TOP Journal Club
Volume 10 Number 7 July 2007

Parenteral amino Acid and metabolic acidosis in premature infants

JPEN J Parenter Enteral Nutr. 2007 Jul-Aug;31(4):278-83.

BACKGROUND: Aggressive parenteral nutrition (PN) including amino acids is recommended for low-birth-weight infants to prevent energy and protein deficit. Their impact on acid-base homeostasis has not been examined. METHODS: We investigated the impact of dose and duration of parenteral amino acids, with cysteine, on acid-base parameters in 122 low-birth-weight infants. Premature infants </=32 weeks, </=1850 g, and receiving parenteral amino acids at 1.5 g/kg/d for an extended period (>24 hours), or 3 g/kg/d for a short (5 hour), extended (24 hour), or prolonged (3-5 days) duration were included in the study. Data were obtained at age 0-3 days (n = 43) or, when clinically stable, age 3-5 days (n = 49). Data from 30 infants, matched for birth weight and gestational age, receiving PN during the first 5 days after birth were also obtained. Acidosis was defined as pH <7.25. RESULTS: Acidosis was evident in all infants between 2 and 5 days after birth. Infants with large patent ductus arteriosus (PDA) exhibited significantly ($p < .05$) lower pH early, had higher blood urea nitrogen levels (26 +/- 9 vs 18 + 8 mg/dL; $p < .05$), and had greater weight loss (approximately 17% of birth weight) when compared with infants without PDA. Gestational age, weight loss, and patent ductus arteriosus accounted for 65% of variance in acidosis. CONCLUSIONS: Low-birth-weight infants develop metabolic acidosis between 2 and 5 days after birth, irrespective of dose and duration of parenteral amino acid administration. Careful management of parenteral fluids and comorbidities may lower the incidence of acidosis and promote protein accretion.

Home parenteral nutrition support in adults: experience of a medical center in Asia.

JPEN J Parenter Enteral Nutr. 2007 Jul-Aug;31(4):306-10.

BACKGROUND: Parenteral nutrition (PN) support is mandatory in patients with gut failure. Short bowel syndrome is a term used for symptoms and pathophysiological disorders brought about by the removal or malfunction of a large portion of the small bowel. Inflammatory bowel disease, vascular disease, and malignancy are the most common causes of short bowel syndrome in adults. There are many complications associated with chronic use of PN. Cholestasis, nutrient deficiency, small bowel bacterial overgrowth, and catheter-related infections were noted in these patients. Due to the various etiologies, we tried to find the optimal method to manage these patients. METHODS: We reviewed all patients over 16 years old, from 1989 to 2002, who required home PN support for at least 30 days. Charts were reviewed to obtain information regarding demographics, nutrition management, outcome, and complications related to PN. Survival was estimated by using the Kaplan-Meier method. The association of survival with primary disease, length of small bowel, age, and gender was assessed by proportional hazard regression analysis. RESULTS: There were 31 patients who needed home PN support during this period, 14 male and 17 female. The average age was 55 (median age, 53; range, 28-88); the average period of PN administration was 19 months (median, 7; range, 1-115 months). The most common indications for home PN were alimentary tract obstruction and short bowel syndrome. Most deaths were related to their original diseases and catheter-related sepsis. Malignant diseases were a major indication for home PN (HPN). However, 20% of these patients with incurable diseases lived longer than 1 year. The disease patterns were different from those in western societies. Most patients had malignancies and vascular insults in our series. There was much less inflammatory bowel disease in our patients than in western countries; catheter-related infections were frequent and caused 25% of mortality. CONCLUSIONS: HPN is very important to patients with intestinal failure or who are waiting for recovery from temporal intestine insufficiency. Even in malignant diseases, a significant number of patients survived for >1 year with treatment of HPN. Most complications related to their underlying diseases and associated infections.

Improving patient education and treatment might improve the prognosis of these patients and expand the application of this technique to help more patients with small intestine failure.

l-Alanin-l-glutamine supplementation improves the outcome after colorectal surgery for cancer.

Colorectal Dis. 2007 Jul;9(6):515-20

Objective To investigate the effect of l-alanine-l-glutamine (Gln) on postoperative complication rate and duration of hospitalization in patients operated for colorectal cancer. Method A total of 109 patients operated with the diagnosis of colorectal cancer and given enteral nutrition between January 2001 and January 2005 were prospectively analysed. The patients were randomized and analysed in two groups; Gln group (n = 57): patients were given parenteral Gln (1 g/kg/day, Dipeptiven, Fresenuis Kabi, Germany) together with enteral nutrition (Ensure; Abbott, Zwolle, The Netherlands) and the control group (n = 52) only received enteral nutrition (Ensure; Abbott), which was a standard isonitrogenous and isocaloric formula. The supplemental enteral nutrition was provided for at least 5 days pre- and postoperatively according to the nutritional status of the patients. Age, gender, subjective global assessment (SGA), body mass index (BMI), serum albumin, protein, associated disorders, localization of pathology, techniques of anastomosis, postoperative complications and length of hospital stay were analysed for each patient. Results The duration of nutritional support in the Gln group was 6 +/- 2 and 5 +/- 1 days pre- and postoperatively; while it was 7 +/- 1 and 6 +/- 1 days for the control group, and there were no significant difference among the groups (P > 0.05). Age, gender, SGA, BMI, levels of serum albumin and protein, localization of pathology and techniques of anastomosis were also similar (P > 0.05). Wound infection (P = 0.038), intraabdominal abcess formation (P = 0.044) and wound dehiscence (P = 0.044) were significantly higher in the control group than in the Gln group. There was no significant difference in terms of anastomotic leakage and other complications between both groups (P > 0.05). Hospital stay was significantly shorter in the Gln group (P < 0.001). Conclusion Supplementation of parenteral Gln decreased the postoperative complications and hospital stay and in the patients undergoing the colorectal surgery for cancer.

Nutritional immunomodulation of acute pancreatitis.

Curr Gastroenterol Rep. 2007 Apr;9(2):99-106

Despite the great advances in our understanding of the pathophysiology of acute pancreatitis, no specific therapy has emerged, and treatment remains supportive. In patients with the severe form of the disease, in which mortality remains high at 20% to 30%, the function of the upper gastrointestinal tract is disturbed due to extrinsic compression by the inflamed and swollen pancreas, and normal eating is impossible. Such patients often develop multiple organ failure, necessitating intensive-care management and artificial ventilation for weeks on end. In this setting, protein catabolism will rapidly result in protein deficiency and further complications unless nutritional support is commenced. Recent studies have shown that, despite the risk of disease exacerbation through pancreatic stimulation, enteral feeding is more effective than parenteral feeding in improving outcome. Experimental studies suggest that this can be attributed to its content of specific immunomodulating nutrients, such as glutamine, arginine, and n-3 fatty acids, and by its stabilizing effect on the gut flora through the provision of prebiotics. Further studies are indicated to examine whether dietary enrichment with these substrates, along with regulation of the gut bacteria with probiotics, can improve outcome further.

http://www.thai-otsuka.co.th/pxnews
Dr. Shwe Win <shwewin@thai-otsuka.co.th>