Contents

Introduction 4

Influence of enteral versus parenteral nutrition on blood glucose control in acute pancreatitis: A systematic review
M S Petrov and V E Zagainov

Immediate oral feeding in patients with mild acute pancreatitis is safe and may accelerate recovery - A randomized clinical study
G E Eckerwall et al.

Prokinetic therapy for feed intolerance in critical illness: One drug or two?
N Q Nguyen et al.

The relationship between blood glucose control and intolerance to enteral feeding during critical illness
N Nguyen et al.

Effects of dietary supplements on depressive symptoms in older patients: A randomised double-blind placebo-controlled trial
S Gariballa and S Forster

Effects of nutritional support long time after total gastrectomy
L Copland et al.

Clinical features of selenium deficiency in infants receiving long-term nutritional support
K Masumoto et al.

Evidence-based medicine for nutrition support: An overview of the process
C Braunschweig and D Lown

Early enteral supplementation with key pharmaconautrients improves sequential organ failure assessment score in critically ill patients with sepsis: Outcome of a randomized, controlled, double-blind trial
R J Beale et al.

Postoperative complications in gastrointestinal cancer patients: The joint role of the nutritional status and the nutritional support
F Bozzetti et al.

Long-term prevalence of oropharyngeal dysphagia in head and neck cancer patients: Impact on quality of life
P Garcia-Pens et al.

Quality of life in adult enteral tube feeding patients
AM Brotherton and PA Judd

The economic impact of disease-related malnutrition at hospital admission
T F Amaral et al.

Misplacement of percutaneously inserted gastrostomy tube into the colon: Report of 6 cases and review of the literature
R Friedmann, H Feldman and M Sonnenblick

Percutaneous Endoscopic Gastrostomy in the neurosurgical intensive care unit: Complications and outcome
D Koc et al.

An Evaluation of the “Cut and Push” method of Percutaneous Endoscopic Gastrostomy (PEG) removal
Merrick S et al

A diet enriched in eicosapentanoic acid, gamma-linolenic acid and antioxidants in the prevention of new pressure ulcer formation in critically ill patients with acute lung injury: A randomized, prospective, controlled study
M Thiella et al

Lack of body weight measurement is associated with mortality and hospitalization in community-dwelling frail elderly
S Izawa et al

Effect of calorically dense enteral nutrition formulas on outcome in critically ill trauma and surgical patients
J Bryk et al

Enteral glutamine during active shock resuscitation is safe and enhances tolerance of enteral feeding
M McQuiggen et al

Malnutrition: Supplements and food fortification in the older population
A Dunne

Gastric motility function in critically ill patients tolerant vs intolerant to gastric nutrition
J Landzinski et al

Demented versus non-demented very old inpatients: the same comorbidities but poorer functional and nutritional status
D Zekry et al

Reference List 18
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
- Clinical Nutrition
- Complete Nutrition
- Critical Care Medicine
- Current Opinion in Clinical Nutrition and Metabolic Care
- European Journal of Clinical Nutrition
- Gastrointestinal Nursing
- GUT
- 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 Woundcare
- Lancet
- Nutrition
- Nutrition in Clinical Practice
- Nursing and Residential Care
- Nursing Older People
- Nurse Prescribing
- Nursing Standard
- Nursing Times
- Paediatric Nursing

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

Please note that due to copyright law our ability to copy and distribute clinical papers is restricted.

This publication and previous editions are also available online at www.fresenius-kabi.co.uk under the nutrition service section.
Influence of enteral versus parenteral nutrition on blood glucose control in acute pancreatitis: A systematic review

M S Petrov and V E Zagainov

Abstract

Background & aims: There is increasing evidence that tight glucose control may reduce infectious complications and mortality in surgical critically ill patients. However, data regarding the influence of artificial nutrition on glycemic homeostasis are limited. Our aim was to review all randomized controlled trials on enteral versus parenteral nutrition in acute pancreatitis to determine whether the route of feeding can affect the glucose control in the setting of this disease. Methods: Relevant literature cited in three electronic databases (Cochrane Central Register of Controlled Trials, EMBASE and Medline) were systematically reviewed. A meta-analysis was carried out using a random-effects model. Results: Thirteen randomized controlled trials on enteral versus parenteral nutrition in acute pancreatitis were identified. Seven studies were excluded from analysis, leaving 6 trials in which a total of 264 non-diabetic patients with acute pancreatitis were treated. Intake of nutrients did not differ among enterally and parenterally fed patients in 5 of 6 randomized controlled trials. Enteral nutrition reduced the risk of hyperglycemia (relative risk 0.53; 95% confidence interval 0.29–0.98; p=0.04) and insulin requirement (relative risk 0.41; 95% confidence interval 0.24–0.70; p=0.001). Conclusions: Enteral nutrition, when compared with parenteral nutrition, is associated with better blood glucose control in patients with acute pancreatitis.

