

Brief Report

Nutrition in burns: A practical solution to a difficult problem

M. P. Suri, C. K. Patel, V. J. S. Dhingra, S. C. Raibagkar, D. R. Mehta

Department of Plastic Surgery, SMT Shardaben Hospital, Saraspur, Ahmedabad, India

Address for correspondence: Manav P Suri, A-12 Sterling Apartments, Near Shahibaug under bridge, Shahibaug, Ahmedabad, Gujarat - 380 004, India. E-mail: surimanav@yahoo.com

ABSTRACT

The nutritional aspects of burns is an important but yet not properly looked after problem in the management of burns. We present our experience with dealing with such a problem giving a practical and easy to deliver solution to nutrition. Early enteral nutrition should be started with frequent assessment to the need of the patient and it requires a team approach.

KEY WORDS

Burns, diet charts, enteral nutrition, nutrition, nasogastric tube, tube feeding

INTRODUCTION

The incidence of burns has decreased significantly in the west but it continues to be a major financial and social burden in the third world countries. In order to combat this load in such countries, it is desirable to put more stress on ancillary measures beside the routine management protocol.

The major task for the plastic surgeon working in poorly financed hospitals in developing countries is to send the patient home early, with minimal deformities and casting least financial burden on the family and society.

We have studied the role of a cheap, self-formulated, locally available, nourishing diet keeping in mind the above hurdles.

MATERIALS AND METHODS

Our study included 51 patients admitted from August 2003 to July 2005 and compared them with same number of closely matched controls selected from patients treated before the start of the special dietary regimen.

The cases included all patients of 30-75% burns admitted in burns ward in this institute during the period of study. The patients above 75% burns were not included in the study because it was not possible to compare with the controls as no patients above 75% burns were salvaged before August 2003. The controls were closely matched for age, sex, degree and extent of burns. Nasogastric tube was inserted in all the patients with burns exceeding 40% BSA.

The diet was prepared using locally available food materials including chikki, (confectionary made of unrefined sugar and nuts) soybeans, eggs, milk, sugar and bananas.^[1] Nasogastric tube was inserted early to support the enteral feeding.^[2,3,4] Patients were also encouraged to have their routine meals. Few additions were made according to the likes and dislikes of the patient^[5] [Textbox 1]. The daily calorie intake was charted on a self made chart [Figure 1] and this was also represented graphically to give patients and their relatives a rough idea of intake of calories in the past few days.

The cases and controls were compared on the basis of the number of operative procedures and number of days

Textbox 1: Example diet

Breakfast (8:00 am) - 4 bread + 50 gm butter, 250 ml milk or 2 paratha + 50 gm butter, 250 ml milk (10:00 am) - 100 gm groundnut chikki or 50 gm cashew-nut + 50 gm almonds through Ryles tube 250 ml banana milk formula + 200 ml pulses soup

Lunch (12:00 pm) - 3-4 roti, 200 gm dal-chawal, 100 gm soyabean subji; 100 gm green vegetable or 3-4 butter roti, 200 gm mutton, 100 gm pulao or 2 masala dosa, 150 ml rasam, 100 gm khesri bhat (2:00 pm) - through ryles tube 250 ml banana milk formula (4:00 pm) - 100 gm groundnut chikki or 2 cream roll, 100 ml tea/coffee/veg soup (6:00 pm) - through ryles tube 150 ml banana milk formula, 100 ml pulses soup

Dinner (8:00 pm) - 2 roti, 100 gm khichdi-kadi, 100 gm curd, 100 gm green vegetable or thepla, 100 gm butter, 200 gm curd or 250 gm dahi bhat, 250 ml rasam (10:00 pm) - through ryles tube 200 ml banana milk formula (11:00 pm) - 100 ml ice-cream

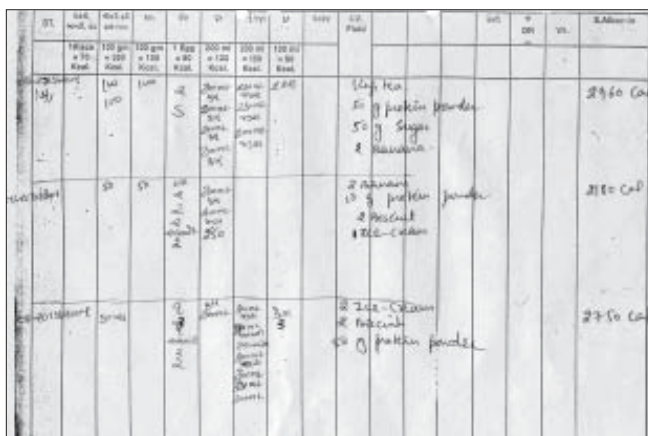


Figure 1: Self-formulated chart in local language

of admission. Stastical analysis was done using Z test.

