Nutritional Support In Short Bowel Syndrome

Essay
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Mahmoud Abd El Hamid Abd El Rahim

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List of abbreviations

ALT : Alanine aminotransferase

AST : Aspartate aminotransferase

ATP : Adenosine triphosphate

aPTT : Activated partial thromboplastin time

BEE : Basal energy expenditure

BUN : Blood urea nitrogen

CCK : Cholecystokinin

CHF : Congestive heart failure

CHO : Carbohydrate

CPN : Central parentral nutrition

CT : Computed tomography

DMT : Divalent metal transporter

EGF : Epidermal growth factor

FFP : Fresh frozen plasma

GER : Gastro esophageal reflux

GIT : Gastro intestinal tract

GLP2 : Glucagon like peptide 2

INR : International normalizing ratio

IV : Intravenous

LCT : Low chain triglycerides

MCT : Medium chain triglycerides

List of abbreviations (Cont.)

NET	: Nasoentric tube
NG	: Nasogastric
PEG	: Percutaneous endoscopic gastrostomy
PICCs	: Peripherally inserted central venous catheters
PN	: Parentral nutrition
PPIs	: Proton pump inhibitors
PPN	: Peripheral parentral nutrition
PT	: Prothrombin time
REE	: Resting energy expenditure
RES	: Reticulo endothelial system
SBS	: Short bowel syndrome
SIBO	: Small intestinal bacterial overgrowth
STEP	: Serial transverse enteroplasty
SVC	: Superior vena cava
TPN	: Total parentral nutrition
USA	: United state of America
UUN	: Urinary urea nitrogen

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Introduction

Short Bowel Syndrome (SBS) can be defined as “the loss of nutrient, fluid, and electrolyte absorptive capacity associated with partial or near-complete loss of the small intestine. The reduction in absorptive capacity leads to frequent diarrhea, steatorrhea, electrolyte imbalances, dehydration, weight loss, and macronutrient and micronutrient deficiencies.in adults, a diagnosis of SBS is made when the small intestine is less than 200 cm in length ***(Regina, 2011).***

Today, the most common causes of short-bowel syndrome in adults include Crohn's disease, javascript:showrefcontent('refrenceslayer');radiation enteritis, mesenteric vascular accidents, trauma, and recurrent intestinal obstruction. in the pediatric population, necrotizing enterocolitis, intestinal atresias, and intestinal volvulus are the most common etiologic factors. ***(Efsen et al., 2011).***

Other conditions associated with short-bowel syndrome include congenital short small bowel, gastroschisis, and meconium peritonitis ***(Efsen et al., 2011).***

Massive small intestinal resection compromises digestive and absorptive processes. Adequate digestion and absorption

cannot take place, and proper nutritional status cannot be maintained without supportive care ***(Weih et al., 2011).***

So that the most important therapeutic objective in the management of SBS is to maintain the patient's nutritional status, primarily through parenteral nutritional support in the early postoperative period. ***(Cheng et al., 2011).***

Enteral nutrition support should be started as early as possible after operation when the ileus has resolved. This step is important for maximizing intestinal adaptation and preventing complications related to parenteral nutrition ***(Cheng et al., 2011).***

Aim of The Work

The aim of the work is to discuss the importance, methods and monitoring nutritional support in short bowel syndrome.

Anatomy of the small intestine

The small intestine begins at the pyloric sphinter and coils its way through the central and lower aspects of the abdominal cavity and joins the large intestine (colon) at the ileocaecal valve. The small intestine is divided into three separate segments: the duodenum, jejunum and ileum. It is approximately 6.5 m long and has a diameter of approximately 2.5 cm. ***(Thibodeau and Patton, 2002).***

Duodenum:

This is approximately 25 cm in length and it curves around the head of the pancreas. In the mid-section of the duodenum there is an opening from both the pancreas and the common bile duct. This opening is controlled by the sphincter of Oddi. ***(Thibodeau and Patton, 2002).***

Jejunum:

This is approximately 2.5 m in length and extends to the ileum. ***(Thibodeau and Patton, 2002).***

Ileum:

This is the terminal part of the small intestine that ends at the ileocaecal valve. It measures about 3.5 m in length. The ileum will usually empty approximately 1.5 litres of fluid into the colon each day. ***(Thibodeau and Patton, 2002).***

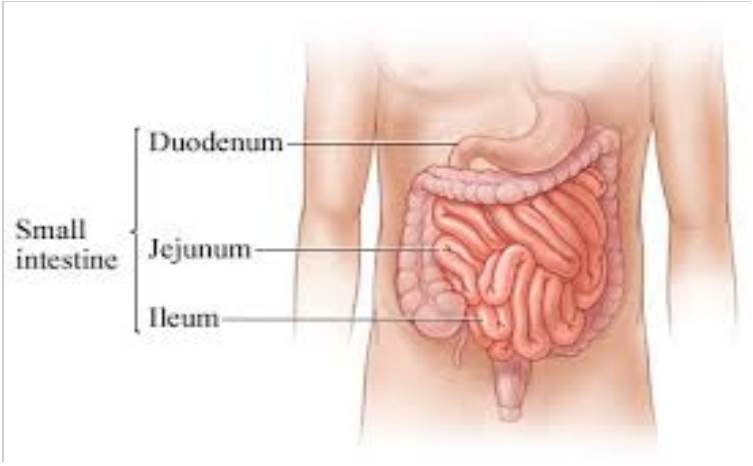

Figure 1: anatomy of the small intestine (**Thibodeau & Patton, 2002).**

Arterial supply and venous drainage:

Arterial supply:

The arterial supply to the jejunum and ileum arises from the superior mesenteric artery. Branches divide as they approach the mesenteric border and extend between the serosal and muscular layers. From these, numerous branches traverse the muscle, supplying it and forming an intricate submucosal plexus from which minute vessels pass to the glands and villi. Although there is a profuse anastomotic network of arteries within the mesentery, anastomoses between the terminal branches close to the intestinal wall are few, and alternate vessels are often distributed to opposite sides of the jejunum/ileum **(*Snell, 2004*)**.