

Nutritional Issues in Short Bowel Syndrome – Total Parenteral Nutrition, Enteral Nutrition and the Role of Transplantation

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In patients presenting with the extreme of the short bowel syndrome, the loss of intestine is so great that patients cannot survive without intravenous feeding. This condition is termed short bowel intestinal failure. Therefore, the principles behind diagnosis, assessing prognosis and management are important. The advent of intravenous feeding (parenteral nutrition) in the 1970s enabled patients with massive (>90%) bowel resection to survive for the first time and to be rehabilitated back into normal life. To achieve this, central venous catheters were inserted preferably into the superior vena cava and intravenous infusions were given overnight so that the catheter could be sealed by day in order to maximize ambulation and social integration. However, quality of life has suffered by the association of serious complications related to permanent catheterization – mostly in the form of septicemias, thrombosis, metabolic intolerance and liver failure – from the unphysiological route of nutrient delivery [1]. This has led to intense research into restoring gut function. In addition to dietary modifications and therapeutic suppression of motility, novel approaches have been aimed at enhancing the natural adaptation process, first with recombinant growth hormone and more recently with gut-specific glucagon-like peptide-2 analogues, e.g. teduglutide. These approaches have met with some success, reducing the intravenous caloric needs by approximately 500 kcal/day. In controlled clinical trials, teduglutide has been shown to permit >20% reductions in intravenous requirements in over 60% of patients after 6 months of treatment. Some patients have been weaned, but more have been able to drop infusion days. The only approach that predictably can get patients with massive intestinal loss completely off parenteral nutrition is small bowel transplantation, which, if successful (1-year survival for graft and host >90%), is accompanied by dramatic improvements in quality of life. In the USA, Medicare

Table 1. Indications for failure of total parenteral nutrition

Medicare indications

- (1) Life-threatening sepsis
 - (2) Venous thrombosis – loss of access
 - (3) Liver disease – progressive fibrosis, cholestasis, cirrhosis
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has accepted ‘failure of total parenteral nutrition’ as the chief indication for small bowel transplantation (table 1).

In summary, the significant advances in different approaches to the complex management of patients with short bowel syndrome and intestinal failure over the last decade have fuelled our armamentarium of therapeutic options and translated into improved quality of care. However, all these forms of therapy have side effects and potentially serious long-term complications, and so we need to be vigilant in our surveillance and thorough in our multidisciplinary management [2], and continue to seek safer forms of therapy that return quality of life towards normal.

References

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- 2 Matarese LE, Jeppesen PB, O’Keefe SJ: Short bowel syndrome in adults: the need for an interdisciplinary approach and coordinated care. *JPEN J Parenter Enteral Nutr* 2014;38(1 suppl):60S–64S.