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

- Journal of Parenteral and Enteral Nutrition
- Clinical Nutrition
- British Journal of Nursing
- Intensive Care Medicine
- British Journal of Community Nursing
- Nursing Standard
- Nursing Times
- Community Nurse
- Lancet
- BMJ
- Paediatric Nursing
- Nursing Older People
- Nutrition in Clinical Practice
- Journal of Human Nutrition and Dietetics
- Nursing and Residential Care
- American Journal of Clinical Nutrition
- Journal of Tissue Viability
- Complete Nutrition
- Archives of Diseases in Childhood
- Professional Nurse
- Age and Ageing
- Gut
- Critical Care Medicine

We hope this will be an efficient way to identify any articles of particular interest to Health Care Professionals involved with Nutrition Support. We do however 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.

If you would like to be added to the mailing list, please contact your local Fresenius Kabi representative or Nutrition Services Department:

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Yours sincerely

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An investigation into the relationships between quality of life, nutritional status and physical function

M. Hickson and G. Frost


Abstract

Background & aims: The measurement of quality of life adds a holistic dimension to the assessment of a clinical state or the response to an intervention. The relationship between quality of life and nutritional status is not well studied. This study aimed to investigate this relationship in a group of sick elderly in-patients.

Methods: We used data from a RCT investigating the benefits of intensive feeding support on acute medicine for the elderly wards. The EuroQol EQ-5D questionnaire was administered to patients on admission and the results were then related to parameters of nutritional status, physical function, depression and serum albumin collected at the same time.

Results: Two hundred and thirty-three patients completed the EQ-5D questionnaire. Comparisons with UK norms for community living elderly showed significantly lower scores. No direct relationship was found between the EQ-5D scores and markers of nutritional status. However, clear differences were observed between patients with and without swallowing problems, those with good and poor appetite and those with good and poor physical function. Increasing risk of depression had a profound effect on quality of life scores.

Conclusions: Nutritional status does not appear to directly influence quality of life, as measured by the EQ-5D, but may affect it through the consequences of reduced physical function. Additionally, factors that directly affect a person’s food intake seem to have a greater impact on quality of life, which underlines the importance of food and eating as an aspect of life quality.
Patient satisfaction is rated higher by radiation oncology outpatients receiving nutrition intervention compared with usual care

E. Isenring, S. Capra, J. Bauer

Journal of Human Nutrition and Dietetics (2004) 17 (2) 145-152

Abstract

Background: Satisfaction with services has been considered vital for the provision of quality health care, however, there are few published papers utilizing patient satisfaction with nutrition services as a measurable outcome.

Method: A randomized, controlled trial investigating the impact of nutrition intervention (NI) vs. usual care (UC) in 54 ambulatory oncology patients receiving radiotherapy to the gastrointestinal or head and neck area demonstrated beneficial impacts in terms of body weight, nutritional status, quality of life and bowel health. This study reports the changes in patient satisfaction that were associated with these improved outcomes for patients receiving NI compared with UC. The patient satisfaction with clinical nutrition services questionnaire was used to measure overall satisfaction and satisfaction with four components of nutrition services 12 weeks after patients commenced radiotherapy.

Results: Patients receiving NI rated satisfaction higher for staff interpersonal skills (P < 0.001), perceived health benefits (P = 0.008), staff presentation skills (P = 0.044) and for overall patient satisfaction with nutrition services (P = 0.002). There were no significant differences between those patients receiving NI or UC for the nutrition supplements factor (P = 0.191).

Conclusions: These data suggest that patients receiving NI perceive nutrition as being beneficial and of higher importance to their health than those receiving UC. This may lead to increased compliance with the nutrition prescription and help explain the better outcomes observed in the NI group compared with the UC group. Patient satisfaction with nutrition services should be conducted regularly to act as a quality-control measure and target areas for improvement.
Malnutrition in critically ill children: from admission to 6 months after discharge

J Hulst, K Joosten, L Zimmermann, W Hop, S van Buuren, H Büller, D Tibboel, and J van Goudoever


Abstract

**Background & Aims:** Little is known about the nutritional status of critically ill children during hospitalisation in and after discharge from an intensive care unit. We set up a prospective, observational study to evaluate the nutritional status of children in an intensive care unit from admission up to 6 months after discharge. A secondary aim was identifying patient characteristics that influence the course of the various anthropometric parameters.

