Retrospective Study of Acute Corrosive Intoxicated Preschool Children Presented to Poison Control Center Ain Shams University Hospital in 2009

Thesis
Submitted for Partial Fulfillment of Master Degree in Clinical toxicology

By

Salma Ibrahim Abd El Kader
(M.B.B.Ch.) - Ain Shams University
Demonstrator in Forensic Medicine and Clinical Toxicology Department
Faculty of Medicine - Ain Shams University

Supervised by

Prof. Dr. Shawkia Mehani Abdelgawad
Professor of Forensic Medicine and Clinical Toxicology
Faculty of Medicine - Ain Shams University

Prof. Dr. Khadega Abdel Fattah Mostafa
Professor of Forensic Medicine and Clinical Toxicology
Faculty of Medicine - Ain Shams University

Prof. Dr. Manal Ali Abd El Kareem
Professor of Forensic Medicine and Clinical Toxicology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2011

دراسة استرجاعية لحالات تسمم الاطفال بالمواد الكاوية فى سن ما قبل المدرسة والتى تم استقبالها بمركز السموم بجامعة عين شمس عام ٢٠٠٩

رسالة علمية
توطئة للحصول على درجة الماجيستير فى السموم الإكلينيكية

مقدمة من الطبيبة
سلمى إبراهيم عبد القادر
بكالوريوس الطب والجراحة
معيدة بقسم الطب الشرعى والسموم الاكلينيكية
كلية الطب - جامعة عين شمس

تحت إشراف

الأستاذ الدكتور/ شوقية مهنى عبد الجواد
أستاذ الطب الشرعى والسموم الاكلينيكية
كلية الطب - جامعة عين شمس

الأستاذ الدكتور/ خديجة عبد الفتاح مصطفى
أستاذ الطب الشرعى والسموم الاكلينيكية
كلية الطب - جامعة عين شمس

الأستاذ الدكتور/ منال على عبد الكريم
أستاذ الطب الشرعى والسموم الاكلينيكية
كلية الطب - جامعة عين شمس

كلية الطب
جامعة عين شمس
٢٠١١

Acknowledgment

First of all thanks to **ALLAH**

I would like to present my sincere thanks and appreciation to Prof. Dr. Shawkia Mehani Abdelgawad professor of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Ain Shams University, who guided this work and helped whenever I was in need. Her great patience, close supervision, and constant encouragement throughout this work are beyond my words of thanks.

I would like to express my deepest gratitude and appreciation to Prof. Dr. Khadega Abdel Fattah Mostafa Professor of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Ain Shams University, for her kind help, great support and valuable instructions.

I am deeply grateful for Prof. Dr. Manal Ali Abd El Kareem professor of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Ain Shams University, for her unlimited help, meticulous supervision and constant support. She helped me to prepare the basic steps of this work.

I have greatly profited from the generously lavished hints from my Professors and Colleagues in the Forensic Medicine and Clinical Toxicology Department, Faculty of Medicine, Ain Shams University. My cordial thanks for their support and comradeship are not enough.

Finally, I would like to express my deepest gratitude for the constant support, patience, and continuous encouragement from My husband and My family during this work. **Salma Ibrahim**

LIST OF ABBREVIATIONS

Abbrev.	Meaning
ABG	Arterial blood gas
ALP	Alkaline phosphatase
ALT	Alanine Aminotransferase (SGPT)
ANOVA	Analysis of variance
AST	Aspartate Aminotransferase (SGOT)
ATLS	Acute trauma life support
ATSDR	Agency for Toxic Substances and Disease Registry
° C	Degree Celsius
CBC	Complete Blood Count
CNS	Central Nervous System
EGD	Esophagogastroduodenoscopy
EUS	Endoscopic ultrasonography
F	Variance ratio
GIT	Gastrointestinal tract
H^+	Hydrogen ion
Hb	Hemoglobin
HCT	Hematocrit
HCO_3	Bicarbonate
H_2SO_4	Sulfuric acid
ICU	Intensive care unit
IU/l	International Unit/liter
LDH	Lactate dehydrogenase
M	Mean

LIST OF ABBREVIATIONS (CONT…)

