IMPACT OF MAJOR TRAUMA ON THE GASTROINTESTINAL TRACT OF THE ICU PATIENT

Essay Submitted for the Partial Fulfillment of the Master Degree in Anaesthesia and Intensive Care

By

Amal Shafik El-Sayed Ahmed
M.B., B.Ch.

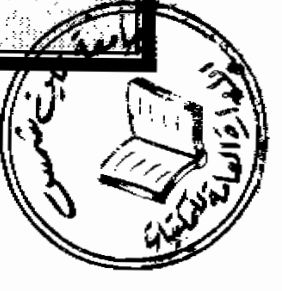
Supervised by

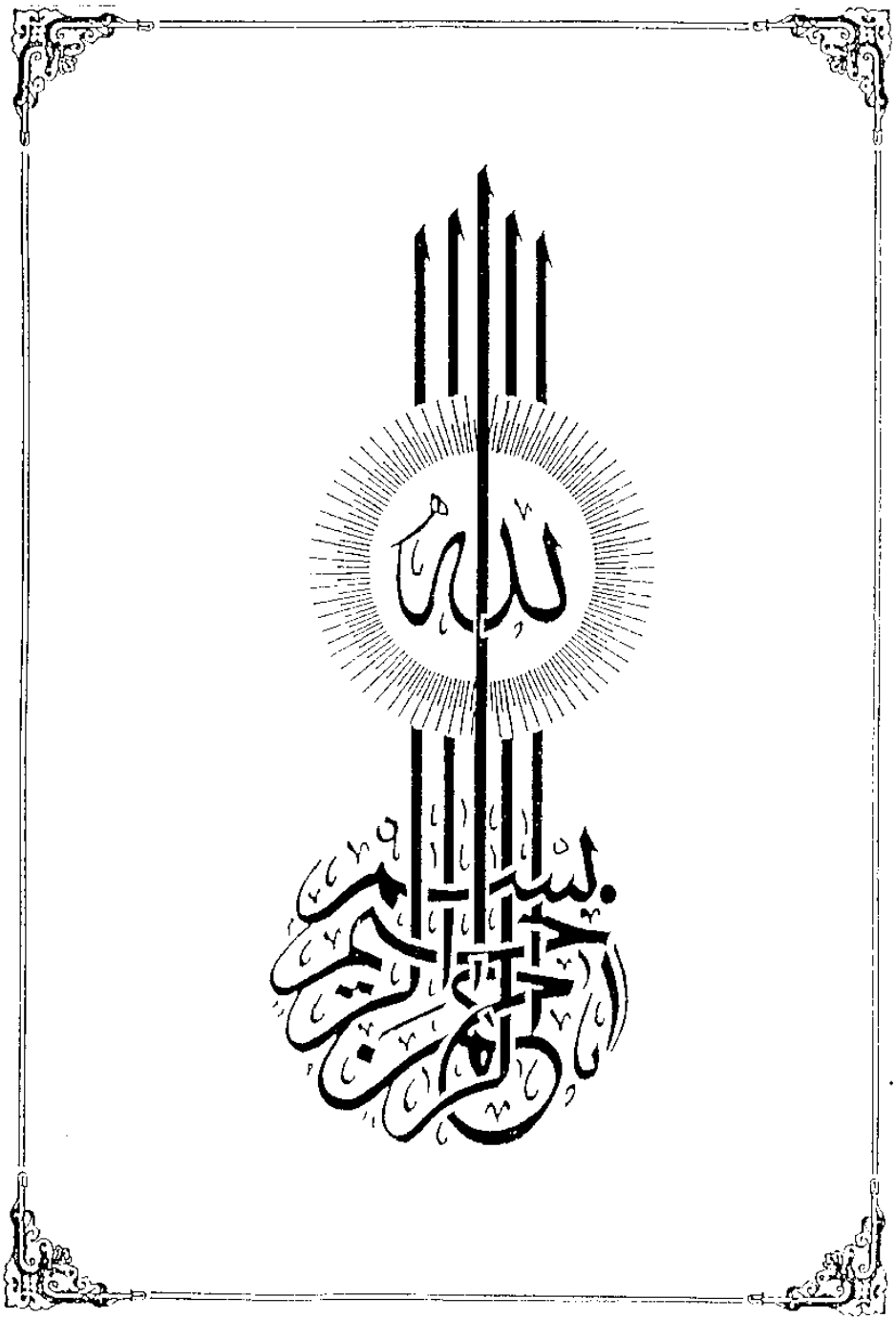
Prof. Dr. Mahmoud Mohamed Kamel
Professor of Anaesthesia and Intensive Care
Ain Shams University

Dr. Galal Abo El-Soaod Saleh
Assistant Professor of Anaesthesia and Intensive Care
Ain Shams University

Dr. Ahmed Ragab Ali Shebl
Lecturer of Anaesthesia and Intensive Care
Ain Shams University