Immediate oral feeding in patients with mild acute pancreatitis is safe and may accelerate recovery - A randomized clinical study

G E Eckerwall, B B Å Tingstedt, P E Bergenzaun and R G Andersson

Abstract

Background & aims: In acute pancreatitis, traditional treatment has been initial fasting on purpose to avoid activation of proteolytic enzymes and pancreatic enzyme secretion. The aim of the present study was to evaluate the efficacy and feasibility of immediate oral feeding as compared to traditional fasting in patients with mild acute pancreatitis. Methods: Sixty patients were randomized to the two treatment groups, fasting or immediate oral feeding. The inclusion criteria were pancreas amylase ≥ 3 times above normal, onset of abdominal pain within 48 h, acute physiological and chronic health evaluation (APACHE) score<8 and C-reactive protein (CRP) <150mg/L. Outcome measures were pancreas-specific amylase, systemic inflammatory response, feasibility and length of hospital stay (LOHS). Results: The groups were comparable with respect to age, sex, etiology, APACHE, time from onset of pain and amylase at admission. No significant differences were seen between the groups concerning levels of amylase, CRP, leukocytes, abdominal pain or number of gastrointestinal symptoms. The LOHS was significantly shorter in the oral feeding group (4 vs. 6 days; p<0.05). Conclusions: No signs of exacerbation of the disease process were seen in terms of significant differences between treatment groups for amylase or systemic inflammatory response. In mild acute pancreatitis, immediate oral feeding was feasible and safe and may accelerate recovery without adverse gastrointestinal events.
Prokinetic therapy for feed intolerance in critical illness: One drug or two?

N Q Nguyen, M Chapman, R J Fraser, L K Bryant, C Burgstad R H Holloway.

Abstract

Objective: To compare the efficacy of combination therapy, with erythromycin and metoclopramide, to erythromycin alone in the treatment of feed intolerance in critically ill patients. Design: Randomized, controlled, double-blind trial. Setting: Mixed medical and surgical intensive care unit. Patients: Seventy-five mechanically ventilated, medical patients with feed intolerance (gastric residual volume >250 mL). Interventions: Patients received either combination therapy (n = 37; 200 mg of intravenous erythromycin twice daily + 10 mg of intravenous metoclopramide four times daily) or erythromycin alone (n = 38; 200 mg of intravenous erythromycin twice daily) in a prospective, randomized fashion. Gastric feeding was re-commenced and 6-hourly gastric aspirates performed. Patients were studied for 7 days. Successful feeding was defined as a gastric residual volume <250 mL with the feeding rate >=40 mL/hr, over 7 days. Secondary outcomes included daily caloric intake, vomiting, postpyloric feeding, length of stay, and mortality. Measurements and Main Results: Demographic data; use of inotropes, opioids, or benzodiazepines; and pretreatment gastric residual volume were similar between the two groups. The gastric residual volume was significantly lower after 24 hrs of treatment with combination therapy, compared with erythromycin alone (136 +/- 23 mL vs. 293 +/- 45 mL, p = .04). Over the 7 days, patients treated with combination therapy had greater feeding success, received more daily calories, and had a lower requirement for postpyloric feeding, compared with erythromycin alone. Tachyphylaxis occurred in both groups but was less with combination therapy. Sedation, higher pretreatment gastric residual volume, and hypoalbuminemia were significantly associated with a poor response. There was no difference in the length of hospital stay or mortality rate between the groups. Watery diarrhea was more common with combination therapy (20 of 37 vs. 10 of 38, p = .01) but was not associated with enteric infections, including Clostridium difficile. Conclusions: In critically ill patients with feed intolerance, combination therapy with erythromycin and metoclopramide is more effective than erythromycin alone in improving the delivery of nasogastric nutrition and should be considered as the first-line treatment.

The relationship between blood glucose control and intolerance to enteral feeding during critical illness

N Nguyen, K Ching, R Fraser, M Chapman and R Holloway

Abstract

Objective: To assess the relationship between blood glucose concentrations (BSL) and intolerance to gastric feeding in critically ill patients. Design: Prospective, case-controlled study. Patients and participants: Two-hourly BSL and insulin requirements over the first 10 days after admission were assessed in 95 consecutive feed-intolerant (NG aspirate >250ml during feed) critically ill patients and 50 age-matched, feed-tolerant patients who received feeds for at least 3 days. Patients with diabetes mellitus were excluded. A standard insulin protocol was used to maintain BSL at 5.0–7.9mmol. Measurements and results: The peak BSLs were significantly higher before and during enteral feeding in feed-intolerant patients. The mean and trough BSLs were, however, similar between the two groups on admission, 24h prior to feeding and for the first 4 days of feeding. The variations in BSLs over 24h before and during enteral feeding were significantly greater in feed-intolerant patients. A BSL greater than 10mmol/l was more prevalent in patients with feed intolerance during enteral feeding. The time taken to develop feed intolerance was inversely related to the admission BSL (r = –0.40). The amount of insulin administered before and during enteral feeding was similar between the two groups. Conclusions: Feed intolerance in critically ill patients is associated with a greater degree of glycaemic variation, with a greater number of patients with transient hyperglycaemia. These data suggest more intensive insulin therapy may be required to minimize feed intolerance, an issue that warrants further study.
Effects of dietary supplements on depressive symptoms in older patients: A randomised double-blind placebo-controlled trial

S Gariballa and S Forster

Abstract

**Background & aims:** The effect of nutritional supplements on mental health in older patients has received little attention so far. The aims of this trial were therefore to test the effect of nutritional support on older patient’s depressive symptoms and cognitive function.

