm) for the nursing home. Intra-class correlation coefficients (ICCs) were 0.89 and 0.92, respectively. Mean differences between laying and upright positions were 0.1 cm (−2.0 to 2.2 cm) and 0.0 cm (−1.9 to 2.0 cm) for each observer, respectively (ICC 0.96–0.97). Mean differences between clothes versus bare upper arm were −2.7 cm (−6.2 to 0.7) and −2.4 (−5.6 to 0.9 cm) (ICC 0.75 and 0.78).

CONCLUSIONS: The reproducibility of the MUAC measurement in older persons is acceptable for group comparisons and, although borderline for the swimming pool facilities, remains acceptable for clinical purposes. The measurement can also be performed in the laying position but not with clothes covering the upper arm.

Improved 4-compartment body-composition model for a clinically accessible measure of total body protein

J P Wilson, B J Strauss, B Fan, F W Duewer and J A Shepherd


Abstract

BACKGROUND: Muscle wasting is a consequence of many primary conditions including sarcopenia, cachexia, osteoporosis, HIV/AIDS, and chronic kidney disease. Unfortunately, there is not a clinically accessible method to measure total body protein, which is the functional mass of muscle.

OBJECTIVE: We sought to derive a simple method to measure total body protein by using dual-energy X-ray absorptiometry (DXA) and bioimpedance analysis (BIA).

DESIGN: We retrospectively analyzed a clinical convenience sample of individuals with numerous metabolic conditions from the Monash Medical Centre, Melbourne, Australia, who had a concurrent protein measure by using neutron activation analysis-derived protein (NAA-TBPro), water measure by using BIA, and whole-body DXA scan. The study was split into calibration and validation data sets by using simple random sampling stratified by sex, BMI category, and age decade. We generated a protein estimate direct-calibration protein (DC-TBPro) derived from BIA water, bone mass, and body volume. We compared NAA-TBPro with DC-TBPro and 2 protein estimates from the literature, one that used the DC-TBPro equation with fixed coefficients (4-compartment Lohman method for analysis of total body protein (4CL-TBPro)) and another that used fat-free mass, age, and sex [Wang equation-derived protein (W-TBPro)].

RESULTS: A total of 187 participants [119 women; mean (±SD) age: 37.0 ± 15.4 y; mean (±SD) BMI (in kg/m²) 24.5 ± 7.7] were included. When plotted against NAA-TBPro, DC-TBPro had the highest correlation [coefficient of determination ($R^2$) = 0.87], lowest root mean squared error (RMSE; 0.87 kg), and fewest outliers compared with 4CL-TBPro ($R^2$ = 0.75; RMSE = 1.22 kg) and W-TBPro ($R^2$ = 0.80; RMSE = 1.10 kg).

CONCLUSIONS: A simple method to measure total body protein by using a DXA system and BIA unit was developed and compared with NAA as proof of principle. With additional validation, this method could provide a clinically useful way to monitor muscle-wasting conditions.
Low phase angle determined by bioelectrical impedance analysis is associated with malnutrition and nutritional risk at hospital admission

U G Kyle, L Genton and C Pichard

Abstract

BACKGROUND & AIMS: This study determined the association between phase angle (PhA), by bioelectrical impedance analysis (BIA) and nutritional risk by Nutritional Risk Screening (NRS-2002), Subjective Global Assessment (SGA), hospital length of stay (LOS) and 30 day non-survival in patients at hospital admission compared to healthy controls. METHODS: PhA was determined by BIA in patients (n = 983, 52.7 ± 21.5 yrs, M 520) and compared to healthy age-, sex- and height-matched controls. Low PhA was set at <5.0° (men) and <4.6° (women) as previously determined (Kyle, in press). RESULTS: PhA was lower in patients (men 6.0 ± 1.4°, women 5.0 ± 1.3°) than controls (men 7.1 ± 1.2°, women 6.0 ± 1.2°, un-paired t-test p < 0.001). Patients were more likely to have low PhA than controls: NRS-2002: no risk (relative risk (RR) 1.7, 95th confidence interval (CI) 1.2-2.3), moderate risk (RR 4.5, CI 3.4-5.8) and severe risk (RR 7.5, CI 5.9-9.4); similar results were obtained by SGA; LOS ≥21 days (RR 6.9, CI 5.1-9.1) and LOS 5-20 days (RR 5.2, CI 3.9-6.9) and non-survivors (RR 3.1, CI 2.1-3.4) compared to survivors. CONCLUSIONS: There is a significant association between low PhA and nutritional risk, LOS and non-survival. PhA is helpful to identify patients who are at nutritional risk at hospital admission in order to limit the number of in-depth nutritional assessments.

Dysphagia, Nutrition, and Hydration in Ischemic Stroke Patients at Admission and Discharge from Acute Care

M A Crary, J L Humphrey, G Carnaby-Mann, R Sambandam, L Miller and S Silliman

Abstract

Dysphagia may predispose stroke patients toward undernutrition and hydration. These comorbidities increase patient risks for reduced functional outcome and short-term mortality. Despite this impact, available information on relationships among dysphagia, nutrition, and hydration status in acute stroke is limited and conflicting. This study evaluated nutrition and hydration status in ischemic stroke patients with versus without clinically significant dysphagia at admission and at discharge from acute care. Sixty-seven patients admitted to the stroke unit in a tertiary-care hospital provided data for this study. On the day of hospital admission and upon discharge or at 7 days post admission, serum biochemical measures were obtained for nutrition (prealbumin) and hydration status (BUN/Cr). Clinical evaluation for dysphagia, nutrition status, and stroke severity were completed an average of 1.4 days following hospital admission. Dysphagia was identified in 37 % of the cohort. At admission 32 % of patients demonstrated malnutrition based on prealbumin levels and 53 % demonstrated evidence of dehydration based on BUN/Cr levels. No differences in nutrition status were attributed to dysphagia. Patients with dysphagia demonstrated significantly higher BUN/Cr levels (greater dehydration) than patients without dysphagia at admission and at discharge. Dehydration at both admission and discharge was associated with dysphagia, clinical nutrition status, and stroke severity. Results of this study support prior results indicating that dysphagia is not associated with poor nutrition status during the first week post stroke. Dehydration status is associated with dysphagia during this period. The results have implications for future confirmatory research and for clinical management of dysphagia in the acute stroke period.
Additional clinical paper summaries

