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A Comparative Study between Tube Feeding versus Parenteral Nutrition in GIT Cancer Patients in ICU

Thesis

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Ahmad Antr Abdellatif

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List of Abbreviations

Abb.	Full term
ASPEN	American Society for Parenteral and Enteral Nutrition
BBS	Buried bumper syndrome
BMI	Body mass index
BMR	Basal metabolic rate
DPEJ	Direct percutaneous endoscopic jejunostomy
EN	Enteral nutrition
ETF	Enteral tube feeding
GIT	Gastrointestinal tract
HAN	Home artificial nutrition
HPN	Home parentral nutrition
IF	Intestinal failure
JET	Jejunal tubes
JET-PEG	Jejunal tubes through the PEG
LES	Lower esophageal sphincter
NETs	Nasoenteral tubes
NGT	Naso gastric tube
PEE	Predicted energy expenditure
PEG	Percutaneous endoscopic gastrostomy
PICC	Peripherally inserted central catheters
PICs	Peripherally inserted catheters
PN	Parentral nutrition
PNP	Pneumoperitoneum
RF	Refeeding Syndrome
RFS	Refeeding syndrome
TPN	Total parental nutrition

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Abstract

Objectives: Our study is designed to determine whether providing nutrition via parenteral route or enteral route is better in patients with GIT cancer after surgery in ICU.

Background: Patients with gastrointestinal malignancy have a higher risk of postoperative complications and alterations resulting from their pre and post-admission nutritional status**.** Malnutrition and subsequent weight loss have long been among the leading causes of morbidity and mortality, as well as increased costs with other organs dysfunction associated to cancer patients undergoing surgery.

Methods: A prospective randomized clinical trial conducted in critical care units in Ain Shams University Hospitals from August 2017 to February 2019.Eighty patients with GIT cancer were included. Half of them received enteral nutrition and the other half received parenteral nutrition. All patients were compared regarding demographic data, hemodynamic parameters, complications (Infection, GIT symptoms, and central venous line insertion), signs of malnutrition (weight loss and hypoalbuminaemia), time to pass flatus, ICU stay and mortality. An informed written consent was obtained from patients and/or relatives.

Results: Postoperative complications occurred in 20 (50%) patients fed enterally versus 23 (57.5%) patients fed parenterally with p0.501.Infectious complications happened in 5 (12.5%) patients fed enterally versus 9 (22.5%) patients fed parenterally with p 0.239.Surgical complications occurred in 3(7.5%) patients fed enterally versus 4(10%) patients fed parenterally with p0.905.GIT complications occurred in 9 (22.5%) patients fed enterally versus 6 (15%) patients fed parenterally with p0.872.Respiratory complications occurred in 4 (10%) patients fed enterally versus 2(5%) patients fed parenterally with p 0.708. Time to flatus (days) was 2.90 ±1.0 in enteral group versus 3.78 ±0.8 in parentral group with p0.003. ICU stay (days) was 5.50 ±1.8 in enteral group versus 9.83 ±3.40 in parentral group with p0.003. Mortality n (%) was 1 (2.5%) in enteral group versus 2 (5.0%) in parentral group with p1.000. Albumin after 7 days and albumin after 14 days were increased statistically significantly in patients of enteral nutrition than parenteral nutrition group (p=0.021) and (p0.003) respectively. There was a statistically significance improvement of albumin level within the same group (P=0.003). There was a statistically significant improvement of weight in patients who had received enteral nutrition (p=0.003) while There was a statistically significant decrease in weight in patients who had received parenteral nutrition (p=0.003).

Keywords: Tube Feeding, Parenteral Nutrition, Gastrointestinal tract.

Introduction

Currently, cancer is a major public health problem worldwide. In addition, malnutrition and subsequent weight loss have long been among the leading causes of morbidity and mortality, as well as increased costs with other organs dysfunction associated to cancer patients undergoing surgery ***(Van Cutsem et al., 2005).***

Patients with gastrointestinal malignancy have a higher risk of postoperative complications and alterations resulting from their pre and post-admission nutritional status, particularly related to surgical stress, immune suppression induced by cancer or by blood transfusion. Among these factors, malnutrition is the most important due to its high prevalence and negative impact on clinical outcomes such as longer hospital stay and mortality ***(Sungurtekin et al., 2004)***.