**Methods:** In this prospective, double-blind, placebo-controlled study, we randomly assigned 225 hospitalised acutely ill older patients to receive either normal hospital diet plus 400 ml oral nutritional supplements (106 subjects) or normal hospital diet plus a placebo (119 subjects) daily for 6 weeks. The composition of the supplement was such as to provide 995 kcal for energy and 100% of the Reference Nutrient Intakes for a healthy old person for vitamins and minerals. Outcome measures were 6 weeks and 6 months changes in nutritional status, depressive symptoms and cognitive state.

**Results:** Randomisation to the supplement group led to a significant increase in red-cell folate and plasma vitamin B12 concentrations, in contrast to a decrease seen in the placebo group. There were significant differences in symptoms of depression scores in the supplement group compared with the placebo group at 6 months (p=0.021 for between groups difference). The effect of supplement was seen in all patient groups including those with no symptoms of depression, mild depression and those with severe depression (p=0.007). There was no evidence of a difference in cognitive function scores at 6 months.

**Conclusion:** Oral nutritional supplementation of hospitalised acutely ill older patients led to a statistically significant benefit on depressive symptoms.

Effects of nutritional support long time after total gastrectomy

L Copland, B Liedman, E Rothenberg and I Bosaeus

Abstract

**Background & aims:** Long-term effects of total gastrectomy on nutritional status are not well known, neither is the role of nutritional support. Dietary counselling is usually individualized, but generally not well defined. We aimed to evaluate effects of individualized oral nutritional support long time after total gastrectomy.

**Methods:** Dietary advice was given, aiming for an energy and protein rich diet, using ordinary food and liquid supplements tailored to individual needs and preferences. Counselling was repeated monthly. Body weight and a 4-day food record were obtained at baseline, and thereafter—at month 1, 3, 6 and 12. Body composition, resting and total energy expenditure were measured at baseline and at 12 months.

**Results:** Thirteen of 15 included patients completed the study. Though a trend of weight gain was seen after 1 month, there was no significant weight change at 12 months as weight development was quite heterogeneous. Six patients who remained healthy during the study (all with BMI<25) gained weight (p<0.05), while five patients with intercurrent co-morbidity and two with initial BMI>25 lost weight or remained stable.

**Conclusions:** Nutritional intervention long time after total gastrectomy did not change body weight, body composition or energy metabolism. Intercurrent co-morbidity appeared to have a major impact on outcome, as the nutritional support was more effective in patients who remained healthy and had a BMI<25.
Clinical features of selenium deficiency in infants receiving long-term nutritional support

K Masumoto, K Nagata, M Higashi, T Nakatsuji, T Uesugi, Y Takahashi, Y Nishimoto, J Kitajima, S Hikino, T Hara, K Nakashima, K Nakashima, R Oishi and T Taguchi

Abstract

Objective: Selenium deficiency is a known complication in patients requiring long-term nutritional support; however, the clinical features of selenium deficiency in infants have not been completely described. We describe the clinical features of selenium deficiency in infants. Methods: Six infants with selenium deficiency were studied retrospectively, with a focus on the period of nutritional support, the clinical symptoms, and the chronologic changes in serum selenium concentrations before and after the administration of selenite. Results: The onset of selenium deficiency in five patients occurred at <6 mo of age; selenium deficiency occurred in one patient 14 mo after birth. One patient received parenteral nutrition for 15 mo after birth; the other five patients primarily received an elemental diet for 2–6 mo. In all patients, growth retardation and alopecia with pseudoalbinism were the characteristic symptoms of selenium deficiency. At the time of diagnosis, the serum selenium level in four patients was <2.0 µg/dL and serum selenium levels in two patients were 3.2 and 3.3 µg/dL, respectively. The resolution of hair symptoms corresponded to the level of serum selenium after 1–2 mo and a rapid improvement in growth occurred in all patients after the administration of selenite. Conclusion: The early clinical symptoms of selenium deficiency in infants include growth retardation and alopecia with pseudoalbinism, which are reversible if the patients are treated with adequate amounts of selenite. Clinicians who manage infants receiving long-term nutritional support, including an elemental diet, should be aware of the symptoms associated with selenium deficiency.

Evidence-based medicine for nutrition support: An overview of the process

C Braunschweig and D Lown

Abstract

On a daily basis, clinicians make decisions regarding therapies to result in the best outcome for their patients. These decisions should be based on the evidence in the literature, indicating a therapy will cause the best outcome. To facilitate this, many professional societies and scientific journals have published technical and scientific reviews, as well as evidence-based standards of care focused on many issues of nutrition support practice. This paper provides an overview of how these reviews and standards of care are derived to promote both the understanding of what they can and cannot do to enhance clinical practice.
Early enteral supplementation with key pharmaconutrients improves sequential organ failure assessment score in critically ill patients with sepsis: Outcome of a randomized, controlled, double-blind trial

R J Beale, T Sherry, K Lei, L Campbell-Stephen, J McCook, J Smith, W Venetz, B Alteheld, P Stehle and H Schneider

Critical Care Medicine (2008) 36(1): 131-144

Abstract

Objective: To assess the safety and efficacy of an early enteral pharmaconutrition supplement containing glutamine dipeptides, antioxidative vitamins and trace elements, and butyrate in critically ill, septic patients.