**Methods:** The nutritional status of 293 children—104 preterm neonates, 96 term neonates and 93 older children—admitted to our multidisciplinary tertiary pediatric and neonatal intensive care unit was evaluated by anthropometry upon and during admission, at discharge and 6 weeks and 6 months following discharge.

**Results:** Upon admission, 24% of all children appeared to be undernourished. Preterm and term neonates, but not older children, showed a decline in nutritional status during admission. At 6 months after discharge almost all children showed complete recovery of nutritional status. Length of stay and history of disease were the parameters that most adversely affected the nutritional status of preterm and term neonates at discharge and during follow-up.

**Conclusion:** While malnutrition is a major problem in pediatric intensive care units, most children have good long-term outcome in terms of nutritional status after discharge.
Weight stabilisation is associated with improved survival duration and quality of life in unresectable pancreatic cancer

W Davidson ,S Ash, S Capra, J Bauer on behalf of the Cancer Cachexia Study Group


Abstract

Background & Aims: Cancer-induced weight loss is associated with poor outcomes and is common in pancreatic cancer. The aims were to determine whether stabilising weight loss for patients with unresectable pancreatic cancer was associated with improved survival and quality of life (QoL) and to identify determinants of weight stabilisation.

Methods: A post hoc analysis was performed using data from 107 patients in a multicentre trial. Patients were categorised as weight losing (>1 kg lost) or weight stable (≤1 kg lost) after an 8 week nutrition intervention period. Group survival duration (Kaplan Meier) and QoL (EORTC QLQ-C30) were compared. Predictors of weight stability were determined using logistic regression analysis.

Results: Patients with weight stabilisation survived longer from baseline (log rank test 5.53, P=0.019). They also reported higher QoL scores (P=0.037) and a greater mean energy intake (P<0.001) at Week 8 than those who continued to lose weight. The absence of nausea and vomiting (OR 6.5, P=0.010) and female gender (OR 5.2, P=0.020) were independent determinants of weight stabilisation.

Conclusions: Weight stabilisation over an 8 week period in weight-losing patients with unresectable pancreatic cancer was associated with improved survival duration and QoL.
Changes in circulating concentrations of vitamins and trace elements after cessation of nocturnal enteral tube feeding

C Baldwin, O Dewit and M Elia


Abstract

Background: This study aimed to examine whether circulating concentrations of a range of vitamins and trace elements in patients receiving long-term cyclic enteral tube feeding vary during the day, and whether standardized time points for blood sampling are required for assessment of nutrient status.

Methods: Circulating concentrations or activities of water-soluble vitamins (thiamine, riboflavin, and vitamins B6, B12, folate and C), fat-soluble vitamins (A, D, E) and trace elements (iron, zinc, copper and selenium (assessed by glutathione peroxidase activity), were measured at 0, 3, 6 and 9–12 h after cessation of nocturnal feeding (fasting), in eight clinically stable patients receiving cyclic nocturnal enteral nutrition.

Results: The circulating concentrations of the nutrients did not change between the fed and fasted state (repeated-measures-ANOVA) except the following: plasma folate increased progressively from 10.9 (SD 4.6) nmol/l in the fed state to 14.0 (SD 4.4) nmol/l at 9–12 h after cessation of feeding (P<0.05); plasma zinc increased progressively throughout the fasting period by 33.5% (8.57, SD 0.68 vs. 11.44, SD 1.85 µmol/l, in fed state vs. 9–12 h fast respectively, P<0.05); and total tocopherol/cholesterol ratio decreased by 9.6% during the study period (P<0.02), while γ-tocopherol increased by 59.2% (P<0.05). For all analytes, the concentrations in blood samples taken at 3 and 6 h after cessation of feeding were not significantly different from those at 9–12 h.

Conclusions: Although cessation of nocturnal tube feeding had no significant effect on the circulating concentrations of most micronutrients, it increased plasma folate and zinc concentrations, and decreased the tocopherol/cholesterol ratio. The timing for blood sampling should be standardized when the status of these nutrients is assessed in patients receiving cyclic tube feeding.
Micronutrient supplementation in mild Alzheimer disease patients

M. Planas, M. Conde, S. Audivert, C. Pérez-Portabella, R. Burgos, P. Chacón, J. Rossello, M. Boada and L. L. Tàrraga


Abstract

Objective: To evaluate if nutritional supplementation with or without micronutrient enhancement prevent weight loss and the progression of the disease in mild Alzheimer's Disease (AD) patients.

