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Introduction

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
- Lancet
- Nutrition
- Nutrition in Clinical Practice
- Nursing in Practice
- Nursing and Residential Care
- Nursing Older People
- Nursing Standard
- Nursing Times
- Paediatric Nursing

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

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This publication and previous editions are also available online at www.fresenius-kabi.co.uk under the nutrition service section.
Adult starvation and disease-related malnutrition: A proposal for etiology-based diagnosis in the clinical practice setting from the International Consensus Guideline Committee

G L Jensen, J Mirtallo, C Compher, R Dhaliwal, A Forbes, R Figueredo Grijalba, G Hardy, J Kondrup, D Labadarios, I Nyulasi, J C Castillo Pineda and D Waitzberg


Abstract
Background & aims: Multiple definitions for malnutrition syndromes are found in the literature resulting in confusion. Recent evidence suggests that varying degrees of acute or chronic inflammation are key contributing factors in the pathophysiology of malnutrition that is associated with disease or injury.

Methods: An International Guideline Committee was constituted to develop a consensus approach to defining malnutrition syndromes for adults in the clinical setting. Consensus was achieved through a series of meetings held at the ASPEN and ESPEN Congresses. Results: It was agreed that an etiology-based approach that incorporates a current understanding of inflammatory response would be most appropriate. The Committee proposes the following nomenclature for nutrition diagnosis in adults in the clinical practice setting. “Starvation-related malnutrition”, when there is chronic starvation without inflammation, “chronic disease-related malnutrition”, when inflammation is chronic and of mild to moderate degree, and “acute disease or injury-related malnutrition”, when inflammation is acute and of severe degree. Conclusions: This commentary is intended to present a simple etiology-based construct for the diagnosis of adult malnutrition in the clinical setting. Development of associated laboratory, functional, food intake, and body weight criteria and their application to routine clinical practice will require validation.

Consensus definition of sarcopenia, cachexia and pre-cachexia: Joint document elaborated by Special Interest Groups (SIG) “cachexia-anorexia in chronic wasting diseases” and “nutrition in geriatrics”

M Muscaritoli, S D Anker, J Argilés, Z Aversa, J M Bauer, G Biolo, Y Boirie, I Bosaeus, T Cederholm, P Costelli, K C Fearon, A Laviano, M Maggio, F Rossi Fanelli, S M Schneider, A Schols and C C Sieber


Abstract
Chronic diseases as well as aging are frequently associated with deterioration of nutritional status, loss muscle mass and function (i.e. sarcopenia), impaired quality of life and increased risk for morbidity and mortality. Although simple and effective tools for the accurate screening, diagnosis and treatment of malnutrition have been developed during the recent years, its prevalence still remains disappointingly high and its impact on morbidity, mortality and quality of life clinically significant. Based on these premises, the Special Interest Group (SIG) on cachexia-anorexia in chronic wasting diseases was created within ESPEN with the aim of developing and spreading the knowledge on the basic and clinical aspects of cachexia and anorexia as well as of increasing the awareness of cachexia among health professionals and care givers. The definition, the assessment and the staging of cachexia, were identified as a priority by the SIG. This consensus paper reports the definition of cachexia, pre-cachexia and sarcopenia as well as the criteria for the differentiation between cachexia and other conditions associated with sarcopenia, which have been developed in cooperation with the ESPEN SIG on nutrition in geriatrics.
Malabsorption may contribute to malnutrition in the elderly