Interventions: Patients received either an enteral supplement (500 mL of Intestamin, Fresenius Kabi) containing conditionally essential nutrients or a control solution via the nasogastric route for up to 10 days. Inclusion occurred within 24 hrs of intensive care unit admission. Additionally, patients received enteral feeding with an immunonutrition formula (experimental group) or standard formula (control group) initiated within 48 hrs after enrollment.

Measurements and Main Results: Organ dysfunction was assessed by daily total Sequential Organ Failure Assessment (SOFA) score over the 10-day study period in both patient groups. Patients receiving the experimental supplement showed a significantly faster decline in the regression slopes of delta daily total SOFA score over time compared with control. The difference between the regression coefficients of the two slopes was significant irrespective of the level of analysis: intent to treat -0.32 vs. -0.14, p < .0001; per protocol -0.34 vs. -0.14, p < .0001; and completers (patients receiving >=80% of the calculated caloric target over a period of 6 days), -0.26 vs. -0.16, p = .0005.

Vitamin C, as a marker of supplement absorption, increased from 10.6 (1.9-159.4) [mu]mol/L (normal range 20-50 [mu]mol/L) on day 1 to 58.7 (5.4-189.9) [mu]mol/L by day 3 (p = .002) in the intervention group but remained below the normal range in the control group 17.0 (2.8-78.5) on day 1 and 14.3 (2.4-179.6) on day 3. Serum levels of glycine, serine, arginine, ornithine, vitamin E, and [beta]-carotene all increased significantly with treatment in the supplementation group.

Conclusions: In medical patients with sepsis, early enteral pharmaconutrition with glutamine dipeptides, vitamin C and E, [beta]-carotene, selenium, zinc, and butyrate in combination with an immunonutrition formula results in significantly faster recovery of organ function compared with control.
Postoperative complications in gastrointestinal cancer patients: The joint role of the nutritional status and the nutritional support

F Bozzetti, L Gianotti, M Braga, V Di Carlo and L Mariani

Abstract
Background & aims: This study investigated the effects of nutritional support on postoperative complications, in relation with demographic and nutritional factors, intraoperative factors, type and routes of nutritional regimens. Methods: A series of 1410 subjects underwent major abdominal surgery for gastrointestinal cancer and received various types of nutritional support: standard intravenous fluids (SIF; n=149), total parenteral nutrition (TPN; n=368), enteral nutrition (EN; n=393), and immune-enhancing enteral nutrition (IEEN; n=500). Postoperative complications, considered as major (if lethal or requiring re-operation, or transfer to intensive care unit), or otherwise minor, were recorded. Results: Major and minor complications occurred in 101 (7.2%) and 446 (31.6%) patients, respectively. Factors correlated with postoperative complications at multivariate analysis were pancreatic surgery, (p<0.001), advanced age (p=0.002), weight loss (p=0.019), low serum albumin (p=0.019) and nutritional support (p=0.001). Nutritional support reduced morbidity versus SIF with an increasing protective effect of TPN, EN, and IEEN. This effect remained valid regardless the severity of risk factors identified at the multivariate analysis and it was more evident by considering infectious complications only. Conclusions: Pancreatic surgery, advanced age, weight loss and low serum albumin are independent risk factors for the onset of postoperative complications. Nutritional support, particularly IEEN, significantly reduced postoperative morbidity.

Long-term prevalence of oropharyngeal dysphagia in head and neck cancer patients: Impact on quality of life

P García-Peris, L Parón, C Velasco, C de la Cuerda, M Camblor, I Bretón, H Herencia, J Verdaguer, C Navarro and P Clave

Abstract
Background & aims: To determine the prevalence of dysphagia in head and neck cancer patients treated with surgery and radiotherapy or chemoradiotherapy. To study the impact of dysphagia on food habits, nutritional status, and quality of life. Methods: Retrospective cross-sectional study of 87 head and neck cancer patients treated with surgery and radiotherapy or chemoradiotherapy from January 2000 through May 2005. Time since surgery was 28.5±17.8 months. A clinical test was used to detect dysphagia. A nutritional assessment was performed in all patients. A questionnaire was used to evaluate quality of life. Results: Oropharyngeal dysphagia was present in 50.6% of patients, mostly to solid foods (72.4%). Patients with total glossectomy and chemoradiotherapy had the highest rate of dysphagia. Nutritional support was necessary in 57.1% of patients. Malnutrition was present in 20.3% of patients, mainly marasmus (81%). Fifty-one percent of patients reported a decrease in their quality of life due to dysphagia. Conclusions: We found a high prevalence of dysphagia in head and neck cancer patients treated with surgery and adjuvant treatment. This problem negatively affects their quality of life. It is important that nutritional surveillance be provided to detect it and to prevent malnutrition.
Quality of life in adult enteral tube feeding patients

A M Brotherton and P A Judd

Abstract

**Background:** Enteral tube feeding may impact significantly on patients’ quality of life (QoL). The aim of this paper is to review studies that have measured QoL in adult patients receiving enteral tube feeding to determine the factors that are associated with feeding that impact on the patients' QoL. **Methods:** An electronic search of CINAHL, MEDLINE and EMBASE was undertaken to identify articles that had measured QoL in adults receiving enteral tube feeding. **Results:** Ten studies were included in the review. Quality of life in patients receiving enteral tube feeding generally appeared poor compared with control groups. Factors that were found to impact on patients’ quality of life included symptoms such as nausea, vomiting, diarrhoea and fatigue. Issues around body image, inability to go out and discomfort while carrying out activities of daily living also impacted on QoL. **Conclusions:** Although the presence of underlying disease and the use of different QoL measures made comparison of the results difficult, issues requiring further consideration in clinical practice include effective symptom management, assessment of psychological and emotional issues and support for patients to enable them to cope with the resulting social isolation.

