

## RETROSPECTIVE STUDY OF ACUTE POISONING IN ELDERLY CASES ADMITTED TO MENOUFIA POISONING CONTROL CENTER (MPCC), MENOUFIA UNIVERSITY HOSPITALS FROM 2012 TO 2014

Azza Wagih Zanaty and Situhom Elsayed Elagamy

Forensic Medicine and Clinical Toxicology Department, Faculty of Medicine, Menoufia University

### ABSTRACT

**Introduction:** Elderly people are exposed to poisons more than younger patients and they metabolize many drugs differently. **Aim of the study:** to evaluate poisoning in elderly patients. **Subjects and Methods:** A retrospective study was done on 255 elderly poisoned cases ( $\geq 60$  years old) admitted to MPCC within the period from January 2012 to December 2014. The cases were evaluated and they were further statistically analyzed. **Results:** Out of 6556 acutely poisoned cases throughout the period of study, 3.9% elderly cases were included. 83.5% of cases were in the age group 60-<65 years. Males outnumbered females (62.4%). More than half of the cases (57.6%) were from urban areas. Housewives were the commonest (32.9%) followed by farmers (28.2%). Suicidal attempts were more in retired and free laborers groups 60% and 100% respectively, accidental exposures were 79.2% in farmers while 6.7% of manual workers and 4.2% of farmers were exposed to homicide. Organophosphate was the commonest poisoning substance among farmers (87.5%), while retired, drivers and unemployed were commonly intoxicated by drugs (40%, 40% and 50% respectively). Cases with metabolic acidosis were intoxicated by corrosives & organophosphate 33.3% for each one. Low cholinesterase level was found in 39 cases of organophosphate poisoning. Methanol level was elevated in three cases of alcohol poisoning and Toxi-lab was positive in three cases of drug poisoning. ECG was done for 25 cases, 24% of them showed bradycardia and 16% showed tachycardia. Thirty six cases underwent X-ray, 11.2% & 8.3% showed increased broncho-vascular marking and alveolar opacities respectively. Mortality rate constituted 9.4% of cases. Logistic regression analysis cleared that PH was the most predictor affecting the outcome followed by hypoxia. **Conclusion and recommendation:** PH, hypoxia and coma were the risk factors in the outcome. Proper evaluation and continuous monitoring of elderly poisoned cases are required to decrease the mortality rates among these patients.

**Key words:** Retrospective, elderly, poisoning, outcome.

### INTRODUCTION

Acute poisoning remains a major public health problem worldwide, in many developed as well as developing

countries (Moghadamnia and Abdollahi, 2002).

It primarily involves younger populations, with less than 3% of the

cases being in people aged 60 years or older in most studies (Cassidy et al., 2008; Karbakhsh and Zandi, 2008). The world's population has experienced a magnificent growth in the number and proportion of the elderly. One in every ten people is now 60 years or above; by 2050, one in five will be 60 years or older. Moreover, the vast majority of aged people will live in developing countries where the health care systems are less well-organized and therefore less able to adapt to the consequences of population aging (World Health Organization, 2004).

The elderly are different from younger adults in many aspects. There are age related physiological changes. There is an increased incidence of comorbidities, and a greater use of many medications for chronic conditions, both of which make the elderly more susceptible to acute poisoning and its related consequences (Rogers and Heard 2007).

Although the elderly form a relatively small proportion of those admitted to hospital for acute self-poisoning, the poisoning which ensues is often more serious, complications are more frequent and a fatal outcome is more common. The presence of multiple physical, psychiatric, and social problems, in conjunction with possible difficulties in the diagnosis of poisoning may all make the management of the elderly more complicated than that of younger poisoned patients (Ticehurst et al., 2002).

There are three main difficulties in diagnosing acute poisoning in the elderly. Firstly, it may not be easily obvious that the patient has taken an

overdose; secondly, the presence of pre-existing physical illness may obscure the clinical picture; and thirdly, the drug may cause physical signs that fail to differentiate with common problems of old age (Crouch et al., 2005).

Although the significance of poisoning in the elderly is increasingly being recognized, not many studies have specifically focused on the pattern and outcome of acute poisoning in the elderly.

### **AIM OF THE WORK**

The present work aims to evaluate poisoning in elderly cases as regards demographic data, mode of poisoning, clinical manifestations, management and outcome.