T Bolin, M Bare, G Caplan, S Daniells and M Holyday

Abstract

Malnutrition, either actually malnourished or at risk, is present in 80% of the elderly population presenting to hospital for admission. Although many factors contribute to this situation, one yet to be explored is malabsorption. We therefore aimed to assess nutritional status as well as the prevalence of altered mucosal permeability and celiac disease among a group of elderly patients presenting for rehabilitation. Forty-eight subjects were recruited (16 females) with a mean age of 83.7 (SD 6.1), body mass index 21.8 kg/m² (SD 3.9), mini-nutritional assessment (MNA) 19.5 (SD 3.4). They had no current gastrointestinal symptoms and undertook an assessment of mucosal permeability using the dual sugar absorption test of lactulose (7.5 g) and rhamnose (1 g). Ten of the 48 subjects had increased mucosal permeability with an L:R ratio ranging from 0.0860 to 7.706 (N 0.01–0.08). These subjects were all at risk or malnourished according to the MNA score and they had a significantly lower mean MNA score of 17.2 (SD 3.5) compared to normal absorbers with a mean of 19.5 (SD 3.4). Two of the subjects had positive tissue trans-glutaminase antibodies. The higher risk of potential malabsorption in this elderly population has significant implications both for nutritional supplementation and for drug absorption as well as being a possible major contributor to malnutrition.

More than the sum of its parts? Nutrition in Alzheimer’s disease

C A F von Arnim, U Gola and H K Biesalski

Abstract

The aim of this article is to emphasize the importance of malnutrition and micronutrient deficiencies in Alzheimer’s disease and discuss recent supplementation trials. Alzheimer’s disease (AD) is a devastating neurodegenerative disease with increasing socio-economic impact. It leads to cognitive decline over the years, finally resulting in brain atrophy and gradually destroying a person’s ability to learn, reason, make judgments, and communicate. Most of the cases are sporadic and risk factors evolve. There is evidence that malnutrition, oxidative stress, and homocysteine-related vitamins play a role in the pathogenesis of AD. A plethora of epidemiologic studies have explored the associations between nutrients and AD. In addition, more and more data from recent trials are evolving to analyze the impact of micronutrient supplementation in AD and incipient AD concerning B vitamin status and antioxidants. Available data do not support definitive conclusions regarding specific recommendations on micronutrient supplementation for the prevention or treatment of AD; however, more data from prospective trials are needed. Approaches with multiple nutritional components might be promising.
The nutritional management of COPD: An overview

A Shepherd

British Journal of Nursing (2010) 19(9): 559 - 662

Abstract

Chronic obstructive pulmonary disease (COPD) is highly prevalent in elderly individuals (Sin et al, 2006) and has a huge impact on both families and individual patients’ lives (Barnett, 2007). Active smoking remains the main risk factor, but other factors are becoming better known, such as occupational factors, infections and the role of air pollution. Prevalence of COPD varies according to country, age and sex (Raherison and Girodet, 2009). Nutritional depletion in patients with COPD is common and has a negative impact on respiratory and peripheral muscle function. Therefore assisting patients with COPD to attain and maintain optimal nutritional status is crucial to enhancing their physical wellbeing and function. In COPD, achieving an optimal nutritional status can delay the progression of this disease and may also reduce the risks of morbidity and early mortality (Raherison and Girodet, 2009). The aim of this article is to provide an overview of this condition and to identify ways in which nurses may optimize the nutritional management of patients with COPD.

Immunonutrition and critical illness: An update

B A Mizock


Abstract

Dietary supplementation with nutrients that have physiologic effects on immune function has been shown to be beneficial in subsets of patients with surgical and medical critical illness. However, several meta-analyses have suggested potential harm when immune nutrients are used inappropriately. This has led to concern among clinicians that in turn has curtailed the more widespread use of immunonutrition as a therapeutic modality. This article discusses the mechanisms by which immune nutrients can be used to modulate alterations in innate and acquired immunity associated with critical illness. In addition, recent evidence-based clinical practice guidelines for use of immunonutrition in adults is reviewed as a means to clarify some of the more controversial issues and provide a “roadmap” for the practitioner.
Early vs delayed enteral nutrition in critically ill medical patients

