Approach to Poisoned Patients in Intensive Care Unit

Submitted for partial fulfillment of master degree ***in Intensive care***

Essay by

Mohamed Abdelaty Abdelrahman Abomosa
M.B.B Ch.,
Al-Azhar University

Under Supervision of

Prof. Dr. Alaa Eldeen Abdel Wahab Koraa
Professor of Anesthesiology and Intensive Care
Faculty of Medicine
Ain Shams University

Prof. Dr. Amr Mohamed Abdelfatah
Assistant Professor of Anesthesiology and Intensive Care
Faculty of Medicine
Ain Shams University

Dr. Goerge Michael Khalil
Lecturer of Anesthesiology and Intensive Care
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
٢٠١٣


بسم الله الرحمن الرحيم
قالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ
صدق الله العظيم
سورة البقرة آية (٣٢)

All gratitude is solely to ***Allah****. Exclusive of all those who might be worshipped besides Him, for the inestimable blessing which He has bestowed upon His slaves.*

Words won't be enough to describe my great appreciation and deep thanks to ***Prof. Dr. Alaa Eldeen AbdelWahab Koraa*** *professor of anesthesiology and Intensive Care Unit, Faculty of medicine, Ain Shams University for his valuable supervision, useful suggestion and support.*

I would like to extend my thanks to ***Prof. Dr. Amr Mohamed Abdelfatah*** *Assistant Professor of Anesthesiology, Faculty of Medicine, Ain shams University for his Keep supervision, perfect guidelines and continuous help.*

I am deeply grateful for ***Dr. Goerge Michael Khalil*** *lecturer of Anesthesiology and Intensive Care, Faculty of Medicine, Ain Shams University for his meticulous supervision and valuable time.*

Finally yet importantly, I would like to express my gratitude to my mother and father for believing in me and standing by me in whatever I want to do and my thanks to my family for their love and support.

Mohamed Abdelaty Abdelrahman Abomosa

Contents

Contents (Cont.)

List of Abbreviations

ABG	:	Arterial Blood Gases.
AC	:	Activated Charcoal.
ALI	:	Acute Lung Injury.
ALT	:	Alanin Transferase.
AST	:	Aspartate Transferase.
AV	:	Atrio-Ventricular.
BB	:	Beta-Blocker.
BC	:	Before Christ.
BDZ	:	Benzodiazepines.
BP	:	Blood Pressure.
BUN	:	Blood Urea Nitrogen.
CAMP	:	Cyclic Adenosine Mono-Phosphate.
CBC	:	Complete Blood Count.
CCB	:	Calcium Channel Blockers.
CHF	:	Congesitive Heart Failure.
CK	:	Creatinine Kinase.
CNS	:	Central Nervous System.
CO HB	:	Carboxy Haemoglobin.
CO	:	Carbon Monoxide.
CO_2	:	Carbon Dioxide.
Cr	:	Creatinin.
CT	:	Computer Tomography.
CTZ	:	Chemoreceptor Trigger Zone.
CVA	:	Cerebro Vascular Accident.
D	:	Dextrose.
DD	:	Differential Diagnosis.
DKA	:	Diabetic Keto Acidosis.
ECG	:	Electro Cardio Graphy.
ED	:	Emergency Department.
EEG	:	Electro Encephalo Graphy.
EMS	:	Emergency Medical System.

List of Abbreviations (Cont.)

GABA	:	Gamma- Amino Butyric Acid.
GCS	:	Glasgow Coma Scale.
GIT	:	Gastro Intestinal Tract.
GL	:	Gastric Lavage.
HR	:	Heart Rate.
IABP	:	Intra Aortic Ballon Pump.
ICU	:	Intensive Care Unit.
IM	:	Intra Muscular.
IV	:	Intra Venous.
MAO	:	Mono Amine Oxidase.
MDAC	:	Multiple Dose Activated Charcoal.
MI	:	Myocardial Infarction.
MOF	:	Multi Organ Failure.
NAC	:	N-Acetyl Cystine.
NG	:	NasoGastric.
OP	:	Organ Phosphate.
PNS	:	Peripheral Nervous System.
RR	:	Respiratory Rate.
SC	:	Subcutaneous.
SNS	:	Somatic Nervous System.
SVT	:	Supra Ventricular Tachycardia.
TCA	:	Tri Cyclic Antidepressants.
VT	:	Ventricular tachycardia.
WBI	:	Whole Bowel Irrigation.
WHO	:	World Health Organization.

List of tables

List of Figures

Introduction

Poisoning defined as development of dose-related adverse effects following exposure to chemicals, drugs, or other xenobiotics. In excessive amounts, substances that are usually innocuous such as oxygen and water, can cause poisoning. Conversely, in small doses, substances commonly regarded as poisons such as arsenic and cyanide, can be consumed without ill effect (***Linden and Burn ٢٠٠٥)***.