The economic impact of disease-related malnutrition at hospital admission

T F Amaral, L C Matos, M M Tavares, A Subtil, R Martins, M Nazaré and N Sousa Pereira

Abstract

**Background & aims:** The reported frequency of disease-related malnutrition (DRM) for patients admitted to hospitals has been shown to be high, but an accurate estimate of the magnitude of its economic costs is lacking. The objective of this study was to determine the impact of DRM on hospitalization costs. **Methods:** A probabilistic sample of 469 (50%) patients from two hospitals was recruited on a cross-sectional study. DRM was evaluated by the Nutritional Risk Screening-2002 instrument at hospital admission and hospitalization costs were calculated for each patient based on hospital length of stay and on the discharge diagnosis-related group (DRG) code. Estimates of the association between DRM and deviations from the mean cost within each DRG were carried out. **Results:** Patients classified as nutritionally-at-risk accounted for 42% of the sample. Multivariate estimates of the determinants of cost deviation shows that the cost of treating a nutritionally-at-risk patient is 20% higher than the average of the respective DRG. Patients that are classified on DRG classes that have a higher relative weight are less likely to end up with hospitalization costs above the mean. **Conclusions:** Considering this sample case-mix, DRM can represent an increase in costs of 19.3%, or between 200 and 1500 €, with a confidence of 95%.
Misplacement of Percutaneously Inserted Gastrostomy Tube Into the Colon: Report of 6 Cases and Review of the Literature

R Friedmann, H Feldman and M Sonnenblick

Abstract

Background: With the increasing use of percutaneous endoscopic gastrostomy (PEG), rare complications are seen; one of them is misplacement of the tube into the colon. We describe the various clinical pictures and treatment approaches. Methods: Case series from our hospital and case reports from the literature are presented. Symptoms, time interval from symptoms to diagnosis, time elapsed from initial PEG insertion to replacement or to regression, regression of gastrostomy tube to the colon vs colonic placement of reinserted tube, and treatment approaches are evaluated. Results: We identified and studied 6 patients in our hospital who had misplacement of a PEG into the colon. A review of the English literature revealed another 22 adult cases with this complication. Of the total 28 cases, 8 had previous abdominal pathology. Seventeen patients developed symptoms after tube replacement, whereas in 11 the tube had not been changed. Fourteen had diarrhea, 11 presented with fecal discharge in or around the tube, and 3 were asymptomatic. Thirteen showed colocutaneous fistula without residual connection to the stomach. Ten patients were treated surgically and 14 conservatively by removal of the tube. One patient had colonoscopic clipping of the fistula. Conclusions: Gastroenterologists should adhere strictly to cautionary measures to prevent misplacement of PEG into the colon. In patients with PEG feeding, the clinician should suspect misplacement of the tube into the colon when there is recurrent severe diarrhea of undigested food or fecal content in the tube, particularly after tube replacement. Treatment may be conservative in most cases.

Percutaneous Endoscopic Gastrostomy in the Neurosurgical Intensive Care Unit: Complications and Outcome

D Koc, A Gercek, R Gencosmanoglu and N Tozun

Abstract

Background: Even with a functioning gastrointestinal tract, it is not always easy to initiate oral feeding in some neurosurgical patients because of their persistently depressed neurologic status or severe lower cranial nerve palsies. Percutaneous endoscopic gastrostomy (PEG) may be required for long-term feeding in these patients. The purpose of the present study is to report our experience with PEG chosen for establishing an enteral route in patients of neurosurgical intensive care unit (ICU). Methods: The outcome and complications of PEG in neurosurgical ICU patients of Marmara University Institute of Neurological Science between January 2001 and November 2006 were retrospectively evaluated. Results: Thirty-one patients, with the median age of 51 years (range, 14–78 years) underwent PEG placement. PEG was placed before the craniotomy in 2 patients and after in 29. Indications for PEG were absent gag reflex in 10 patients and low Glasgow Coma Scale score in 21. Before the PEG tube insertion, 18 patients had enteral nutrition by a nasogastric tube and 10 had parenteral nutrition (PN), with a median duration of 14.5 (range, 4–60) and 12 (range, 7–25) days, respectively. Two patients accidentally pulled out the gastrostomy tubes 10 and 11 days after insertion. Buried bumper syndrome developed in 1 patient. Two patients died 8 and 34 days after the procedure in the neurosurgical ICU. Twenty-nine patients were discharged from the hospital while being fed via the PEG tubes. In 11 patients who were able to resume oral feeding, the tube was removed, with a median interval of 62 (range, 25–150) days. Procedure-related mortality, 30-day mortality, and overall mortality of the patients were 0%, 6.4%, and 45%, respectively. Conclusion: PEG is a safe and well-tolerated gastrostomy method for neurosurgical ICU patients with depressed neurologic state or severe lower cranial nerve palsies.
An Evaluation of the "Cut and Push" Method of Percutaneous Endoscopic Gastrostomy (PEG) Removal