S Hamblin Woo, C K Finch, J E Broyles, J Wan, R Boswell, and A Hurdle


Abstract
This study was conducted to identify current practice in provision of enteral nutrition (EN) and to determine effects of early enteral nutrition (EEN) on length of stay in the medical intensive care unit (ICU). In this prospective, observational study, medical ICU patients were evaluated to determine their candidacy for EEN. If patients were candidates for EN and expected to remain nothing-by-mouth for 48 hours, they were classified as receiving EEN (within 24 hours of admission) or delayed EN. Thirty-six patients were candidates for EEN. Eighteen received EEN and 18 received delayed EN. In the delayed group, the median time to start of EN was 2.1 ± 4.8 days. Median ICU length of stay was 4.7 ± 3.5 days in the EEN group compared with 8.5 ± 8.3 days in the delayed group. Although hospital length of stay was shorter in the EEN group, this was not statistically significant (10.4 ± 6.9 vs 16.9 ± 11.5 days). Time on the ventilator was significantly shorter in the EEN group vs delayed (n = 30, 3.0 ± 4.2 vs 6.0 ± 9.2 days). The incidence of new pneumonia was lower in the EEN group (5.5% vs 44%), but no difference was found in the incidence of bacteremia. Hospital mortality was lower in the EEN group (1 vs 7 deaths). Given its association with numerous benefits, EEN within 24 hours of admission should be encouraged and implemented by clinicians in medical ICU patients, but additional research is needed.

Near-target caloric intake in critically ill medical-surgical patients is associated with adverse outcomes

Y M Arabi, S H Haddad, H M Tamim, A H Rishu, M H Sakkijha, S H Kahoul, and R J Britts


Abstract
Background: The objective of this study was to determine whether caloric intake independently influences mortality and morbidity of critically ill patients. Methods: The study was conducted as a nested cohort study within a randomized controlled trial in a tertiary care intensive care unit (ICU). The main exposure in the study was average caloric intake/target for the first 7 ICU days. The primary outcomes were ICU and hospital mortality. Secondary outcomes included ICU-acquired infections, ventilator-associated pneumonia (VAP), duration of mechanical ventilation days, and ICU and hospital length of stay (LOS). The authors divided patients (n = 523) into 3 tertiles according to the percentage of caloric intake/target: tertile I <33.4%, tertile II 33.4%-64.6%, and tertile III >64.6%. To adjust for potentially confounding variables, the authors assessed the association between caloric intake/target and the different outcomes using multivariate logistic regression for categorical outcomes (tertile I was used as reference) and multiple linear regression for continuous outcomes. Results: Tertile III was associated with higher adjusted hospital mortality, higher risk of ICU-acquired infections, and a trend toward higher VAP rate. Increasing caloric intake was independently associated with a significant increase in duration of mechanical ventilation, ICU LOS, and hospital LOS. Conclusions: The data demonstrate that near-target caloric intake is associated with significantly increased hospital mortality, ICU-acquired infections, mechanical ventilation duration, and ICU and hospital LOS. Further studies are needed to explore whether reducing caloric intake would improve the outcomes in critically ill patients.
Nutrition and pancreaticoduodenectomy

S Pappas, E Krzywda and N Mcdowell

Abstract
Pancreaticoduodenectomy (Whipple) is the surgical procedure of choice for curative resection of pancreatic head, periampullary, and distal bile duct cancers. This procedure involves removal of the pancreatic head, duodenum, distal common bile duct, and sometimes the pylorus and gastric antrum. The 2 most common complications are pancreatic fistula and delayed gastric emptying. Preoperative nutrition status has been shown to influence surgical outcomes. This technically demanding operation involves an extensive surgical resection and alters digestive processes, which can influence nutrition long term. This review article identifies the surgical and nutrition consequences associated with pancreaticoduodenectomy.