The history of poisonings is as old as the human history itself. Since the earliest times, human had been updating and refining its knowledge of toxins ***(Writer, ٢٠٠٠)***

Ancient man likely observed toxic effects in nature partly by accident. He noted the harmful or fatal effect following the causal ingestion of some plant or animal product by one of his fellow tribesman and possibly used their extracts for hunting or in warfare.

By ١٥٠٠ before Christ (B.C), written recordings indicated that hemlock, opium, arrow poisons, and certain metals were used to poison enemies or for state executions ***(Fenton, ٢٠٠٢)***

The ebers papyrus, an ancient Egyptian text written about ١٥٠٠ before Christ (B.C) that is considered to be among the earliest medical texts, describes many ancient poisons, including aconite, antimony, arsenic, glycosides, hemlock, lead, mandrake, opium and worm wood ***(Mann, l ٩٩٤).***

With time poisons became widely used and with great sophistication. Notable poisoning victims include Socrates, Cleopatra, and Claudius. By the time of the renaissance and the age of Enlightenment, certain concepts fundamental to toxicology began to take shape (***Poklis, ١٩٨٤)***.

Acute poisoning is a common cause of intensive care unit (ICU) admission and a leading cause of injury mortality (***Donovan et al., ٢٠٠٥)***.

Organophosphate compounds (OPC) the most worldwide used insecticides may cause serious poisoning either accidentally or by deliberate ingestion. There are no rules for regulations governing the purchase of these products and they are therefore readily available "over the counter" (***Johri et al., ٢٠٠٥).***

The main cause of death due to acute organophosphate poisoning is believed to be acute respiratory failure caused by peripheral and central cholinergic actions (***Asari et al., ٢٠٠٤).***

An intensive care unit is usually recommended to be the most appropriate location for management of poisoned patient requiring hospital admission because of the availability of rapid diagnostic procedures, intense observation monitoring and complex treatment modalities **(*Kuling and Presson* ١٩٨٦).**

Although poisoning can mimic other illnesses, the correct diagnosis can usually be established by the history, physical examination, routine and toxicological, laboratory evaluation and characteristic clinical course. The history should include the time, route, duration and circumstances, of exposure as well as the name, amount of each drug, chemical, ingredient involved, time of onset, nature, severity of symptoms, time and type of first aid measures provided, medical and psychiatric history (***Olson,* ٢٠٠٤).**

The emergency management of poisoning information centre can be called for advice **(*Bond,* ١٩٩٥).**

General principles treatment goals include support of vital signs, prevention of further poisons absorption enhancement of poison elimination, administration of specific antidotes and prevention of re-exposure. Specific treatment depends on the identity of the poison, route and amount of exposure, time of presentation relative to the time of exposure

and the severity of poisoning (***Olson, ٢٠٠٤).***

The prognosis and clinical course of recovery of a patient poisoned by a specific agent depends largely on the quality of care delivered within the first few hours in the emergency setting (***Erickson et al., ٢٠٠١).***

Most critically ill poisoned patients have acutely reversible conditions that will clearly benefit from intensive care intervention. Toxicological emergencies have confusing presentations, do not have a well recognized clinical course or predictable complications, nevertheless may be rapidly fatal.

The therapies, antidotes and complications may be unfamiliar to the intensivists (***Klein-Schwartz et al., ١٩٩١)***.

Aim of the Work

Due to increase incidence of poisoned patients and due to increase intensive care unit (ICU) admission of these patients it is important to know general approaches to poisoned patients in intensive care unit (ICU).

Early Measures that are Done to Poisoned Patients

In poisoned patients supportive care is the mainstay of Therapy and a part of basic stabilization measures. The early Measures involve the treatment of any potentially life-Threatening conditions, such as airway compromise, breathing Difficulties haemodynamic instability and serious Dysrhythmias. Convulsions should be treated, fluid, acid-base and electrolyte abnormalities should be corrected and hypothermia managed by using space blanket. Also pre-hospital care is an important measure to poisoned patients because it's an important part from basic stabilization measures ***(Green et al., ٢٠٠٥)***.

١- Pre-hospital care of poisoned patients:

There are few well- controlled trials that examine the impact of pre-hospital care on the poisoned patients. It is taken for granted that medics should perform basic stabilization measures such as providing oxygen when needed, employing cardiac monitoring for those with unstable vital signs and cardiotoxic overdoses and establishing venous access in those who may require fluids or life-saving medications. The exact indications for these measures, however, remain unstudied ***(Greene et al., ٢٠٠٥)***.