Design: Mild AD patients were recruited from an Alzheimer Day Centre. Subjects received oral liquid supplements with (Study-group: S) or without (Control-group: C) micronutrient enhancement. Intake assessment, nutritional status, biochemical parameters, cognitive function, and eating behaviour disorders were determined at baseline and at 6 months of treatment.

Results: At baseline both groups were not different in any variable measured. They were norm nourished, with normal biochemical parameters. Blandford scale demonstrated a mild alteration of feeding behaviour, the cognitive scale classified the patients as impaired and there was presence of memory complaints. After 6 months of nutritional supplements, a similar increase in energy consumption was observed in both groups of patients (P<0.05). In the within-group analysis, we found a trend (P=0.05) to increase body mass index; a significant increase in triceps skin fold thickness, mid-upper-arm circumference and serum magnesium, zinc and selenium, and a significant reduction in serum vitamin E (P<0.001, each). Serum cholesterol decreased substantially only in the S-group (P=0.025). No significant differences at baseline, within-group, neither between-group analysis in feeding behaviour nor in cognitive function were observed.

Conclusions: According to our results no benefits in the progression of the disease was observed with micronutrient enhancement supplements. Effectiveness of nutritional supplements in preventing weight loss in mild AD patients showed a similar behaviour as observed in other populations. Due to the beneficial evolution of serum cholesterol in the S-group, this intervention deserves further investigation.
Comparison of nutritional risk screening tools in patients on admission to hospital

C. A. Corish, P. Flood, N. P. Kennedy


Abstract

Background and aims: Undernutrition has been frequently reported in patients on admission to hospital. Because this is not always detected promptly, screening for nutritional risk on admission has been widely advocated. Although there is no universally accepted ‘gold standard’ for defining undernutrition, the definition used by McWhirter, J.P. & Pennington, C.R. [(1994) Br. Med. J. 308, 945] has been widely used by clinical nutrition specialists. This study aimed to compare the efficacy of two frequently used nutritional risk screening tools in detecting undernutrition according to this definition.

Methods: Both the Nutrition Risk Index [Veterans Affairs Total Parenteral Nutrition Co-operative Study Group (1991) N. Engl. J. Med. 325, 525] and the Nutrition Risk Score [Reilly H.M. et al. (1995) Clin. Nutr. 14, 269] were used to screen for undernutrition in 359 admissions to two acute teaching hospitals in Dublin. Undernutrition was defined as a Body Mass Index below 20 kg m⁻² and a triceps skinfold thickness or mid-arm muscle circumference below the 15th percentile. Comparison of stratification of nutritional risk by the two screening tools was carried out.

Results: Both screening tools identified over 40% (Nutrition Risk Index, 44%; Nutrition Risk Score, 46%) of all patients assessed as at nutritional risk on admission. However, one-third of the undernourished patients were classified as at no nutrition risk by the Nutrition Risk Index, while almost one-fifth of those undernourished were classified as at low risk by the Nutrition Risk Score. The degree of nutritional risk differed with the screening tool used, the Nutrition Risk Score classifying 29% of all patients as high risk while the Nutrition Risk Index classified only 5% as in the high risk category.

Conclusions: Although a large proportion of patients on admission were classified as being at nutritional risk, the degree of risk was significantly different depending on the screening tool used. Both nutritional risk screening tools evaluated in this study failed to recognize many cases of undernutrition. Evaluation of the efficacy of nutritional screening tools should be promoted as seriously as the development of such tools.
Development of a nutritional screening or assessment tool using a multivariate technique

J M Jones


Abstract
Objective: The aims of this paper are to consider the important design stages required to develop a nutritional screening or assessment tool and to present an analysis for identifying important risk factors associated with malnutrition.

Methods: Design issues, such as sample selection and sample size, are addressed in relation to the study protocol. The various steps involved in tool development are outlined. Appropriate univariate and multivariate techniques are discussed with the non-statistician in mind. Emphasis is placed on the linear logistic regression method. Practical suggestions relating to the development of a tool for nutritional risk assessment are proposed, and methodology is illustrated with data from a published study.