Combining enteral with parenteral nutrition to improve postoperative glucose control

P Lidder, D Flanagan, S Fleming, M Russell, N Morgan, T Wheatley, J Rahamin, S Shaw and S Lewis

Abstract
The provision of parenteral nutrition (PN) to ‘stressed’ patients often results in hyperglycaemia, which may be detrimental. In animal models limited amounts of enteral nutrition (EN) improve intestinal integrity and stimulate intestinal incretin production, which may lead to improved glucose control. We set out to assess if combining EN with PN results in improved glucose homeostasis rather than PN given alone. We conducted a randomised trial in a university teaching hospital of patients undergoing a ‘curative’ oesophagectomy for adenocarcinoma. Differences between the two intervention groups were assessed for continuous glucose measurement, insulin sensitivity using insulin tolerance tests (ITT) and homeostasis model analysis (HOMA), the incretin glucose-dependent insulino tropic polypeptide (GIP) and intestinal permeability. The combination of PN with EN resulted in lower interstitial glucose concentrations ($P = 0.002$), reduced insulin resistance, improved insulin sensitivity ($\text{HOMA-IR} P = 0.045$; $\text{HOMA-IR} P = 0.037$; $\text{ITT P} = 0.006$), improved intestinal permeability ($P < 0.001$) and increased GIP ($P = 0.01$) when compared with PN alone. The combination of EN with PN, when compared with PN alone, results in reduced glucose concentrations, reduced insulin resistance, increased incretins and improvements in intestinal permeability.
Comparison of complications attributable to enteral and parenteral nutrition in predicted severe acute pancreatitis: a systematic review and meta-analysis

M S Petrov and K Whelan

British Journal of Nutrition (2010) 103(9): 1287-1295

Abstract

Enteral nutrition (EN) reduces infectious complications and mortality compared with parenteral nutrition (PN) in patients with predicted severe acute pancreatitis. However, to date the complications attributable to the administration of EN and PN in this patient group have not been comprehensively studied. The aim of the study was to systematically review the complications related to the use of nutrition in patients with predicted severe acute pancreatitis receiving EN v. PN. The Cochrane Library, MEDLINE and Scopus were searched. Randomised controlled trials (RCT) of EN v. PN in predicted severe acute pancreatitis were selected. Pooled estimates of complications were expressed as OR with corresponding 95% CI. Data from five RCT were meta-analysed. Diarrhoea occurred in six of ninety-two (7%) patients receiving PN and twenty-four of eighty-two (29%) patients receiving EN (OR 0·20; 95% CI 0·09, 0·43; P < 0·001). Hyperglycaemia developed in twenty-one of ninety-two (23%) patients receiving PN and nine of eighty-two (11%) receiving EN (OR 2·59; 95% CI 1·13, 5·94; P = 0·03). Given a significant reduction in infectious complications and mortality associated with the use of EN over PN that has been consistently demonstrated in previous studies, the former should be the treatment of choice in acute pancreatitis. Further clinical studies should investigate the strategies to mitigate the complications of enteral tube feeding in patients with acute pancreatitis.

Nasogastric tube feeding and percutaneous endoscopic gastrostomy tube feeding in patients with head and neck cancer

B Nugent, M J Parker and I A McIntyre


Abstract

Background: For patients with a diagnosis of head and neck cancer, oral nutrition may not provide adequate nutrition during radical radiotherapy or chemoradiation treatment, resulting in enteral feeding initiation. Enteral feeding may be delivered via a nasogastric tube or by a gastrostomy tube. The present study aimed to determine how different treatment modalities impact on requirement for enteral feeding and which method of enteral feeding provided the most benefit to the patient, as demonstrated by weight loss and the number of unscheduled radiotherapy treatment interruptions.

Methods: Patients who were treated with radical radiotherapy or chemoradiation between January 2004 and June 2007 were reviewed retrospectively (n = 196, male = 149, female = 47). Data were collected on demographics, diagnosis, T and N classification, nutritional status, unscheduled radiotherapy treatment interruptions, and type and duration of enteral feeding. Subjects were divided into three subgroups depending on the treatment received. Comparisons were then made between methods of enteral feeding. Results: Combined modality treatment (Induction Chemotherapy and Chemoradiation) results in a higher proportion of patients requiring enteral feeding (66-71% compared to 12% for radiotherapy). Patients fed via a prophylactic percutaneous endoscopic gastrostomy lost the least amount of weight during treatment (~4.6% to +1.4%), although the method of enteral feeding did not statistically influence weight difference at the end of treatment. The enteral feeding method did not influence unscheduled radiotherapy treatment interruptions. Conclusions: Combined modality treatment results in a greater requirement for enteral feeding, with these patient groups having the greatest weight loss. The findings obtained in the present study indicate that the method of enteral feeding did not statistically influence weight loss at the end of treatment or unscheduled radiotherapy treatment interruptions.
Day case gastrostomy placement for patients in the community

