Panel Discussion

SY4-6

Nutritional treatment of intestinal failure: Clinical outcome in children

Sachiyo Suita, MD., PhD., FACS

Department of Pediatric Surgery, Reproductive and Developmental Medicine, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

In children intestinal failure can be roughly divided into two categories including short bowel syndrome (SBS) characterized an absolute reduction in normally functioning gut mass after massive intestinal resection or intestinal atresia, and allied disorders of Hirschsprung's disease, which shows bowel dysfunction. The later includes morphologically abnormal intestinal ganglia such as immaturity, hypogenesis and hypoganglionosis, The other forms consists of non functioning morphologically normal intestinal ganglia including megacystis, microcolon, intestinal hypoperistalsis syndrome (MMIHS) and chronic idiopathic intestinal pseudo obstruction syndrome (CIIPS). The key to successful treatment of these intestinal failure is how to utilize nutritional management including parenteral nutrition (PN) and enteral nutrition (EN).

During the past 31 years, we encountered 7 patients with SBS, whose small intestine measured less than 75cm, 7 patients with an immaturity of ganglion cells, two with hypogenesis of the ganglion cells, two with MMIHS and two with CIIPS. In SBS, 5 patients tolerated to PN well and then thereafter started EN at average 87 days of PN. One patient with 30cm of small intestine died because of catheter-related infection after 10 month of PN. The other one with 37 cm of small intestine and biliary atresia died because of liver failure. In the immaturity group, the patients started EN on average 21days of life and required 104 days of PN, because the ganglion cells matured between 3 to 6 months of age. All patients are presently alive and well. Two patients with hypogenesis of ganglion cells started EN on 110 and 430 days of life and required 138 and 1332 days of PN support, respectively. At present they demonstrate growth retardation and both still depend on either an elemental diet or intermittent PN support. Two patients with MMIHS could not undergo EN and eventually died from complications related to PN. One patient with CIIPS is doing well with intermittent ileus and the other one with CIIPS has been on elemental diet and PN for 17 years.

Owing to advances in PN, the prognosis of patients with intestinal failure has shown great improvement. However, the longer the period of PN, the higher the incidence of PN induced complications., which sometimes induce lethal complications. Therefore, the prognosis of the patients with intestinal failure is how they can tolerate the EN .We should make very important decisions when we start EN, how aggressively we advance and what kind of EN we choose.

PD1

Measuring the impact of Nutrition Support: a cost-benefit approach

JE Bines MD FRACP
Head of Clinical Nutrition
Department of Gastroenterology & Clinical Nutrition
Royal Children's Hospital
Parkville, Victoria, Australia

Malnutrition in the hospitalised patient is associated with an increased risk of complications and a higher mortality rate. Malnourished patients also incur higher hospital-related costs and charges, and have increased length of hospital stay (1).
Although the provision of nutrition support to patients at risk of malnutrition or with established malnutrition is intuitively beneficial, the cost of effectiveness of providing nutrition support has been documented in only a few publications and for specific disease and nutritional indications.

Due to the limitation of resources, many healthcare organizations are under increasing pressure to justify current clinical practice and to support the introduction of new nutritional options (2). The cost of providing nutrition support can be clarified as direct costs (the cost of inpatient and outpatient care), indirect costs (infrastructure costs) and opportunity costs (cost of a patient's lost opportunities; i.e. lost earnings). The benefit of nutrition therapy can be estimated by using objective outcome measures (i.e. length of hospital stay, functional outcomes, quality of life) and subjective outcome measures (i.e. patient satisfaction and perception of quality of care).

The balance of the cost-benefit analysis will vary on the type of nutrition support provided (dietary counselling, energy or micronutrient supplements, enteral or parenteral nutrition, specialised nutritional products), method of nutrition delivery (tube, IV), patient characteristics, disease factors (i.e. cancer, critical illness) and the site of administration (hospital versus home). Nutrition support teams have been evaluated and proved to be cost-effective in a number of healthcare settings.

(1) Reilly JJ et al. Economic Impact of Malnutrition: A model system for Hospitalized Patients, JPEN 1988, **12**: 371-6.

(2) Sachdeva RC. Measuring the impact of new technology: An outcomes-based approach. Crit Care Med 2001, **29 (Suppl)**: N190-5.

PD2

Cost Benefit of Nutrition Support

Renato M. Reyes, M.D.

Department of Surgery, Faculty of Medicine & Surgery, University of Santo Tomas, Manila, PHILIPPINES

With the escalating costs of health care, the system is currently undergoing scrutiny by consumers, policy makers, payers and the medical community. It therefore becomes imperative that medical nutrition support be proven to be effective in treating diseases and preventing disease complications resulting in health benefits to the patients and cost savings to the health care providers.

The following clinical settings, situations and medical conditions has lent itself to critical assessment on the cost benefit and cost effectiveness of nutritional support: A. cost effectiveness of nutrition support teams B. patients with functioning gut unable to maintain adequate nutrition C. patients with intestinal failure D. patients with surgical/medical gastrointestinal conditions and/or complications E. critically ill patients F. preoperative preparation of malnourished surgical patients G. nutritional support of the head injured patients H. early postoperative enteral feeding I. perioperative immunonutrition J. pharmacoeconomics in cancer K. nutritional support in home care.