Conclusion: Guidelines for the standardization of the design, analyses, and publication of results are presented.
Experience of post-pyloric feeding in seriously ill patients in clinical practice

J. R. Boulton-Jones, J. Lewis, J. C. Jobling and K. Teahon


Abstract

Background: Maintaining nutrition is an integral part of patient care and when it is possible enteral nutrition is regarded as superior to parenteral nutrition. Post-pyloric feeding may enable enteral feeding to be maintained in patients who cannot tolerate nasogastric feeding. The success of post-pyloric feeding in routine clinical practice is uncertain.

Methods: One hundred and forty six consecutive patients who had 150 separate episodes of post-pyloric feeding were identified. Casenotes were reviewed to assess indication for post-pyloric feeding, prior use of alternative methods of feeding, success of achieving nutritional requirements and patient outcome.

Results: A post-pyloric tube was successfully placed in 138 (92%) and nutritional requirements were met by post-pyloric feeding alone in 124 (83%). Post-pyloric feeding was used for between 2 and 254 days (median 14 days). Conditions for which post-pyloric feeding was used to administer nutritional support included burn injury, pancreatitis, sepsis, post-operative gastric stasis, bone marrow transplantation and chemotherapy induced vomiting. Fifty (33%) patients had an attempt at nasogastric feeding and 33 (22%) were on total parenteral nutrition before post-pyloric feeding was commenced. There was one major complication of a jejunal ulcer bleed in the series. Minor complications included displacement of the nasojejunal tube and failure to absorb feed related to gastrointestinal dysfunction.

Conclusions: Post-pyloric feeding can be successfully used to maintain enteral nutrition in patients who would otherwise require parenteral nutrition.
Does additional feeding support provided by health care assistants improve nutritional status and outcome in acutely ill older in-patients?--a randomised control trial

M Hickson, C Bulpitt, M Nunes, R Peters, J Cooke, C Nicholl and G Frost


Abstract

Background & Aims: Malnutrition is common in the elderly and increases morbidity and mortality. Most attempts to reverse malnutrition have used liquid supplements, but the findings are inconsistent. This study tests a new approach using a randomised-controlled design. The aim was to examine whether health care assistants, trained to provide additional support with feeding, can improve acutely ill elderly in-patients' clinical outcomes.

Methods: The study was carried out on three acute medicine for the elderly wards at Hammersmith Hospitals NHS Trust, London. In all, 592 patients, all over 65 years old, were recruited.

Results: The results showed that the median time patients received feeding support was 16 days, and the assisted group was given less intravenous antibiotics (P=0.007). However, the groups did not differ in markers of nutritional status, Barthel score, grip strength, length of stay or mortality.

Conclusion: It was concluded that the use of health care assistants in this specialised role, in an acute setting, without change to the food provision or without targeting higher risk patients, reduced the need for intravenous antibiotics. However, the intervention did not improve nutritional status or have an effect on length of stay in the time span studied. The results highlight the difficulties of improving the intake of acutely ill elderly patients during a hospital stay.
Survey on the current practice of nutritional therapy in Portugal

P Ravasco, P Martins, A Ruivo and M Ermelinda Camilo


Abstract

Background & Aims: This survey aimed to provide a nationwide overview about the current practice of nutrition.

Methods: Questionnaires designed by the Portuguese Association of Parenteral Enteral Nutrition were sent, with postage-paid addressee envelopes, to all hospitals and primary-care institutions.

Results: Hospitals' response rate was 44/100 (44%), reaching 274/359 (60%) in primary care, P=0.02. A Nutrition Support Team (NST) was reported in 34% hospitals, 40% of which were teaching hospitals. In 3/15 (9%) hospitals, NST nutrition prescriptions covered the whole hospital population; in 16% the NST only acted on a consultant basis; in 30% they were involved in purchasing nutrition products and in 18% the NST promoted teaching/training. Physicians alone prescribed oral, enteral and parenteral nutrition in 50%, 64% and 74% hospitals, respectively, and also monitored parenteral nutrition in 50% of hospitals; monitoring oral/enteral nutrition involved dietitians in 46% and 41% hospitals, respectively; nurses were never involved in NSTs and seldom participated in nutritional management. Most primary-care institutions with hospital units (91%) provided nutrition therapy and nurses were then the most involved professionals, P=0.001, even prescribing regimens while physicians favoured monitoring.