C Best and H Hitchings


Abstract

The numbers of patients receiving home enteral feeding via a gastrostomy is increasing, with placement of the gastrostomy often being undertaken as a hospital day case. There are a number of benefits to the patient having the procedure in this way, however, problems may arise if a comprehensive assessment is not undertaken prior to the procedure, there is a lack of communication between hospital and community services, or inappropriate or inadequate training. It is essential to ensure that the transfer of care from acute hospital to community services is thorough to minimize these potential problems. This article aims to address some of the pitfalls that may occur when patients who require home enteral feeding are admitted to hospital for the placement of a gastrostomy and discharged from hospital into their own homes or into a care home the same day. Discussion will centre around the timing and assessment for gastrostomy placement, managing the risk of refeeding syndrome, devising a suitable feed regime, obtaining prescriptions, setting up community services and monitoring the patient’s progress.

Colonic ischemia and perforation associated with enteral feeding through an ileal tube

K De Brabandere, B De Waele, and G Delvaux


Abstract

Reported complications of enteral feeding through a jejunostomy include diarrhea, intraperitoneal leaks, bowel obstruction, fistula formation, wound infection, tube occlusion, and other mechanical malfunctions. However, the incidence of these complications is very low, and many physicians prefer to feed their patients by means of a jejunal tube instead of parenteral nutrition. A potentially lethal complication is ischemia of the bowel distal to the site of insertion of the feeding catheter. The described cases of bowel ischemia secondary to enteral nutrition invariably occurred at the level of the jejunum. This report describes an unusual case of perforation of the colon in a patient fed through an erroneously placed feeding catheter in the distal ileum, just proximal to the ileocaecal valve. After weeks of continuous and intractable diarrhea and progressive weight loss, the patient developed diffuse colonic ischemia with subsequent free perforation of the left colon and peritonitis. Surgical treatment consisted of placement of a new feeding tube in the proximal jejunum and removal of the old one together with a short segment of small bowel, left hemicolectomy, and end colostomy. The patient tolerated the procedure well, the tube feedings were gradually restarted, and at the 6-month postoperative visit gastrointestinal function was normal. This case illustrates possible complications of an inadvertently placed feeding tube. Not only may it cause unexplained diarrhea and undernutrition, but it may lead to more serious events like colonic ischemia and perforation.
Validation of skinfold measurements and bioelectrical impedance analysis in children with severe cerebral palsy: A review

R Rieken, E A C Calis, D Tibboel, H M Evenhuis and C Penning

Abstract

**Background & aims:** Accurately measuring nutritional status in children with severe cerebral palsy (CP) is a challenge. This review seeks to assess the validity of skinfold measurements and bioelectrical impedance analysis (BIA) for measuring body composition in children with severe CP. **Methods:** We executed a literature search on the validation of both methods in children with severe CP. To be eligible for inclusion, a study had to report on a statistical comparison between these two methods and any method of reference. The QUADAS tool was used for quality assessment. **Results:** The search strategy resulted in 1549 studies of which 5 studies eventually met the inclusion criteria. When comparing body composition outcomes of skinfold measurements to a reference method, correlation coefficients were found ranging from 0.406 to 0.988. Correlation coefficients between body composition data of BIA and a reference method ranged from 0.515 to 0.95. **Conclusions:** Although a number of authors found favorable agreement between skinfold measurements and BIA in comparison with reference methods, the small numbers studied, the lack of methodological quality measured by QUADAS, and the use of inappropriate analytical methods hamper solid conclusions.

