THE UTILITY OF TOTAL PARENTERAL NUTRITION ON A MODERN-DAY COLORECTAL SURGERY SERVICE

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Introduction

Total parenteral nutrition (TPN) is used to supplement patients with poor nutritional status or the inability to eat for extended periods of time. Often, TPN is used in a hospital setting as a bridge to surgery to supplement or to augment a patient's nutritional status in anticipation of future treatment. Many older studies have compared patient outcomes with and without TPN [4, 6] but studies that characterize the clinical factors that lead to the use of TPN are lacking. There are also data comparing outcomes in patients receiving TPN, but these studies usually focus specifically on patients with Inflammatory Bowel Disease (IBD) [1, 2, 3, 5]. We aim to analyze the use of TPN on our colorectal surgery service and examine the complications associated with TPN use.

Methods

A retrospective review of patients admitted to the colorectal surgery service at a large quaternary care center between July 2017 and July 2020.

Results

We identified a total of 72 patients during the study period. Almost half were female (n=35; 49%) and the mean age was 55.3 years. Most of the patients were White (n=45; 62.5%), with 14% Black, 6% Asian-Indian, and 15% other. TPN was most used in patients who were NPO for greater than 5-7 days (n=31; 43%), required nutritional optimization prior to surgery (n=18; 25%), and who were determined to be malnourished by the institution's nutritional service (n=16; 22%). The most common admission diagnoses were inflammatory bowel disease (n=11; 15%), Small bowel obstruction (n=11; 15%), colon cancer (n=9; 12.5%), and enteric fistula (n=9; 12.5%). The mean albumin on admission was 3.2 g/dL with an average prealbumin of 12.6 mg/dL. Of the 72 patients, 4 experienced complications related to TPN (5.6%) including upper extremity DVT (n=2; 2.8%), Bacteremia (n=1; 1.4%), and Fungemia (n=1; 1.4%). The mean duration of TPN administration for patients who experienced complications was 16.9 +/- 15.0 days while the mean duration of TPN administration for those who did not experience complications was 8.6 +/- 5.5 days (p = 0.0015).

Table 1. Reasons for TPN Administration

NPO Status of Patient greater than 5-7 days	31 (43%)
Nutritional Optimization Prior to Surgery	18 (25%)
Patient Determined to be Malnourished	16 (22%)
Patient Unable to Tolerate PO	6 (8%)
Aid Wound Healing After Surgery	1 (1%)

Table 2. Admission Diagnoses

Inflammatory Bowel Disease	11 (15%)
Small Bowel Obstruction	11 (15%)
Colon Cancer	9 (12.5%)
Enteric Fistula	9 (12.5%)
Anastomotic Leak	4 (6%)
Rectal Cancer	3 (4%)
Bowel/Colon Perforation	3 (4%)
Pelvic Abscess	2 (3%)
Intraabdominal Abscess	2 (3%)
Perineal Abscess	1 (1%)
J-Pouch Stricture	1 (1%)
Ischemic Bowel	1 (1%)
Incision Necrosis and Dehiscence	1 (1%)
Colonic Stent Migration	1 (1%)
Small Bowel Ileus	1 (1%)
Dehydration	1 (1%)
Colon Polyps due to FAP	1 (1%)

Table 3. Complications Related to TPN

Upper Extremity DVT	2 (2.8%)
Bacteremia	1 (1.4%)
Fungemia	1 (1.4%)

Conclusions

Although TPN requires central access which increases the risk of morbidity, TPN is helpful to supplement patients who are NPO for prolonged periods of time, need nutritional optimization prior to surgery, are malnourished, or are unable to tolerate PO. In selected patients, TPN use is associated with an acceptable complication rate

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