OBSERVATIONS AND DISCUSSION

Out of 51 patients studied [Table 1], those who were given the self-formulated feed were found to fare far better than the controls. The number of cases that required more than 2 procedures (n=11) was significantly lower ($P<0.05$, $Z=2.13$) than the controls (n=21) and also the number of cases that required more than 50 days of admission (n=12) was significantly lower ($P<0.01$, $Z=3.2$) than controls (n=28). Weight remained within 10% of the admission weight in almost all the patients except in one case. On the contrary few of the patients gained weight during the admission. The positive nitrogen balance and better immunity leads to better wound healing, better and early preparation of graft beds, less graft losses and decreased episodes of invasive infection.^[6-10] The early mobilization also

Table 1: Comparison of the number of procedures and the number of days of stay between cases and controls

Patients requiring	Cases	Controls	Z-value/P-value
>Procedures	11	21	2.13/<0.05
>50 days of admission	12	28	3.2/<0.01

contributed to early discharge of these patients.

It was also noted that the cost of therapy was decreased not only because of less number of days of stay in the hospital and less number of operative procedures required but also because of less episodes of invasive infections requiring costly antibiotics and monitoring.^[11] The early wound healing and coverage of raw areas and better take of grafts led to early mobilization and hence less joint stiffness and contractures. This also kept the morale of the patient high.

Because of early discharge, less deformity and disability, they were able to be rehabilitated early and contribute positively to the society. Moreover the attendants of the cases could also return to their jobs earlier.

The mortality (in > 30% BSA burns) decreased from 60 to 51% since we have introduced this regimen. This however is not statistically significant.

CONCLUSION

Adequate nutrition is required for wound healing, immunocompetence and, ultimately, patient survival. Nutritional support of the burn patient should be instituted promptly and designed to limit the deleterious consequences of acute structural protein loss, to facilitate wound healing and to support the immune response. Management of major burns with this cheap high calorie diet along with the charting of daily calorie intake would lead to a decrease in morbidity (decrease in number of procedures and days of admission). Use of this regimen is recommended for general hospitals.

REFERENCES

1. Dickerson RN, Gervasio JM, Riley ML, Murrell JE, Hickerson

1. WL, Kudsk KA, *et al.* Accuracy of predictive methods to estimate resting energy expenditure of thermally injured patients. *J Parenteral Nutr* 2002;26:17-29.
2. Metheny NA, Tittler MG. Assessing placement of feeding tubes. *Am J Nurs* 2001;101:36-45.
3. Braunschweig CL, Levy PM, Sheean PM, Wang X. Enteral compared with parenteral nutrition: A meta-analysis. *Am J Clin Nutr* 2001;74:534-42.
4. DeLegge M. Enteral access: The foundation of feeding. *J Parenteral Nutr* 2001;25:S8-13.
5. Rodriguez DJ. Nutrition in patients with severe burns: State of the art. *J Burn Care Rehabil* 1996;17:62-70.
6. Demling RH, Seigne P. Metabolic management of patients with severe burns. *World J Surg* 2000;24:673-80.
7. Deitch EA. Nutritional support of the burn patient. *Crit Care Clin N Am* 1995;11:735-50.
8. Cioffi WG. What's new in burns and metabolism. *J Am Coll Surg* 2001;192:241-54.
9. LeBoucher J, Cynober L. Protein metabolism and therapy in burn injury. *Ann Nutr Metab* 1997;41:69-82.
10. Cuthbertson D. Post shock metabolic response. *Lancet* 1942;242:433-7.
11. Sparkes BG. Immunological responses to thermal injury. *Burns* 1997;23:106-13.

ANNOUNCEMENT

**The Association of Plastic Surgeons of India & ETHICON
Welcomes APSI members & bonafide M.Ch/DNB students for its first**

MICROSURGERY ACCREDITATION COURSE

The Course is also endorsed by ISRM

Course Convener: Dr. Bimal Mody

Course Duration: 5 days

Location: ETHICON INSTITUTE FOR SURGICAL EDUCATION, Mumbai,

Dates: 8th Jan to 12th Jan 2007

Course agenda: The five days intensive workshop takes participants through dry and animate labs sessions and a series of videos and lectures on flap harvest and clinical applications.

Faculty: Will be eminent surgeons from all over India, like APSI President Dr. Mukunda Reddy, Dr. S. R. Tambwekar, Dr. Rajeev Ahuja, Dr. Mukund Thatte and others.

Course fee: For participants from India is Rs. 7500/-. Demand Draft Payable to Johnson & Johnson Limited

Course fees includes all the sessions, course material, lunches, tea/coffee

"All courses conducted at EISEs are "NOT FOR PROFIT
"and are subsidized by Johnson and Johnson Medical, India."

ETHICON a Johnson and Johnson Company, have jointly provided an educational grant in support of the fees of Rs.7500/- for this course. The course fee will be refunded on successful completion of the course. Please note that no cancellation request will be entertained.

Important note:

- Candidates will be registered on "First-come-First-served" Basis.
- Number of participants will be restricted to maximum Twelve so as to encourage one-on-one interaction with faculty.
- The decision of course director on selection of the participants will be final and binding.

Please mail Registration Forms and Bank Drafts to:

Ethicon Institute of Surgical Education

Johnson House, 64-66, Senapati Bapat Marg,

Mahim, Mumbai 400016

Ph-91-22-244674438, 24466801, Fax-24444883

E-mail: meise@jnjin.jnj.com