Conclusions: Nutrition therapy is mostly unidisciplinary; the concept of a NST and its roles is wrongly perceived; education and training are eagerly awaited.
Is nutritional depletion by nutritional risk index associated with increased length of hospital stay? A population based study

U G Kyle, M Pirlich, T Schuetz, H Lochs, and C Prichard


Abstract

Background: Malnutrition is common at hospital admission and tends to worsen during hospitalisation. This controlled population study aimed to determine if serum albumin or moderate and severe nutritional depletion by nutritional risk index (NRI) at hospital admissions are associated with increased length of hospital stay (LOS) (and increased hospital cost) in patients admitted to hospitals in 2 European countries.

Methods: Serum albumin levels and recent weight loss were prospectively determined at hospital admissions in Geneva (n=652) and Berlin (n=621). Patients were classified as no, mild, moderate or severe risk by NRI. Multiple logistic regressions were used to determine the association between albumin and nutritional risk category and LOS.

Results: Patients (24%) were at moderate or severe nutritional risk by NRI. Nutritional risk by NRI, adjusted for age, was associated with LOS of 11 days (moderate: odds ratio [OR] 1.9, 95% confidence interval [CI] 1.4 to 2.7, p<.005; severe: OR 2.9, 95% CI 1.6 to 5.3, p<.005). Serum albumin was also significantly associated with increased LOS (p<.001).

Conclusions: The prevalence of nutritional depletion assessed by NRI and albumin was increased with longer LOS. Albumin alone underestimated nutritional risk. Severe nutritional depletion by NRI was significantly associated with LOS ≥ 11 days in Geneva and Berlin patients. Nutritional screening should take place at hospital admissions to determine nutritional risk and risk for longer LOS.
Investigation into the nutritional status, dietary intake and smoking habits of patients with chronic obstructive pulmonary disease

W. J. Cochrane, O. A. Afolabi


Abstract

Background and Aims: Weight loss and reduced fat-free mass are prevalent amongst patients with chronic obstructive pulmonary disease (COPD). However, the causes of this weight loss are not clear. The aims of this study are to investigate the factors affecting body weight and dietary intake in a group of outpatients with COPD, and to investigate any differences between adequately nourished and malnourished patients.

Methods: In 103 stable outpatients, nutritional status was assessed using Body Mass Index (BMI) and upper arm anthropometry. Lung function, smoking status, exercise tolerance, dietary intake, dietary problems and health-related quality of life were assessed. Patients were classed as either adequately nourished or malnourished.

Results: Twenty-three per cent of subjects were classed as malnourished. The malnourished subjects had lower lung function measurements, suffered more dietary problems and had lower nutritional intake compared with the adequately nourished subjects. They also had poorer fatigue scores. In linear regression analysis, the factors that had the most effect on BMI were a low transfer factor, presence of early satiety, and being a current smoker.

Conclusion: Important differences were found between adequately nourished and malnourished subjects. These differences move us closer to understanding how best to screen and treat this group of patients.
Nutritional support in acute renal failure

L-N Chan


Abstract

Purpose of Review: Acute renal failure is commonly present in patients with sepsis, shock, trauma, burn injury, or multi-organ dysfunction syndrome. Acute renal failure is an independent risk factor contributing to increased hospital mortality. The major complications associated with acute renal failure include metabolic derangement and protein catabolism. The purpose of this article is to review the literature between 2001 and December 2003, to determine whether newer studies have provided a better understanding of the optimization of caloric and protein delivery to critically ill patients with acute renal failure receiving continuous renal replacement therapy.

Recent findings: Continuous renal replacement therapy is now widely used in the intensive care unit to manage patients with acute renal failure, because it is better tolerated than intermittent hemodialysis by patients who are hemodynamically unstable. Although continuous renal replacement therapy is highly efficient in the removal of toxins and metabolic wastes, it may also lead to an excessive loss of nutrients, which include intact protein and amino acids. Data describing the optimal nutritional support regimen for patients receiving continuous renal replacement therapy are very limited.

