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Short bowel syndrome: Recent advances

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Abstract

Short bowel syndrome is defined as “reduction of functioning gut mass below the minimum amount necessary for adequate water and electrolyte absorption and adequate digestion and absorption of nutrients”. This may occur when there is less than 200cm of functional gut remaining.

Most digestion and absorption occurs in the first 150 cm. Vitamin B12 and bile salts are absorbed in the distal ileum. The distal ileum provides a brake, through the effects of Peptide YY (PYY), and the ileocecal valve. PYY inhibits vagally stimulated gastric acid secretion, and gastric and intestinal motility.

Following small bowel resection, gastric hypersecretion occurs, and proton pump inhibitor therapy is therefore required in the early management of patients. Glucagon-like peptide 2 stimulates gut hyperplasia, and increases the absorptive capacity of the residual small bowel. The amino acid glutamine is also thought to enhance intestinal adaption.

The presence of the colon is associated with increased PYY levels, providing a “colonic brake”. Colonic bacteria produce short chain fatty acids from non-absorbed complex carbohydrates, which contributes significantly to nutrient and fluid balances

Problems of fluid and electrolyte balance generally occur when there is less than 120cm small bowel remaining. Less than 50cm of small bowel (with an intact colon), and less than 100 cm without a colon invariably necessitates long-term parenteral nutrition.

Management of SBS involves use of antidiarrheal agents (loperamide, tincture of opium), to reduce diarrhea, and increase “dwell” time for absorption. In patients with an intact colon, dietary maneuvers include use of a high complex carbohydrate (60%), and a low fat diet. Patients should also be on a low oxalate diet to prevent the occurrence of oxalate stones. In patients without a colon, a high fat diet is generally implemented. Teduglutide, a GLP-2 analog has recently been shown to significantly improve intestinal absorption, with a deceased requirement for TPN.

Surgical options include segmental reversal of the small bowel (Biachi procedure), and serial transverse enteroplasty (STEP procedure). Small bowel transplant is considered in patients who have developed life-threatening complications of short bowel syndrome and TPN therapy.

Biography

Dr. Winter is Clinical Associate Professor of Medicine in the Division of Gastroenterology and Hepatology, at Stanford School of Medicine, Stanford, California, USA. He is Board Certified in Internal Medicine and Gastroenterology, and has specific interest in the management and treatment of intestinal failure, nutrition rehabilitation and inflammatory bowel disease. He completed fellowship training at Groote Schuur Hospital in Cape Town, South Africa, and at the John Radcliff Hospital OX, UK. He accomplished his PhD (Medicine) at the University of Cape Town. He is the author of 62 papers, editorials, letters and reviews, 9 chapters, and 84 abstracts.