Approximately half of the patients with malignancies has malnutrition, and in the case of gastrointestinal tract (GIT) tumors, the mortality rate varies from 30% to 50%, reaching 80% in cases of advanced pancreatic cancer ***(Sungurtekin et al., 2004).***

Nutrition support can be given to patients through enteral nutrition (EN) or parenteral nutrition (PN) ***(Altintas et al., 2011).***

Parenteral nutrition (PN) is the feeding of a person intravenously, bypassing the usual process of eating and digestion. The person receives nutritional formulae that contain nutrients such as glucose, salts, amino acids, lipids and added vitamins and dietary minerals ***(Klek et al., 2011).***

Total parental nutrition (TPN) is used to provide nutritional support when patients for a variety of reasons were incapable of absorbing nutrients via the gastrointestinal tract ***(Klek et al., 2011).***

Complications from PN can be divided into four categories: (I) metabolic; (II) infectious; (III) mechanical; and (IV) psychological ***(Braunschweig et al., 2001).***

EN is a method of nutritional support when the GI tract is functional and the cancer patient is unable to have an adequate oral intake of nutrients to meet his/her nutritional requirements .The guidelines recommend that EN may be done using nasogastric tube (NGT) or gastrostomy or jejunostomy ***(Braunschweig et al., 2001).***

The gastrostomy tube is associated with its own set of complications. Leakage of gastric contents around the

tube into the abdominal cavity results in peritonitis ***(Melis et al., 2006).***

Thus, our study is designed to determine whether providing nutrition via parenteral route is better or enteral route in patients with GIT cancer after surgery in ICU.

Aim of the Work

Our study is designed to determine whether providing nutrition via parenteral route or enteral route is better in patients with GIT cancer after surgery in ICU.

Chapter (1):

GIT Cancer and Malnutrition

Currently, cancer is a worldwide major public health problem ***(Bray et al., 2013).*** Approximately half of the patients with malignancies have malnutrition, and in the case of gastrointestinal tract (GIT) tumors, the mortality rate varies from 30% to 50%, reaching 80% in cases of advanced pancreatic cancer ***(Petroniau et al., 2004).***

In addition to that, malnutrition and subsequent weight loss have long been among the leading causes of morbidity and mortality, as well as increased costs with other organs dysfunction associated to cancer patients undergoing surgery ***(Van Cutsem et al., 2005).***

Malnutrition is defined as the energy, protein and other specific nutrients deficient state, which significantly modifies organic functions ***(Ryu et al., 2010).***

Major stress, such as surgery, can subject a patient to a whole host of metabolic and physiologic changes. The body responds to such stress by increasing its basal metabolic rate (BMR), using up its nitrogen stores and creating a negative nitrogen balance. An increase in gluconeogenesis as well as the synthesis of acute phase

proteins is observed also. The body scavenges for the required nutrients during such times of stress, which if continue unchecked for prolonged periods of time could lead to adverse consequences. Perioperative nutritional supplementation, therefore, should blunt the catabolic effects of such a high energy state. ***(Bozzetti, 2011).***

Common features of the terminal phase of cancer are weight loss, decreased appetite and difficulty in the consumption of food. Some patients also become physically unable to take in sufficient nutrition, or eating may become painful, time-consuming or otherwise a burden. Difficulty in eating may be self-limited, such as temporary nausea or illness, or may be expected to last the rest of the lifespan, such as untreatable gastrointestinal obstruction. Treatment of underlying symptoms or conditions, changes in diet and nutritional supplements may be helpful in certain situations, and appetite stimulants may increase intake, body weight and quality of life, but they do not affect the prognosis in the terminally ill ***(Jatoi et al., 2001).***

Patients with gastrointestinal malignancy undergoing major elective procedures have a higher risk of postoperative complications and alterations resulting from their pre and post-admission nutritional status, particularly