S Merrick, S Harnden, S Shetty, P Chopra, P Clamp, and S Kapadia,

Abstract

Background: This study aimed to establish whether 15-Fr gauge percutaneous endoscopic gastrostomy (PEG) tubes can be safely removed by 'cut and push.' Methods: Patients were prospectively recruited who were found to be without significant intestinal dysfunction requiring removal of Freka (Fresenius Kabi) 15-Fr gauge PEG tubes. The PEG tube was cut close to the stoma and the remnant pushed into the gastric lumen with a 14-Fr nasogastric tube. Patients were asked to observe their stool for the remnant. Patients were contacted at day 7 and an abdominal x-ray was arranged for those who had not seen the remnant in the stool. If the remnant was still present as seen on plain x-ray, the patient was contacted on day 14. A second x-ray was ordered if the patient reported that they had still not seen the remnant. Outcome measures were PEG remnant observed in stool or not seen on plain abdominal x-ray, and adverse events. Results: Forty-two patients were recruited over 29 months: 38 head and neck patients and 4 others (stroke, head injury, cystic fibrosis [CF], and lung cancer). Of these, 41 had passed the remnant by day 8 and all by day 14. No adverse events occurred. Conclusions: We have concluded that cut and push is a safe method of removal for Freka 15-Fr PEG tubes in ambulant patients without significant gastrointestinal history.

Influence of Fiber on Glycemic Index of Enteral Nutrition

J Visek, M Zourek, S Lacigova, and Z Rusavy

Abstract

Background: Enteral nutrition is indicated in patients with malnutrition due to inadequate peroral intake. A number of these patients have diabetes mellitus or impaired glucose tolerance. The aim of the study was to evaluate the influence of fiber-enriched enteral nutrition on postprandial glycemia and insulinemia. Methods: Ten healthy volunteers consumed the following solutions: A. 50 g of glucose, B. enteral formula containing 50 g of saccharides, and C. enteral formula containing 50 g of saccharides enriched with 2.3 g of fiber/100 mL. Postprandial glycemia and insulinemia were measured in time period after administration of specified nutrition. Time courses of glycemia and insulinemia were used for calculation of areas under the curve (AUC). The glycemic (GlyI) and insulminic (InsI) indices of the nutrition were subsequently derived from AUC. Every measurement was performed 3 times for given type of nutrition. Results: Results are presented as median and interquartile range. Gly of enteral nutrition was 85.76 (82.71–87.82), Gly of enteral nutrition with fiber was 84.61 (80.31–94.39). InsI of enteral nutrition was 114.15 (106.55–137.71); InsI of enteral nutrition with fiber was 104.10 (96.71–127.96). The Gly and InsI results did not differ significantly. Addition of fiber into enteral nutrition did not influence postprandial glycemia in comparison with common enteral nutrition. Conclusions: Added fiber in polymerous enteral nutrition does not influence postprandial glycemia compared with polymerous enteral nutrition without fiber.
A diet enriched in eicosapentanoic acid, gamma-linolenic acid and antioxidants in the prevention of new pressure ulcer formation in critically ill patients with acute lung injury: A randomized, prospective, controlled study

M Theilla, P Singer, J Cohen and F DeKeyser


Abstract

**Background & aims:** Pressure ulcers are a significant burden in the ICU. Many factors have found to be associated with pressure ulcers including malnutrition. While it has been recognized that high protein diets decrease the incidence of pressure ulcers, the role of lipids as well as vitamins and antioxidants remains unclear. The aim of this study was to evaluate the preventive and healing effects of an enteral diet enriched in eicosapentanoic acid (EPA) and gamma-linolenic acid (GLA) and vitamins (vitamins A, C and E) on pressure ulcers. **Methods:** One hundred patients with acute lung injury were included in a larger study evaluating the effects of lipids and vitamins on respiratory function. A secondary end point, occurrence and healing of pressure ulcers was included. A diet enriched in lipids (EPA, GLA) and vitamins (vitamins A, C and E) was compared with a diet similar in macronutrient composition. The occurrence and healing of pressure ulcers was evaluated according to the National Pressure Ulcer Panel. Nutritional assessment included calorie intake, resting energy expenditure, levels of serum prealbumin, albumin, vitamins A and E, zinc and copper. C-reactive protein and procalcitonin were also measured. **Results:** Patient’s age, severity of disease and gender distribution were similar in the two groups. The study group had a higher body mass index. At baseline, the pressure ulcer score was similar in the two groups. A significantly lower rate of occurrence of new pressure ulcers was observed in the study group compared to the control group (p<0.05). No difference was observed in the healing of existing pressure ulcers in the study as opposed to the control group. There was no significant difference in the nutritional parameters between the two groups. **Conclusions:** A diet enriched with EPA, GLA and vitamins A, C and E is associated with a significantly lower occurrence of new pressure ulcers in critically ill patients with acute lung injury.
Effect of Calorically Dense Enteral Nutrition Formulas on Outcome in Critically Ill Trauma and Surgical Patient

J Bryk, M Zenati, R Forsythe, A Peitzman, and J B Ochoa

Abstract

Background: Surgical and trauma patients are traditionally provided with calorically dense dietary formulas to deliver high amounts of nutrients. The benefits of these formulas remain unproven and may be associated with significant side effects and even increased mortality. We studied outcomes on surgical and trauma patients receiving either a calorically dense dietary formula or a normocaloric dietary formula.