Summary: The results and findings from this review may help clinicians to individualize caloric and protein delivery for patients with acute renal failure. The ultimate goal is to tailor the regimen towards the needs of each individual patient in order to maximize the benefit of nutritional support, in the hope of improving patient survival.
Nasojejunal feeding in hyperemesis gravidarum—a preliminary study

N. Vaisman, R. Kaidar, I. Levin and J. B. Lessing


Abstract
Hyperemesis gravidarum is a severe form of nausea and vomiting during the first trimester of pregnancy. Our objective was to assess the feasibility of nasojejunal feeding in our patients. Eleven pregnant women aged 23–46 years with hyperemesis gravidarum, persisting in spite of an in-hospital treatment of 2-15 days by intravenous fluids and antiemetic drugs and accompanied by weight loss, consented to have a nasojejunal feeding tube inserted endoscopically. Mean in-hospital weight loss prior to tube insertion was 2.2±1.1 kg (range 0.9–5.1 kg). A clear reduction in the extent of vomiting was already apparent within the first 48 h after tube insertion, but vomiting ceased completely after a mean of 5±4 days (range 1–13 days). Weight gain was recorded in six patients who stayed on tube feeding for more than 4 days. Patients were encouraged to start drinking and eating along tube feeding after 3–4 days. Ceasing vomiting and a concomitant sufficient oral intake of at least 1000 kcal/day resulted in the decision to remove the tube after 4–21 days. In three cases, however, the tube was expelled by recurrent vomiting after 1–4 days, or was blocked as in one case. The tube was not reintroduced and patients did not resume vomiting. There were no complications associated with this feeding approach in this population. Only one patient was readmitted. None of the rest resumed vomiting after tube withdrawal.

The above suggests that nasojejunal enteral feeding can be an effective option in hyperemesis gravidarum persisting despite intravenous fluids and antiemetic drugs.
Older adults receiving home enteral nutrition: Enteral regimen, provider involvement, and health care outcomes

H J Silver, N S Wellman, D J Arnold, A S Livingstone and P M Byers


Abstract

Background: Home enteral nutrition (HEN) is most frequently prescribed for older adults. Medicare reimbursement policy limits in-home nursing visits, and in-home professional nutritional services are restricted to those patients with diabetes or pre-dialysis kidney disease. Most older adults receiving HEN rely on informal (family) caregivers to provide HEN care. The purpose of this study was to apply care process theory to identify and investigate variables related to healthcare outcomes of HEN in a sample of older adults dependent on informal caregivers. We assessed relationships among patient characteristics, the HEN regimen prescription and adherence, formal provider involvement, and healthcare outcomes.

Methods: In-home interviews were conducted with a multiethnic (14 whites, 8 Hispanic, 7 African American, 1 Asian) sample of 30 older adults (mean = 68.4 years) during their first 3 months of HEN (mean = 1.83 months).

Results: Daily enteral intake averaged 1596 ± 553kcal. Gastrointestinal complications, occurring in up to 63.3%, interrupted daily infusions. Further, one third reported tube clogging or leaking, and one third had tube displacement. Water intake was half of calculated need and associated with decreased urination (p= .001). Average weight change was -4.35 pounds (p=0.01), and 17 patients has body mass indexes (BMI’s) <18.5. Women had more complications (p= .004), lower enteral intake (p=.009), and lower MI’s (p=.02). Only 6 patients dietitians in follow-up care. Complications ad type of feeding tubes were associated with unscheduled health care visits and readmissions (p< .05).

Conclusion: The efficacy of HEN in older adults (ie, reversal of malnutrition and improvements in health, functionality and quality of life) requires more frequent monitoring, reassessment, and intervention from a highly skilled multidisciplinary team that includes dietitians.
Can it all be done by enteral nutrition?

F Hammarqvist


Abstract

Purpose of Review: During recent years techniques and metabolic considerations have been discussed intensively. One contributing reason is that results have not always been easy to interpret and introduce into clinical practice. Nutrition through the enteral and parenteral route has classically been compared, and this is the topic of this review.

Recent findings: During the past 2 years a growing number of studies have focused on the amount and type of nutrition that is possible to give by enteral nutrition to intensive care unit patients. How to handle the clinical problem with paralysis and gastroparesis has also been studied. Basic research has shown a link between the gastrointestinal tract, immunocompetence and nutritional status. More evidence now exists that this is also clinically valid.