Comparison of nutritional risk screening tools for predicting clinical outcomes in hospitalized patients

M Raslan, M C Gonzalez, M C Gonçalves Dias, M Nascimento, M Castro, P Marques, S Segatto, R S Torrinhas, I Cecconello and D Linetzky Waitzberg

Abstract

**Objective:** International nutritional screening tools are recommended for screening hospitalized patients for nutritional risk, but no tool has been specifically evaluated in the Brazilian population. The aim of this study was to identify the most appropriate nutritional screening tool for predicting unfavorable clinical outcomes in patients admitted to a Brazilian public university hospital. **Methods:** The Nutritional Risk Screening 2002 (NRS 2002), Mini-Nutritional Assessment-Short Form (MNA-SF), and Malnutrition Universal Screening Tool (MUST) were administered to 705 patients within 48 h of hospital admission. Tool performance in predicting complications, very long length of hospital stay (LOS), and death was analyzed using receiver operating characteristic curves. **Results:** NRS 2002, MUST, and MNA-SF identified nutritional risk in 27.9%, 39.6%, and 73.2% of the patients, respectively. NRS 2002 (complications: 0.6531; very long LOS: 0.6508; death: 0.7948) and MNA-SF (complications: 0.6495; very long LOS: 0.6197; death: 0.7583) had largest areas under the ROC curve compared to MUST (complications: 0.6036; very long LOS: 0.6109; death: 0.6363). For elderly patients, NRS 2002 was not significantly different than MNA-SF (P > 0.05) for predicting outcomes. **Conclusion:** Considering current criteria for nutritional risk, NRS 2002 and MNA-SF have similar performance to predict outcomes but NRS 2002 seems to provide a best yield.
A 4-year survey of the activity of a malnutrition task force in an Italian research hospital

R Caccialanza, C Klersy, M Marinelli, B Cameletti, B Chiara, E Montagna, M Zugnoni, M L Rava, C Curti, M Calvi and P Dionigi


Abstract

Objective: The proper management of nutritional support remains a challenging task in many Western hospitals. This study aimed at reporting a 4-y survey on the centralized management of nutritional support by a malnutrition task force in an Italian research hospital.

Methods: The requests for nutritional supports, the number of patients treated with enteral nutrition in the medical and surgical units, and the number of home artificial nutritional support activated were recorded from 2005 to 2008.

Results: The median number of first and follow-up visits per month significantly increased from 16 (25th–75th percentiles 13–26) in 2005 to 74 (25th–75th percentiles 69–82) in 2008 (P < 0.001) and from 56 (25th–75th percentiles 42–82) in 2005 to 101 (25th–75th percentiles 90–120) in 2008 (P = 0.001), respectively. This trend was observed also in the number of patients treated with enteral nutrition (from 95 in 2004 to 190 in 2008) and in those on home artificial nutritional support (from 25 in 2004 to 65 in 2008), whereas the number of parenteral nutrition bags produced remained substantially stable.

Conclusion: The centralized management of nutritional support is a successful strategy, which provides the appropriate prescription of artificial nutrition during hospitalization and at discharge. Multidisciplinary nutrition support teams or task forces should be created in every hospital.

Resting energy expenditure in stroke patients who are dependent on tube feeding: A pilot study

A Leone and P B Pencharz


Abstract

Background & aims: Energy requirements of chronic stroke patients are not known. The purpose was to determine the energy requirements of stable stroke patients who are tube fed. Methods: Resting energy expenditure was measured in tube fed, chronic stroke patients (n = 10) using indirect calorimetry. Fat free mass was then measured using bioelectrical impedance to determine the relationship between fat free mass and resting energy expenditure. The results were compared to a healthy control group (n = 57), using multivariate analysis of variance (MANOVA). Results: Fat free mass was significantly lower in the stroke group (42.2 ± 2.3 kg) than the controls (51.0 ± 1.5 kg) (p < 0.02). Adjustment of resting energy expenditure for fat free mass brought the mean resting energy expenditure of the stroke group (5439 ± 235 kJ/d) closer to that of the controls (6336 ± 149 kJ/d) than the original measured values. However, adjusted resting energy expenditure remained significantly lower for the stroke group than for the control group (p < 0.02). Conclusions: Resting energy expenditure and hence energy needs of chronically tube fed stroke survivors appear to be reduced.
Warfarin bioavailability with feeding tubes and enteral formula