Abbrev.	Meaning
MCV	Mean corpuscular volume
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
mEq/L	Milliequivalent/liter
mg/dl	Milligram/deciliter
mg/l	Milligram/liter
mm	Millimeter
mmHg	Millimeter mercury
NGT	Nasogastric tube
OH^-	Hydroxide ion
$PaCO_2$	Partial pressure of carbon dioxide
PaO_2	Partial pressure of oxgyen
PCCA	Poison Control Center of Ain Shams University Hospitals
PPIs	Proton pump inhibitors
PSS	Poisoning severity score
PT	Prothrombin time
SD	Standard deviation
SO_4^{-2}	Sulfates anion
SPSS	Statistical Package for the Social Science
TAR	Titratable reserve
WBC	White blood cell count
WHO	World Health Organization

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بسم الله الرحمن الرحيم

"قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا
إِنَّكَ أَنت الْعَلِيمُ الْحَكِيمُ"

صدق الله العظيم

سورة البقرةالآية (٣٢)

Introduction

Acute poisoning is an important health issue in children which can result in severe evolution and even death. Many studies show that common household products, rather than pharmaceuticals, are now implicated in the majority of pediatric poisonings (***Verma, 2007; Kohli, et al., 2008)***.

In developing countries, corrosive substances ingestion has been recognized as one of the major health problems in childhood. Acidic or alkaline cleaning materials are used mostly in kitchens in liquid or powder form, and these agents have been identified as common agents among corrosive substances ingested by children. The home is the most common place where such poisonings occur ***(Cordero and savage, 2006; Melek et al., 2008).***

Ingestion of corrosives is a cause of concern because of the extreme morbidity associated with it. Caustic ingestions occur most commonly in children, especially those younger than 5 years old. In this age group ingestions are primarily accidental. This is in distinction to ingestions in adolescents and adults where the majority of which are intentional ***(Lek, 2005; Dogen et al., 2006).***

Accidental ingestion of caustic agents is potentially capable of burning the upper part of the gastrointestinal tract. It is generally a problem of childhood, and young toddlers, where they are investigating their surroundings and are unaware of many dangers, so they are prone to this kind of accidents (***Dogan et al., 2006; Cibisev et al., 2007).***

Aim of the work

The aim of this work is to study and evaluate the cases of corrosive intoxicated preschool children presented to the Poison Control Center of Ain Shams University Hospitals to determine the common agents, risk factors, and the outcome.

Historical Review

At the end of the 19th century and beginning of the 20th century, lye products became commercially available for domestic use primarily as drain cleaners. Commonly available household products such as dishwashing liquids, window cleaning agents, and drain cleaners are highly corrosive agents if accidentally ingested. This increased availability is associated with an increasing number of accidental caustic ingestions in the pediatric population. Noting that no warning labels were being used on these products, Chevalier Jackson began a public campaign against some opposition to institute proper labeling on these containers and the Federal Caustic Act of 1927 was enacted ***(Litovitz et al., 2002).***

In response to the recognition that caustic exposures were more frequent in children, in 1970 the Federal Hazardous Substances Act and Poison Prevention Packaging Act were passed stating that all caustic agents with a concentration more than 10% must be placed in child-resistant containers. By 1973, the household concentration for child-resistant packaging was lowered to 2%. In addition, the subsequent development of poison prevention education has led to dramatic decrease in the incidence of unintentional caustic injuries in children in the United States. The positive impact of both regulatory legislation and education is evident when observing the decrease of exposures in the United States compared to the number of exposures in developing countries that lack these policies ***(Fulton and Rao, 2006).***

Magnitude of the Problem

No available sufficient data about the whole corrosive exposures in Egypt, and more efforts are required to evaluate the problem. The following table represents numbers of corrosive intoxicated cases presented to Poison Control Center of Ain Shames University Hospitals (PCCA) during 2007 and 2008:

Table (A): numbers of corrosive intoxicated cases presented to PCCA during 2007 and 2008.

Agent	2007	2008
Bleach(Chlor)	795	703
Sulfuric acid (H_2So_4)	114	144
Phenol	219	203
Dishwashing soap	134	111
Total	1262	1161

Internationally corrosive ingestion is still a widespread problem in many areas of the world not only observed in developing countries but also in urban areas of developed countries as well. It is a serious problem that may carry great risk of morbidity and mortality ***(Sarioglu-Buke et al., 2006).***

Sources and uses of corrosive substances

Corrosives include concentrated acidic, alkaline, or oxidizing agents. A large number of industrial and commercial products contain potentially toxic concentrations of acids, bases, or other chemicals that can cause burns ***(Cox, 2010).***