### **SUBJECTS, MATERIAL & METHODS**

A retrospective study was done on 255 poisoned cases admitted to MPCC during the period from January 2012 to December 2014. Their ages were above 60 years. The study was carried out in an ethical manner following guidelines set by the Ethical Committee of Faculty of Medicine, Menoufia University. Also, the permission of the authority of MPCC was taken before the study. All the data were collected from the patient file which includes all clinical data since admission till discharge as regard: Socio-Demographic data as age, sex, occupation, etc. Intoxication data of the patient that include, type of poison, route of administration, mode of intake, etc. Data regarding clinical assessment, general examination (vital signs, level of consciousness, etc.) and systemic examination which included

respiratory, cardiovascular, central nervous system, etc. investigations as Arterial Blood Gases (ABG), and Electro-Cardiography (ECG), specific toxicological laboratory investigations as measurement of cholinesterase activity according to (Waber, 1966), Toxi-lab AB system for confirmation of abused drugs (Toxi-Lab incorporated Irvine, CA 92718) and measurement of methanol level (Single beam spectrophotometer T60U PG instruments limited).

Radiological investigations as plain X- ray and Computed Tomography (CT) were done when needed. Then, data about the patient's treatment and outcome were evaluated.

#### Statistical Analysis:

- The data collected were tabulated and analyzed by SPSS (statistical package for social science) version 17.0 on IBM compatible

computer. (Elliott and Woodward, 2007).

- Descriptive statistics: As percentage.

- Analytic statistics: Chi-square test ( $\chi^2$ ): was used to study association between two qualitative variables. P-value of  $< 0.05$  was considered statistically significant

- Multivariant regression analysis: was applied to determine factors associated with the outcome. Results were presented as adjusted odds ratio with a 95% confidence interval, Wald statistic and corresponding p-values.

## RESULTS

There were 6556 acute poisoned cases admitted to Menoufia poison control center (MPCC) during the period of the study, and 3.9% of these patients were  $\geq 60$  years old.

**Table (1):** Distribution of Socio-Demographic Data of Poisoned Elderly Patients. NO= 255

Socio-demographic data		No.	%
Age	60-<65	213	83.5
	65-<70	18	7.1
	$\geq 70$	24	9.4
Sex	Male	159	62.4
	Female	96	37.6
Occupation	Retired	30	11.8
	Manual worker	45	17.6
	Farmer	72	28.2
	Driver	15	5.9
	Free laborer	3	1.2
	Unemployed	6	2.4
	Housewife	84	32.9
Residence	Rural	108	42.4
	Urban	147	57.6

Socio-demographic data		No.	%
Age	60-<65	213	83.5
	65-<70	18	7.1
	≥70	24	9.4
Marital Status	Single	3	1.2
	Married	222	87.1
	Divorced	6	2.4
	Widow	24	9.4
Special habit	Smoking	111	43.5
	Non smoking	144	56.5

Table (1): shows the incidence of elderly intoxicated cases in different socio- demographic data. Regarding age and sex groups, the highest incidence of these patients was in the 60-<65 age group 83.5%. Males exceeded females with 62.4% and

37.6% respectively. Housewives were the commonest 32.9% followed by farmer 28.2% and the least was free laborers 1.2%. More than half of the cases 57.6% were from urban areas. Most cases were married 87.1% and 56.5% of cases were nonsmoker.

**Table (2):** Chi-square ( $X^2$ ) Statistical Analysis of Age in Relation to Sex.

Age		Sex		Total	$X^2$	P. value
		male	female			
60-<65	No.	135	78	213	1.3	>0.05
	%	63.4%	36.6%	100.0%		
65-<70	No.	9	9	18		
	%	50.0%	50.0%	100.0%		
≥70	No.	15	9	24		
	%	62.5%	37.5%	100.0%		

P>0.05 insignificant

As regard different age groups in relation to sex, males were higher than females in both age groups 60-<65&≥70 years 63.4% and 62.5%

respectively. The difference was insignificant as p value was >0.05 Table (2).

**Table (3):** Chi-square ( $X^2$ ) Statistical Analysis of Mode of Poisoning and Occupation of Cases. No= 255

Occupation		Mode of poisoning			Total	$X^2$	P. value
		Suicide No.90	Homicide No.6	Accidental No.159			
<b>Retired</b>	<b>No</b>	18	0	12	30	38.9	<0.001**
	<b>%</b>	60.0%	.0%	40.0%	100.0%		
<b>Manual worker</b>	<b>No</b>	9	3	33	45		
	<b>%</b>	20%	6.7%	73.3%	100.0%		
<b>Farmer</b>	<b>No</b>	12	3	57	72		
	<b>%</b>	16.7%	4.2%	79.2%	100.0%		
<b>Driver</b>	<b>No</b>	6	0	9	15		
	<b>%</b>	40.0%	.0%	60.0%	100.0%		
<b>Free laborer</b>	<b>No</b>	3	0	0	3		
	<b>%</b>	100.0%	.0%	.0%	100.0%		
<b>Unemployed</b>	<b>No</b>	3	0	3	6		
	<b>%</b>	50.0%	.0%	50.0%	100.0%		
<b>Housewife</b>	<b>No</b>	39	0	45	84		
	<b>%</b>	46.4%	.0%	53.6%	100.0%		

\*\*P<0.001 highly significant

Table (3): illustrates highly significant relation between different occupations and mode of poisoning where  $P < 0.001$ . Suicide attempts were more in retired and free laborers groups 60% and 100% respectively, while accidental exposures were 79.2%,

73.3%, 60% and 53.6% in farmers, manual workers, drivers and housewife respectively.