M Klang, D Graham, and V McLymont

Abstract

Background: Earlier literature showed reduced efficacy of warfarin when co-administered with enteral nutrition formulas through feeding tubes. This study used an in vitro model for gastric administration of warfarin through a feeding tube to evaluate potential causes for reduced warfarin absorption when administered through feeding tubes. Methods: There were 2 phases of the study. The first phase used an artificial stomach model with or without the infusion of enteral nutrition formula. Warfarin was added to the contents either directly into the vessel or passed through a feeding tube. Warfarin tablet dissolution was compared to the injectable formulation, which served as a control. The second phase used chopped feeding tube material added to beakers containing warfarin in increasing amounts.

Results: Warfarin injection and tablet formulations showed decreased solubility when combined with acid. The warfarin solubility was higher when enteral formula was added. Warfarin concentration dropped by 35% when the drug was passed through a feeding tube, as opposed to added directly to the flask. In the second study, the warfarin levels were lower in the beakers containing feeding tubes. Doubling the amount of warfarin added did not raise levels to that of the initial dissolved. Doubling the amount of feeding tube material further reduced the concentration dissolved. Conclusions: Feeding-tube administration compromises the total amount of warfarin reaching patients. It appears, from this in vitro study, that the mechanism of the interaction of warfarin may be a result of direct binding to the feeding tube.

Enteral nutrition for severe malnutrition in chronic intestinal pseudo-obstruction

J Benjamin, N Singh and G K Makharia

Abstract

Objective: Chronic intestinal pseudo-obstruction (CIPO) is a rare intestinal motility disorder. A prolonged avoidance of food due to fear of aggravation of postprandial symptoms leads to severe malnutrition. We report a case of a 21 y old man who was diagnosed as CIPO with a history of recurrent intestinal colic and obstructive symptoms, slow transit type of constipation, bilateral hydronephrosis (non-obstructive), motor dysphagia without any evidence of demonstrable mechanical obstruction. Our aim was to keep his postprandial symptoms to a minimum and nutritionally build him up with enteral nutrition (EN). Methods: He had life threatening malnutrition (BMI of 11 kg/m²) and significant postprandial distension with an intake more than 100 ml, compromising the quality of life. In view of a normal absorptive function of the gut, TPN was ruled out and the patient was treated with enteral nutrition (oral & tube) only. The EN regimen followed was ad libitum oral intake along with nocturnal NG tube feeding. Initially a full strength semi-elemental formula at 50 ml/hour was given, later shifted to polymeric formula at 100 ml/hour. Serum levels of magnesium, phosphate and potassium were regularly monitored to prevent refeeding syndrome. He was constantly motivated, counseled and monitored. Result: With a gradual increase in the intake from 300 Kcal to 1400 Kcal he was discharged. Eight months from discharge he had a weight of 58 kg (BMI = 22.3 kg/m²), with resumption of normal activities and marked improvement in the quality of life. Conclusion: Carefully planned EN along with motivation, psychological support and regular monitoring are the keys to nutritional management in CIPO.
Nutrition in hepatic encephalopathy