There is growing body of evidence by metanalysis and evidence based review of world literature showing the benefits of nutritional support in terms of reduced infectious complications, reduced period of critical and intensive care, reduced morbidity and mortality rates and shorter hospital stay.

PD3

Nutrition Support in Pediatric: The choice for PN solution when and which

Soehartati Safiun, MD.
Harapan Kita Children and Maternity Hospital
Jakarta, Indonesia

Concern over high cost of medical care has led formal exercises in speculative accounting. One form of this analysis compares the monetary costs of various ways to achieve a desired result such as life saved or a complication avoided.

For TPN this is more than the pharmacy's outlay for nutritions. In addition to cost of labor, the hospital have to add for overhead and later profit. It has been realized that TPN is a luxury for most Indonesian. Not every Indonesian are covered by insurance. Reimbursement is difficult due to hospital management. Since recession years the burden of each family increased.

In 1997 to 2001 there had been 163 cases of pediatric surgery who had to stay for more then 10 days. Most of them fast for more then 7 days. There were 219 cases who had only stayed for less than 7 days, with 4 days of fasting.

Aside from the individual tailored solution there are other commercial available PN solution. Length of fasting socioeconomic and complication are compared to decide the novel PN solution.

Conclusions: Commercially ready for use parenteral nutrition solution should be corrected to meet nutrition demand of growing individu Enteral nutrition is preferable when gut is working

PD4

Cost benefit of nutrition support in Thailand

Prasong Tienboon MD, FRCPedT, MCN, FICN, PhD.

Division of Nutrition and Nutrition Research Center, Department of Pediatrics, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand.
Email: prasong@chiangmai.ac.th

In Thailand, the common nutrition and nutrition-related problems in hospitalized pediatric patients are protein energy malnutrition in various degrees; vitamin deficiencies: A, B1, B2, Niacin, folic acid, K, E; mineral deficiencies: Zn, Fe, Ca, Mg, P, K, Na; essential fatty acid deficiencies; lactose intolerance; maldigestion; malabsorption; overweight and obesity. Nutrition screening is vital for early recognition of patients at risk for several types of malnutrition. At least, weight and height should be obtained for all hospitalized patients so that body mass index (BMI) can then be calculated. In children, Tienboon has published BMI values or BMI classification for use as indicators for the assessment of undernutrition in children whose heights are less than 145 cm. This classification has been tested and re-tested, using normal children and patients with various degrees of undernutrition, and were found to be reliable and valid (BMI: mild undernutrition <14.5-13.0 kg/m2, moderate undernutrition <13.0-11.5 kg/m2; severe undernutrition <11.5 kg/m2). In general, more than half of the hospitalized pediatric patients were malnurished and needed nutrition support. Since the implementation of a nation-wide program entitled " Baht 30-for-All ", all Thai patients have benefitted from this program. The program was first introduced in June 2001 for a few provinces and for all over the country in October, 2001. All patients who are in this program pay Baht 30.00 per consultation for whatever disease management is required. Patients who receive either enteral or parenteral nutrition management also benefit from this program. They pay only Baht 30.00 for the cost of their disease management and the rest will be paid or absorbed by the Thai government. However, the program is still in a trial process. In future, problems arising from the program will be further discussed among authorities and solution found be solved.

PD5

Cost-effective benefits of nutrition support team at university hospital in Japan

Kinya Sando MD, Akira Okada MD, Yoshiyuki Shimizu MD, Hideki Soh MD, Masafumi Wasa MD, Yoji Takagi MD.

Department of Pediatric Surgery, Osaka University Graduate School of Medicine, Suita, Osaka, Japan

In 1972, the first nutrition support team (NST) was established at the Osaka University Hospital. During these 29 years since then, the total number of managed patients reached 5,498 (adults:3,163, children: 2,335) and the sum of management days counted as 300,536 (adults: 164,002, children: 136,534). During last five years, the average incidence of catheter related sepsis (CRS) was 4.8% (adults:2.6, children: 6.8) and 0.57 per 1,000 managements day (adults:0.31, children: 0.81).

Benefits of NST obtained in the Osaka University Hospital may be highlighted as follows;

1) Early recognition and treatment of malnourished patients.
2) Decreased mechanical and metabolism complications.
3) Provision of appropriate and more cost-effective products.
4) Provision of specialized nutrition support system for such as bone marrow transplantation patients.
5) Reduction of wastage of parenteral nutrition devices and equipment.

Cost-effective benefits of nutrition support team at Osaka university hospital was concretely calculated as follows;

1) Reduction of the incidence of CRS by using "closed system" for the route of parenteral nutrition ; ¥150,000,000 ($ 1,200,000) / year.
2) Reduction of wastage by standardizing the route of parenteral nutrition ; ¥ 5,500,000 ($ 44,000) / year.

Summing the savings as described above yielded a total cost-effective benefits of ¥155,500,000 ($ 1,244,000) / year.