Methods: A retrospective analysis comparing outcomes in intensive care unit (ICU) surgical and trauma patients receiving either a calorically dense dietary formula or a normocaloric dietary formula was performed at the University of Pittsburgh Medical Center. Results: One hundred seventeen patients met study criteria. Surgical and trauma patients were analyzed separately. Despite receiving different calorically dense diets, caloric intake was not significantly different in surgical patients receiving either diet. However, surgical patients receiving a normocaloric formula exhibited decreased length of stay (14.7 ± 10.1 vs 25.0 ± 11.3 days; p = .01), ventilator days (14.3 ± 12.9 vs 21.3 ± 10.5 days; p = .04), and average daily glucose levels (129.8 ± 4.1 vs 157.9 ± 13.6 mg/dL; p = .01), and were more likely to be directly discharged home compared with those receiving a calorically dense dietary formula. Trauma patients receiving a calorically dense dietary formula were on average 17 years younger (p = .01). However, trauma patients receiving a normocaloric formula exhibited decreased length of stay (15.3 ± 1.6 vs 18.7 ± 1.6 days; p = .02) and a greater likelihood of direct discharge home.

Conclusions: The data generated suggest that what a patient is fed affects both short- and long-term outcomes. A prospective study should be designed to determine the ideal calories needed in surgical and trauma patients.

Lack of body weight measurement is associated with mortality and hospitalization in community-dwelling frail elderly

S Izawa, H Enoki, Y Hirakawa, Y Masuda, M Iwata, J Hasegawa, A Iguchi and M Kuzuya

Abstract

Background & aims: Although it is not uncommon for there to be frail older people living in the community, who do not know their weight and/or height, the health-related outcomes of those older remains unknown. We examined whether missing these anthropometries are a predictor of mortality or hospitalization during a 2-year follow-up period in community-dwelling older people using various community-based services.

Methods: This study was a prospective cohort analysis of 952 community-dwelling elderly. Data included the clients’ demographic characteristics, basic activities of daily living (ADL), comorbidity, and anthropometric measurements at baseline. Analysis of mortality and hospitalization over the 2-year period was conducted using multivariate Cox proportional hazards models.

Results: Among the 952 participants, 342 and 292 had missing data for height and weight at baseline, respectively. Multivariate Cox proportional hazards models adjusting for potential confounders showed that the lack of data on weight was associated with 2-year mortality (hazard ratio, HR:1.54, 95% CI:1.09–1.79) as well as hospitalization (HR:1.34, 95% CI:1.01–1.79) during the 2-year follow-up, although the lack of height measurement was not associated with these adverse outcomes.

Conclusions: Older people living in the community with unavailable weight data appear to be more likely to have a high risk of mortality and hospitalization.
Enteral Glutamine During Active Shock Resuscitation Is Safe and Enhances Tolerance of Enteral Feeding

M McQuiggan, R Kozar, R M Sailors, C Ahn, B McKinley and F Moore

Abstract

Background: Feeding the hemodynamically unstable patient is increasingly practiced, yet few data exist on its safety. Because enteral glutamine is protective to the gut in experimental models of shock and improves clinical outcomes, it may benefit trauma patients undergoing shock resuscitation and improve tolerance if administered early. This pilot study aimed to evaluate gastrointestinal tolerance and safety of enteral feeding with glutamine, beginning during shock resuscitation in severely injured patients. Methods: In a prospective randomized trial, 20 patients were randomly assigned to either an enteral glutamine group (n = 10) or a control group (n = 10). Patients with severe trauma meeting standardized shock resuscitation criteria received enteral glutamine 0.5 g/kg/d during the first 24 hours of resuscitation and 10 days thereafter. Immune-enhancing diet began on postinjury day 1, with a target of 25 kcal/kg/d. Control patients received isonitrogenous whey powder plus immune-enhancing diet. Tolerance (vomiting, nasogastric output, diarrhea, and distention) was assessed throughout the study. Results: Glutamine was well tolerated and no adverse events occurred. Treated patients had significantly fewer instances of high nasogastric output (5 vs 23; \( p = .010 \)), abdominal distention (3 vs 12; \( p = .021 \)), and total instances of intolerance (8 vs 42; \( p = .011 \)). Intensive care unit (ICU) and hospital length of stay were comparable. Control patients required supplemental parenteral nutrition (PN) to meet goals at day 7. Conclusions: Enteral glutamine administered during active shock resuscitation and through the early postinjury period is safe and enhances gastrointestinal tolerance. A large clinical trial is warranted to determine if enteral glutamine administered to the hemodynamically unstable patient can reduce infectious morbidity and mortality.