Summary: Recent research has shown that enteral nutrition alone does not cover the total nutritional needs of intensive care unit patients. Enteral nutrition given early in a high dose is associated with a higher risk of complications. Metabolism in intensive care unit patients is different from the perioperative condition, which has been highlighted in recent studies with important clinical implications. The final solution has not been found yet, if it exists at all, and research in this field will continue. As the situation in biology and in real intensive care unit life is neither black nor white, it would be most beneficial for the intensive care unit patient if enteral nutrition and parenteral nutrition joined together in a good balance in order to avoid underload and overload.
Continuous nasogastric tube feeding: monitoring by combined use of refractometry and traditional gastric residual volumes

W. -K. Chan, S. -A. McClave and Y. -C. Chao


Abstract
Background & Aims: Traditional use of gastric residual volumes (GRVs) is insensitive and cannot distinguish retained enteral formula from the large volume of endogenous secretions. We designed this prospective study to determine whether refractometry and Brix value (BV) measurements could be used to monitor gastric emptying and tolerance in patients receiving continuous enteral feeding.

Methods: Thirty-six patients on continuous nasogastric tube feeding were divided into two groups; patients with lower GRVs (<75 ml) in Group 1, patients with higher GRVs (>75 ml) in Group 2. Upon entry, all gastric contents were aspirated, the volume was recorded (Asp GRV), BV measurements were made by refractometry, and then the contents were reinstilled but diluted with 30 ml additional water. Finally, a small amount was reaspirated and repeat BV measurements were made. Three hours later, the entire procedure was repeated a second time. The BV ratio, calculated (Cal) GRV, and volume of formula remaining were calculated by derived equations.

Results: Mean BV ratios were significantly higher for those patients in Group 2 compared to those in Group 1. All but one of the 22 patients (95%) in Group 1 had a volume of formula remaining in the stomach estimated on both measurements to be less than the hourly infusion rate (all these patients had BV ratios <70%). In contrast, six of the 14 patients in Group 2 (43%) on both measurements were estimated to have volumes of formula remaining that were greater than the hourly infusion rate (all these patients had BV ratios >70%). Three of the Group 2 patients (21%) whose initial measurement showed evidence for retention of formula, improved on repeat follow-up measurement assuring adequate gastric emptying. The remaining five patients from Group 2 (35%) had a volume of formula remaining that was less than the hourly infusion rate on both measurements. The pattern of Asp GRVs and serial pre- and post-dilution BVs failed to differentiate these patients in Group 2 with potential emptying problems from those with sufficient gastric emptying.

Conclusions: Refractometry and measurement of the BV may improve the clinical utilization of GRVs, by its ability to identify the component of formula within gastric contents and track changes in that component related to gastric emptying.
QUARTERLY ABSTRACT BULLETIN

Reference List

Additional useful references on Enteral Nutrition Support

  This paper addresses the design and analysis of validity studies for evaluating the performance of a nutrition screening or assessment tool.

  This paper addresses the design and analysis of studies for evaluating the reliability of a nutrition screening and assessment tool.

  This article discusses the factors which should be considered before embarking on home nutritional support programmes.

  This article looks at the management of enteral tube feeding in care homes.

  This article outlines nutritional support for patients with Crohn’s disease requiring surgery.

  This article looks at the important role of nutrition and colorectal cancer before diagnosis, during and after the patient’s cancer journey.

  This article discusses issues surrounding this symptom and the role of the multidisciplinary team in the management.

  This article discusses the importance of assessing the eating skills in those older adult patients with malnutrition and shows it is as important as nutrition assessment.
  This article outlines the nutritional needs of this patient group and describes how a multidisciplinary group designed a diet information leaflet.

  This editorial discusses recent headlines reporting the extent of malnutrition and older people in the UK, and asks healthcare professional to evaluate the nutritional practices in the work place.

  This paper investigates whether a nasoenteric feeding tube can be guided into the pyloric sphincter using external magnetic guidance in critically ill patients.

  This paper investigates two different methods of measuring gastric contents in patients receiving nasogastric feeding.

  This paper discusses whether nutritional supplementation after discharge in the elderly can improve nutritional status and functional outcomes or reduced health care costs.