Only manual workers and farmers were exposed to homicide (6.7% and 4.2% respectively)

**Table (4):** Chi-square ( $X^2$ ) Statistical Analysis of Age and Sex in Relation to Mode of Poisoning.

Age	Mode of poisoning		Sex		Total	$X^2$	P. value
			Male	female			
60-<65	Suicide	No	36	39	75	12.1	<0.001**
		%	48.0%	52.0%	100.0%		
	Homicide	No	3	0	3		
		%	100.0%	.0%	100.0%		
	Accidental	No	96	39	135		
		%	71.1%	28.9%	100.0%		
65-<70	Suicide	No	3	3	6	0.00	>0.05
		%	50.0%	50.0%	100.0%		
	Accidental	No	6	6	12		
		%	50.0%	50.0%	100.0%		
≥70	Suicide	No	6	3	9	2.6	>0.05
		%	66.7%	33.3%	100.0%		
	Homicide	No	3	0	3		
		%	100.0%	.0%	100.0%		
	Accidental	No	6	6	12		
		%	50.0%	50.0%	100.0%		

**\*\*P<0.001 highly significant P>0.05 insignificant**

Concerning mode of poisoning in relation to different age and sex groups, in age group 60-<65 suicide was higher in females (52%) than males (48%). All cases (100%) exposed to homicide were males, while accidental exposure was 71.1% of them. The difference was statistically highly significant as P value <0.001. In age group 65-<70 fifty percent of each males and females was suicidal and accidental exposure. All males in age group ≥70 were exposed to homicide followed by 66.7% suicide. The relation between both age groups and mode of poisoning was statistically insignificant as p value was >0.05 Table (4).

**Table (5):** percentage distribution of different types of poisons among studied cases  
NO= 255

Types of poisons	No.	%
Corrosives	30	11.8
Drugs (48=18.8%)		
-Antipsychotic and antidepressant	15	5.8
-Cardiovascular drugs	12	4.7
-Analgesics	8	3.1
-Addicting (tramadol and hashish)	6	2.4
-Theophylline	4	1.6
-Oral hypoglycemic combined with Antihypertensive	3	1.2
Kerosene	6	2.4
Alcohols(Methanol)	3	1.2
Snake bite	18	7.1
Food poison	9	3.5
Organophosphate	126	49.4
Co poisoning	3	1.2
Dormex	3	1.2
Mixed	9	3.6

Table (5): Regarding different types of poisons it was found that 49.4% of cases were intoxicated with organophosphate substances while 18.8% were drugs (antipsychotic& antidepressant 5.8%, cardiovascular drugs 4.7%, analgesic 3.1%, addicts 2.4%, theophylline 1.6%, and oral hypoglycemic combined with antihypertensive 1.2%). 25% of these drug overdoses were due to therapeutic errors. Corrosives and snake bite were (11.8%, 7.1%) respectively. The least common were alcohols (methanol), Co poisoning and dormex were (1.2%) for each.

Table (6): Chi-square ( $X^2$ ) Statistical Analysis of Occupation Versus Different Types of Poison.

Occupation		Type of poison										Total	$X^2$	P.value
		Corrosive No=30	Drugs No=48	Kerosene No=6	Alcohol No=3	Snake bite No=18	Food poisoning No=9	Organo phosphate No=126	Co poisoning No=3	Dormex No=3	Mixed No=9			
Retired	No	3	12	3	0	3	3	6	0	0	0	30	2.2	<0.001**
	%	10.0%	40.0%	10.0%	.0%	10.0%	10.0%	20.0%	.0%	.0%	.0%	100%		
Manual worker	No	12	3	3	0	3	3	15	0	0	6	45		
	%	26.7%	6.7%	6.7%	.0%	6.7%	6.7%	33.3%	.0%	.0%	13.3%	100%		
Farmer	No	0	0	0	0	3	0	63	3	3	0	72		
	%	.0%	.0%	.0%	.0%	4.2%	.0%	87.5%	4.2%	4.2%	.0%	100%		
Driver	No	0	6	0	3	0	0	3	0	0	3	15		
	%	.0%	40.0%	.0%	20.0%	.0%	.0%	20.0%	.0%	.0%	20.0%	100%		
Free laborer	No	0	0	0	0	0	0	3	0	0	0	3		
	%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%	.0%	.0%	.0%	100%		
unemployed	No	3	3	0	0	0	0	0	0	0	0	6		
	%	50.0%	50.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100%		
housewife	No	12	24	0	0	9	3	36	0	0	0	84		
	%	14.3%	28.6%	.0%	.0%	10.7%	3.6%	42.9%	.0%	.0%	.0%	100%		