Malnutrition: supplements and food fortification in the older population

A Dunne
British Journal of Community Nursing (2007) 12 (11) 494 - 499

Abstract

There is an important relationship between positive nutritional status, dietary intake and a healthy population. Lifelong adoption of healthy eating patterns is essential for life and can help reduce the risk of development of many illnesses. Malnutrition remains very prevalent in both developed and developing countries despite ongoing awareness campaigns. The consequences of malnutrition are broad-ranging and ultimately impact on quality of life, increase length of stay in hospital and overall; increase the risk of unsuccessful outcomes of treatment. The management of malnutrition requires using appropriate screening tools to identify malnutrition and access to a registered dietitian who are the experts in nutrition - who will provide dietary advice to improve dietary intake through conventional dietary means and if unsuccessful through artificial supplementation. Failure to acknowledge the risks of malnutrition can seriously impact on morbidity and mortality rates.
Gastric Motility Function in Critically Ill Patients Tolerant vs Intolerant to Gastric Nutrition

J Landzinski, T H Kiser, D N Fish, P E Wischmeyer, and R MacLaren

Abstract

Background: Administration of gastric enteral nutrition (EN) in the intensive care unit (ICU) is commonly impeded by high gastric residual volumes (GRV). This study evaluated gastric emptying in patients with limited GRV (tolerant group) vs volumes ≥ 150 mL (intolerant group) and whether prokinetic therapy improves gastric motility in intolerant patients. Methods: To assess gastric motility, mechanically ventilated patients received acetaminophen 975 mg, and peak plasma concentration (Cmax), concentration at 60 minutes (C60), time to Cmax (Tmax), and area under the concentration-time curve from 0 to 60 minutes (AUC0-60) were determined. This evaluation was repeated in intolerant patients after 24 hours of either erythromycin 250 mg or metoclopramide 10 mg therapy, both administered intravenously every 6 hours.

Results: Ten tolerant and 20 intolerant patients were studied. Tolerant patients had significantly greater Cmax (14.12 ± 7.25 vs 9.28 ± 5.22 mg/L; p < .05), C60 (9.62 ± 4.65 vs 6.08 ± 4.00 mg/L; p < .001), and AUC0-60 (10.01 ± 5.97 vs 3.93 ± 2.84 mg/h/L; p < .01) and shortened Tmax (0.81 ± 0.61 vs 1.98 ± 1.26 hours; p < .001) compared with intolerant patients. After prokinetic therapy, Cmax (15.26 ± 8.85 mg/L), C60 (11.96 ± 5.99 mg/L), and AUC0-60 (10.90 ± 6.57 mg/h/L) increased and Tmax (1.07 ± 1.01 hours) decreased in the intolerant group to values similar to the tolerant group.

Conclusions: ICU patients with elevated GRV during gastric EN have delayed gastric motility. Initiating prokinetic therapy accelerates gastric emptying to resemble that of ICU patients tolerating EN.

Demented versus non-demented very old inpatients: the same comorbidities but poorer functional and nutritional status

D Zekry, F R Herrmann, Grandjean, M Meynet, J Michel, G Gold and K-H Krause

Abstract

Background: Demented patients have been reported to be healthier than other old people of the same age. Objectives: to assess comorbid conditions, functional and nutritional status in medically ill hospitalised patients with normal cognition or affected by dementia of various causes and severities, or mild cognitive impairment (MCI). Design and Setting: a prospective study was carried out, between January and December 2004, in the Rehabilitation and Geriatric Hospital (HOGER). Methods: activities of daily living (ADL), instrumental activities of daily living (IADL) and mini nutritional assessment (MNA) scores were assessed as a function of the status of the patient two weeks before admission to hospital. On admission, cognitive status was assessed by a systematic battery of neuropsychological tests, comorbid conditions were assessed with the Charlson comorbidity index (CCI), and body mass index (BMI) and functional independence measure (FIM) were determined. BMI and FIM were also determined on discharge. Results: we studied 349 patients (mean age 85.2 ± 6.7; 76% women): 161 (46.1%) cognitively normal, 37 (10.6%) with MCI and 151 (43.3%) demented (61 Alzheimer’s disease (AD), 62 mixed dementia (MD) and 17 vascular dementia (VaD)). ADL, IADL, FIM and MNA scores on admission decreased with cognitive status, regardless of the type of dementia. Functionality at discharge remained significantly lower in demented patients than in other patients. CCI was high and similar in all three groups (mean 4.6 ± 2.7). Patients with VaD had poorer health than other demented patients, with a higher average comorbidity score, more frequent hypertension, stroke and hyperlipidaemia. Comorbidity did not increase with severity levels of dementia. Conclusions: in this cohort of very old inpatients, demented patients, non-demented patients and patients with MCI had similar levels of comorbidity, but demented patients had a poorer functional and nutritional status.
Further references on nutrition support published in the last quarter.


- Duffin C (2007) Nurses face disciplinary action if they neglect patient nutrition. Nursing Standard 22(9): 8. This article looks at the statement made by health minister Ivan Lewis which accompanied the governments Nutrition Action Plan which provides guidance on tackling poor nutrition in hospitals and social care settings.


- Vere-Jones E (2007) Study finds malnutrition risk in young patients. Nursing Times 103(48): 3. This article looks at a survey involving 10,000 patients admitted to hospitals and care homes during three days in September and outlines that young patients as well as older people be screened for malnutrition risk.

- Beech C et al. (2007) An audit of nutritional care in a health board in Scotland. British Journal of Nursing 16(20): 1286-1290. This article’s aim is to describe the processes used and results found when conducting an audit of nutritional care within a health board area in Scotland.

- Martin U (2007) Enteral feeding in the Community. Complete Nutrition 7(6): 9-11. This article looks at the experiences of a community dietitian in Northern Ireland and ways that patients are supported to enable them to be enterally fed at home.

Reference List