R Chadalavada, R S S Biyyani, J Maxwell and K Mullen


Abstract

Protein calorie malnutrition (PCM) is a well-known complication of chronic liver disease (CLD). A major contribution to PCM in CLD is restriction of dietary protein intake. After many decades of injudicious reduction in dietary protein, cirrhotic patients are now prescribed appropriate amounts of protein. PCM in CLD is known to be associated with life-threatening complications. In the general approach to these patients, the initial and most important step for the clinician is to recognize the extent of malnutrition. Most patients tolerate a normal amount of dietary protein without developing hepatic encephalopathy (HE). Oral branched-chain amino acids (BCAAs) have a limited role in HE. Patients who exhibit dietary protein intolerance originally were thought to be best treated with BCAA formulations. Mixed evidence has been reported in multiple studies. In keeping with other reports, this article shows that in animal protein-intolerant patients, even those with advanced cirrhosis, vegetable protein-based diets are well tolerated. Another approach to management of apparent dietary intolerance is to optimize HE treatment with available medications. This article reviews the causes of HE, minimal HE, and PCM; examines nutrition requirements and assessment; and discusses treatment options for malnutrition in HE.

Home enteral nutrition: Outcomes relative to indication

S I Cawsey, J Soo and L M Gramlich


Abstract

Background: Home enteral nutrition (HEN) is a life-sustaining therapy for patients who are unable to meet nutrient needs by oral intake, who have a functional gastrointestinal (GI) tract, and who are able to remain in their own home. The objective of this study was to identify whether the indication for HEN is related to reason for discharge from a HEN program. Methods: A retrospective chart review of all patients admitted to the multidisciplinary Northern Alberta Home Enteral Nutrition Support Program between January 1, 1999 and January 1, 2005 was performed. Detailed information on the indication for HEN, length of time on program, and reason for discharge was collected and statistically analyzed. Results: Over the 6-year period, 727 adult patients were admitted. Major diagnostic categories for HEN were cancer, neurological disorders, and GI disorders. Median duration of HEN for cancer patients was 122 (range, 1-1259) days, duration for neurological disorders was 187 (range, 1-1752) days, and duration for GI disorders was 161 (range, 1-1849) days. Death was the main reason for discharge in patients with cancer and neurological disorders. Patients with GI disorders were most likely to initiate oral intake and least likely to be discharged because of death. Conclusions: Indications for HEN are related to outcome—specifically, time to discontinuation of enteral nutrition and reason for discharge, including return to oral intake and death.
Further references on nutrition support articles and studies published in the last quarter

  This paper reports on the estimated cost and economic consequences of pressure ulcer attributable to malnutrition.

  This article studies the case of a 5 year old boy who developed nutritional problems to demonstrate the need for clear systematic guidelines and protocols for nurses and healthcare professionals to use in order to make an informed decision in the management of such situations.

  This paper describes the experience using the Cortrak naso-intestinal feeding tube and prokinetics in critically ill patients with delayed gastric emptying.

  This article explains how to make the most out of fortified foods and how appropriate use of oral nutritional supplements can play an important role in treating malnutrition.

  This article outlines the issues of malnutrition in older people and national initiatives to identify and treat malnutrition. It provides an example on how these are managed from a local perspective through a service called focused on undernutrition.

  This article outlines how a swallow screening tool was developed and introduced to increase the detection of dysphagia.

  This article describes the benefits of close collaborative working of multiple agencies to provide tailor made healthcare to children with complex needs and make the transition from tube to oral feeding successful.

- Lonergan M T (2010) A majority of tube fed patients are on medications that require special precautions. Age and Ageing 39: 495-510
  This is a research letter outlining a study to determine the prevalence of prescription medication that require special precaution in tube fed patients.

  This article explores some of the practical issues that affect nutritional care of older people in hospital and provides suggestions to improve care.

  This article discusses the development of a professional consensus statement on nutritional care in palliative care patients.

  This review discusses indications for, controversies surrounding and complications of gastrostomy feeding and provides practical advice on the management.

  This article reviews the literature reports of dietitians placing feeding tubes and provides information on the methods used, training and competencies and legal issues involved.

  This article discusses the findings of a small study which evaluated the effectiveness of a home enteral nutrition nursing team.

  This article discusses lung cancer and the importance of nutritional status and achieving optimum nutritional support.

  This article explores the evidence for both malnutrition and obesity, along with other chronic problems associated with chronic obstructive pulmonary disease.