Faculty of Medicine
Ain Shams University
1997





بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا،

إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة–الآية: ٣٢

Acknowledgment

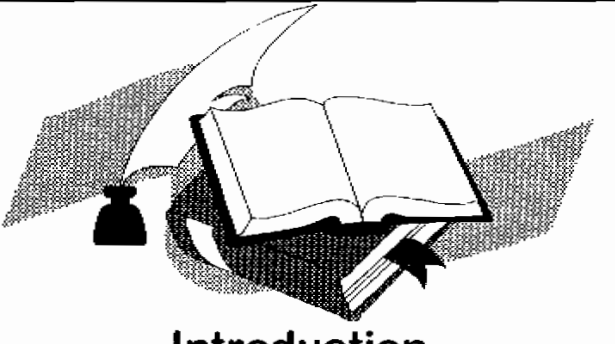
I would like to express my gratitude to Prof. Dr. Mahmoud Mohamed Kamel, Professor of Anaesthesia and Intensive Care, Ain Shams University, for his kind help, meticulous supervision and valuable remarks which have been of paramount importance to complete this work.

I would also like to thank Dr. Galal Abo-El-Soaod Saleh, Assistant Professor of Anaesthesia and Intensive Care, Ain Shams University, for his continuous support, encouragement and worthy advices throughout the work.

Last but not least, I would like to express my deepest appreciations to Dr. Ahmed Ragab Ali Shebl, Lecturer of Anaesthesia and Intensive Care, Ain Shams University, for his patience, fruitful comments and kind help.

Amal Shafik

List of Contents



Introduction

INTRODUCTION

Trauma is an important and leading cause of death. Approximately 10%-15% of major trauma patients have serious multisystem injuries in United States statistical workup *(Vernick, 1996).*

Trauma severity scoring:

It is used for quality assurance and center accreditation. It is necessary to provide an objective means of identifying patients whose injuries were apparently of sufficient magnitude to justify death or a poor outcome. It is also helpful in identifying patients, who survived injuries (survivors).

The scoring system based on an anatomic and physiologic data.

1. Revised Trauma Score (RTS):

It is the most commonly used physiologic estimate of injury. RTS is based on (Glasgow Coma Scale), a systolic blood pressure and respiratory rate (table 1). RTS ranges from 1 to 8. A score of +4 is associated with probability of survival of 60% *(Vernick, 1996).*

Table (1): Revised Trauma Score *(Vernick, 1996)*

GCS	SBP	RR	Coded value
8-15	>89	10-29	4
8-12	76-89	>29	3
6-8	50-75	6-9	2
4-5	1-49	1-5	1
3	0	0	0

2. The Glasgow Coma Scale (GCS) (table 2):

It is uniquely important and is a key component of RST.

Table (2) Glascow coma scale (GCS) *(Vernick, 1996)*

1. Eye opening	
• Spontaneous	4
• To voice	3
• To pain	2
• None	1
2. Verbal response	
• Oriented	5
• Confused	4
• Inappropriate words	3
• Incomprehensive sounds	2
• None	1
3. Motor response	
• Obeys commands	6
• Localizes pain	5
• Withdraw (pain)	4
• Flexion (pain)	3
• Extension (pain)	2
• None	1
Total GCS points 1+2+3	-

Burns and major trauma victims as well as patients with septicemia experience metabolic stress and fasting for days may lead to multiple organ failure syndrome (MOFS) which is a mostly fatal syndrome.

The gastrointestinal tract is a dynamic organ with the most rapid cell turnover rate of any organ in the body. Fasting alone can have profound effects on mucosal structure and function. Fasting in combination with the metabolic stress of critical illness can lead to alterations in gastrointestinal integrity which may have clinical consequences.

Based on experimental studies documenting that under certain circumstances the intestinal barrier function can be impaired or lost, thereby allowing luminal bacterial/endotoxin to reach portal and systemic circulation and development of systemic infections and multiple organ failure syndrome.

Multiple organ failure (defined as failure of two or more vital organs or systems in sequences, or simultaneously, irrespective of the primary disease) and sepsis are distressingly familiar to surgeons who perform major elective cases, as well as to those involved in transplantation and trauma. Uncompensated or compensated shock leading to progressive oxygen debt, ischemia-reperfusion injury and cellular dysfunction is the underlying unifying pathophysiologic mechanism ***(Fiddian, 1993).***

Throughout the world, multiple organ system failure has become the most common cause of death in the intensive care unit: the reported mortality rates vary from 30% to 100% with a mean of 50%, depending on the number of organ systems involved ***(Carrico, 1985).***

Bacterial endotoxin in the gut may translocate across the semipermeable mucosa. Besides endotoxins, the products of the damaged mucosa also may contribute to the development of multiple organ system failure and death of the ICU patient. The translocation of enteric bacteria seems to be an important cause of nosocomial infection in the clinically ill ***(Fiddian, 1989).***

Recent concern about gut barrier functions and advances of immunoenhancing diets hopefully will increase the rate of I.C.U. patient survival and decrease rate of infections occurrence in surgical I.C.U. patients.