Further references on nutrition support articles and studies published in the last quarter


- Bermange J and Stewart K (2013) Measuring clinical outcomes in a community home enteral feeding team. Complete Nutrition 13 (1): 50-52. This study investigated clinical/patient reported outcomes as a way to demonstrate the effectiveness of the dietetic and nursing support provided by a home enteral feeding team.


- Brotherton A and Holdoway A (2013) Hydration in adults on enteral feeding. Complete Nutrition 12 (6): 51-53. This article summarises the results of a recent survey in relation to hydration practices and highlights the need to develop simple tools to assist staff in determining and delivering fluid requirements.


- Dickinson JM et al (2013) Aging differentially affects human skeletal muscle amino acid transporter expression when essential amino acids are ingested after exercise. Clinical Nutrition 32 (2): 273-280. This study’s primary aim was to determine whether amino acid transporter expression is increased in human muscle following resistance exercise coupled with essential amino acid ingestion, and whether a differential response occurs with aging.


- Hansen B (2013) Management of swallowing disorders using thickened drinks. Complete Nutrition 13 (1): 33-35. This article describes how and why thickened drinks can help in managing dysphagia, outlines some of the concerns, and points the way to getting the most out of that management strategy.

- Heyland DK (2013) Critical care nutrition support research: lessons learned from recent trials. Current Opinion in Clinical Nutrition & Metabolic Care 16 (2): 176-181. The purpose of this study is to review current large scale trials in nutrition support and illustrate key methodological points that should help with the interpretation of these trials, and inform the design of critical care nutrition trials of artificial nutrition in the future.


- Hobson R and Hawdon D (2013) How care and catering staff can meet the complex nutritional needs of care home residents: Forming a care home action on nutrition group. CN Focus 15 (1): 13-15. This article discusses how care and catering staff can succeed in meeting the nutritional needs of care home residents.


• Söderström L et al (2013) Mealtime habits and meal provision are associated with malnutrition among elderly patients admitted to hospital. Clinical Nutrition 32 (2): 281-288. *This study’s aim is to estimate the prevalence of malnutrition and to examine the association between mealtime habits, meal provision, and malnutrition among elderly patients admitted to hospital.*


• Sundström M et al (2013) Indirect calorimetry in mechanically ventilated patients. A systematic comparison of three instruments. Clinical Nutrition 32 (1): 118-121. *The aim of this study was to compare two new instruments for Indirect Calorimetry (Quark RMR, CCM Express) to the Deltatrac in mechanically ventilated patients.*


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**Notes**
NEW from Fresenius Kabi

Survimed® OPD HN Tube Feed

Fresenius Kabi is delighted to announce the launch of Survimed® OPD HN, a new high energy peptide-based tube feed. Survimed® OPD HN offers the following key features to support your patients with maldigestion and malabsorption.

- High energy (1.33kcal/ml), high protein (6.7g per 100ml)
- Rich in MCT (52% of fat)
- Nutritional complete in 1000ml*
- Available now in 500ml EasyBag (Order code: 7118221, PIP code: 378-2729)

Survimed® OPD HN is ACBS approved and available on prescription for standard ACBS indications including haemodialysis and continuous ambulatory peritoneal dialysis.

If you require any further information about Survimed® OPD HN please contact your local Fresenius Kabi Territory Manager or call our Nutrition Service helpline on 01928 533516.

(*Dietary reference values for food, energy and nutrients for the United Kingdom, males aged 19-50 years, DH 1991, excluding electrolytes).

ENPlus connection system to EasyBag

Fresenius Kabi is launching the ENPlus port to the EasyBag feed presentation.

The new ENPlus system has been developed with patient safety in mind and is designed to avoid any risk of accidental misconnections between enteral nutrition and intravenous (IV) luer delivery systems.

ENPlus is the new industry developed standard for enteral connections and will be implemented by the majority of enteral nutrition manufacturers in the UK and Europe in 2013.

The ENPlus port is being introduced to all EasyBag presentations from March 2013. The connection system includes a purple plus shaped (+) port on the EasyBag:

This change does not affect the way in which the EasyBag is currently used; the Fresenius Kabi Applix® giving sets will connect with the ENPlus port, if you use another manufacturers giving sets an ENplus or slim spike adapter is available from your current supplier if required.

For any further information about ENPlus connection system on EasyBag, please contact your local Fresenius Kabi Territory Manager or call our Nutrition Service helpline on 01928 533516.
Fresenius Kabi, the leading name in clinical nutrition, provides a range of products and services to support healthcare professionals, and patients suffering malnutrition. Our specialist training helps improve appropriate prescribing, and our award-winning Homecare service further helps to support patients’ nutritional requirements.

The Fresubin® 2 kcal range delivers the highest nutritional content per pence, in the widest choice of flavours, and is available to sample in fibre and non-fibre formulas.

Contact us today on 01928 533533 or visit www.fresenius-kabi.co.uk and find out how we can help you reduce malnutrition in your community.