Total Parenteral Nutrition In Postoperative Patients In Intensive Care Units

Essay

Submitted for partial fulfillment of Master Degree in ***intensive care***

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Mahmoud Ebrahim Ahmed Azzam

Dedication

Words stand short when they come to express my gratefulness to my father to whom this work is dedicated. Asking Allah to bless his soul.

List of Abbreviations (cont.)

Abbreviation	Meaning
–	Negative
+	positive
↑	increase
↓	decrease
µg	Microgram
A_{10}	10% amino acids
AA	Arachidonic Acid
ACTH	Adrenocorticotropic hormone
ADH	Antidiuretic Hormone
ADP	Adenosine Di Phosphate
ALA	Alpha-Linoleic Acid
Ala–Gln	Alanine, Glutamine
ALI	Acute Lung Injury
AP	Acute Pancreatitis
APACHE	Acute Physiology and Chronic Health Evaluation
APR	Acute-phase response
ARDS	Adult Respiratory Distress Syndrome
ASPEN	American Society for Parenteral and Enteral Nutrition
ATP	Adenosine Tri Phosphate
AVP	Arginine Vasopressin
BCM	Body Cell Mass
BG	Blood Glucose
BIA	Bio-impedance analysis
BIS	Bio-impedance spectroscopy
BMI	Body mass index
BMI	Body Mass Index

BUN	**Blood urea nitrogen**
CCF	**Chronic Cardiac Failure**
CCPG	**Canadian Clinical Practice Guidelines**
CIPO	**Chronic intestinal pseudo-obstruction**
cm	**Centimeter**
CO_2	**Carbon dioxide**
CoA	**Co Enzyme**
COPD	**Chronic Obstructive Pulmonary Disease**
Cr	**Chromium**
CRBI	**Catheter-related bloodstream infections**
CRP	**C-reactive protein**
CT	**Computered Tomography**
Cu	**Copper**
CVC	**Central Venous Catheter**
CVVHD	**Continuous Veno-Venous Hemodialysis**
d.	**Day**
D_{50}	**Dextrose**
DHA	**Docosahexanoic Acid**
DTO	**deodorized tincture of opium**
EPA	**Eicosapentaenoic Acid**
ESPEN	**European Society for Parenteral and Enteral Nutrition**
Fe	**Iron**
FV	**Femoral Vein**
g.	**Gram**
G-CSF	**Granulocyte Colony-Stimulating Factor**
GH	**Growth Hormone**
GIT	**Gastro-Intestinal Tract**
GLA	**Gamma linolenic acid**
GLP-2	**Glucagon-like peptide-2**
GLUT	**Glucose transporter**
GPx	**Glutathione peroxidase**

h.	**Hour**
H^+	**Hydrogen ion**
H_2O	**water**
HPN	**home parenteral nutrition**
HSCT	**hematopoietic stem cell transplantation**
HTG	**Hypertriglyceridemia**
I	**iodine**
IBT	**intestinal bacterial translocation**
IBW	**Ideal Body Weight**
ICU	**Intensive Care Unit**
IF	**Intestinal failure**
IJV	**Internal Jugular Vein**
IL	**Interleukin**
IU	**International Unit**
IV	**Intravenous**
K^+	**Potassium**
Kcal	**Kilo calori**
L/min/m	**Liter per Minute per Meter**
LCT	**Long Chain Triglyceride**
LMF	**Tumor Lipid Mobilizing Factor**
MAMC.	**Mid-Arm Muscle Circumference**
MCT	**Medium Chain Triglyceride**
Mg^{++}	**Magnesium**
mmol	**mille mole**
MMSE	**Mini-Mental State Examination**
Mn	**Manganese**
Mo	**Molybdenum**
MOF	**Multiple Organ Failure**
MRI	**Magnetic Resonance Imaging**
Na^+	**Sodium**
NG	**Naso-gastric**
NJ	**Naso jejenal**

PEG	**Percutaneous endoscopic gastrostomy**
PEJ	**Percutaneous endoscopic Jejonostomy**
PGE	**prostaglandin E**
PI	**Prognostic Index**
PICC	**Peripheral Inserted Central Catheter**
PIF	**proteolysis inducing factor**
PN	**Parenteral Nutrition**
PNALD	**Parenteral nutrition associated liver disease**
PNI	**Prognostic Nutritional Indices**
PO^{--}	**Phosphorus**
PRL	**Prolactin**
R	**Resistance**
RDA	**recommended dietary allowance**
REE	**resting energy expenditure**
RF	**Renal Failure**
RNI	**Reference Nutrient Intake**
ROI	**reactive oxygen intermediates**
ROS	**reactive oxygen species**
S-alb.	**serum albumin**
SBS	**short bowel syndrome**
SCV	**Subclavian Vein**
Se	**Selenium**
SePP-1	**Selenoprotein-P**
SIRS	**Systemic Inflammatory Response Syndrome**
SQ	**Subcutaneous**
T3	**Thyroxin**
TG	**Triglyceride**
TIBC	**Total Iron Binding Capacity**
TNF	**Tumor Necrotic Factor**
TPN	**Total Parenteral Nutrion**
TSF	**Triceps skin fold**
TSH	**Thyroid Stimulating Hormone**

U	**Unit**
UUN	**urinary urea nitrogen**
VCO2	**CO2 production**
VDR	**vitamin D Receptor**
VO2	**O2 consumption**
wk.	**Weeks**
Xc	**Reactance**
Zn	**Zinc**
α	**Alpha**
β receptors	**Beta adrenergic receptors**
γ	**Gamma**
ω	**Omega**

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Introduction

INTRODUCTION

Malnutrition in intensive care unit (ICU) patients is common and can be present on admission or develop as a result of metabolic response to injury. This response to injury can lead to changes in substrate metabolism, causing alterations in body composition and nutrient deficiencies that become clinically evident. ***(Irwin and Rippe's, 2003).***

Total Parenteral Nutrition (TPN) is an extension of nutritional care for patients who either temporarily or permanently have a condition in which the bowel is not able to absorb food properly or they are not able to swallow food. In these cases, nutrition must be achieved by giving intravenous fluids containing fat, carbohydrates, vitamins and other substances (TPN). **(*Leonard, et al, 2004).***

The administration of TPN is considered after careful consideration that the patient requires nutrition support, is predicted to benefit from it and he will not tolerate enteral feedings. ***(Leonard, et al, 2004).***

Total parenteral nutrition is complementary and not competitive to enteral nutrition. The majority of patients can be managed by enteral nutrition, a few patients need parenteral nutrition for survival. Very few patients may need both enteral and parenteral nutrition for short periods. **(Mohandas, et al, 2003).**

Malnutrition, irrespective of the presence of injury and stress, is an independent risk factor for morbidity and mortality, therefore early identification and appropriate action is critical, and appropriate nutrition support results in decreased duration in ICU and hospital, decreased duration of ventilation, decreased complications and decreased costs. (**Holmes 2007).**

Surgical nutrition, TPN of the surgical patient summarize the basic nutritional knowledge that should be an integral part of the educational background of all junior and senior doctors involved in the management of complex diseases. ***(Gibney, 2005).***

Chapter 1

The Metabolic Responses to Surgical and Traumatic Injury