\*\*P<0.001 highly significant

Table (6): shows highly significant statistical relation between occupation and different types of poison where P value was <0.001. Organophosphate was the commonest poisoning among farmers, manual workers, free laborers and

housewives (87.5%, 33.3%, 100%, 42.9%) respectively, while retired, drivers and unemployed were commonly intoxicated by drugs (40%, 40% and 50%) respectively. All alcohol cases

were drivers while Co poisoning cases were farmers. On the other hand 50% of unemployed and 26.7% of manual workers were exposed to corrosives, and 10.7% of housewives were exposed to snake bite.

Table (7): Chi-square ( $X^2$ ) Statistical Analysis of Different Clinical Manifestations in Relation to Type of Poison.

			Type of poison										X <sup>2</sup>	P. value	
			Corrosive	Drugs	Kerosene	Alcohol	Snake bite	Food poisoning	Organophosphate	Co poisoning	Dormex	mixed			Total
Eye	normal	No	30	39	6	3	18	9	21	3	3	6	138	1.7	<0.001 **
		%	21.7%	28.3%	4.3%	2.2%	13%	6.5%	15.2%	2.2%	2.2%	4.3%	100%		
	constricted	No	0	6	0	0	0	0	93	0	0	3	102		
		%	.0%	5.9%	.0%	.0%	.0%	.0%	91.2%	.0%	.0%	2.9%	100%		
	pinpoint	No	0	0	0	0	0	0	12	0	0	0	12		
		%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%	.0%	.0%	.0%	100%		
dilated	No	0	3	0	0	0	0	0	0	0	0	3			
	%	.0%	100%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100%			
Skin	normal	No	27	48	6	3	15	9	102	3	0	9	222	2.9	<0.001 **
		%	12.2%	21.6%	2.7%	1.4%	6.8%	4.1%	45.9%	1.4%	.0%	4.1%	100%		
	sweaty	No	3	0	0	0	0	0	18	0	0	0	21		
		%	14.3%	.0%	.0%	.0%	.0%	.0%	85.7%	.0%	.0%	.0%	100%		
	burn	No	0	0	0	0	0	0	0	0	3	0	3		
		%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100%	.0%	100%		
	cyanosis	No	0	0	0	0	3	0	3	0	0	0	6		
		%	.0%	.0%	.0%	.0%	50%	.0%	50%	.0%	.0%	.0%	100%		
dermatitis	No	0	0	0	0	0	0	0	0	3	0	3			
	%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100%	.0%	100%			



Table (8):Chi-square (X<sup>2</sup>) Statistical Analysis of Relation of PH and Hypoxia with Type of Poison.

		Type of poison																				Total	X <sup>2</sup>	p.value	
		Corrosive		Drugs		Kerosene		Alcohol		Snake bite		Food poisoning		Organophosphate		Co poisoning		Dormex		Mixed					
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				No.
PH	Normal	24	10.1%	48	20.3%	6	2.5%	0	.0%	15	6.3%	9	3.8%	120	50.6%	3	1.3%	3	1.3%	9	3.8%	237	100.0%	18.9	<0.05*
	Metabolic acidosis	6	33.3%	0	.0%	0	.0%	3	16.7%	3	16.7%	0	.0%	6	33.3%	0	.0%	0	.0%	0	.0%	18	100.0%		
Hypoxia	Normal	24	11.0%	39	17.8%	6	2.7%	3	1.4%	9	4.1%	9	4.1%	117	53.4%	0	0.0%	3	1.4%	9	4.1%	219	100.0%	12.22	>0.05
	hypoxia	6	16.7%	9	25.0%	0	.0%	0	.0%	9	25.0%	0	.0%	9	25.0%	3	8.3%	0	.0%	0	0.0%	36	100.0%		

**\*P<0.05 significant**

**P>0.05 insignificant**

Table (8): clears that cases of metabolic acidosis were intoxicated by corrosives & organophosphate 33.3% for each one and all cases of alcohol intoxication. The relation between type of poison and metabolic acidosis was statistically significant as P value <0.05, while there was statistically

insignificant relation between hypoxia and type of poison (p value >0.05). Hypoxia occurred equally (25%) in cases of drugs, snake bite and, organophosphate poisoning and in all cases of Co poisoning.

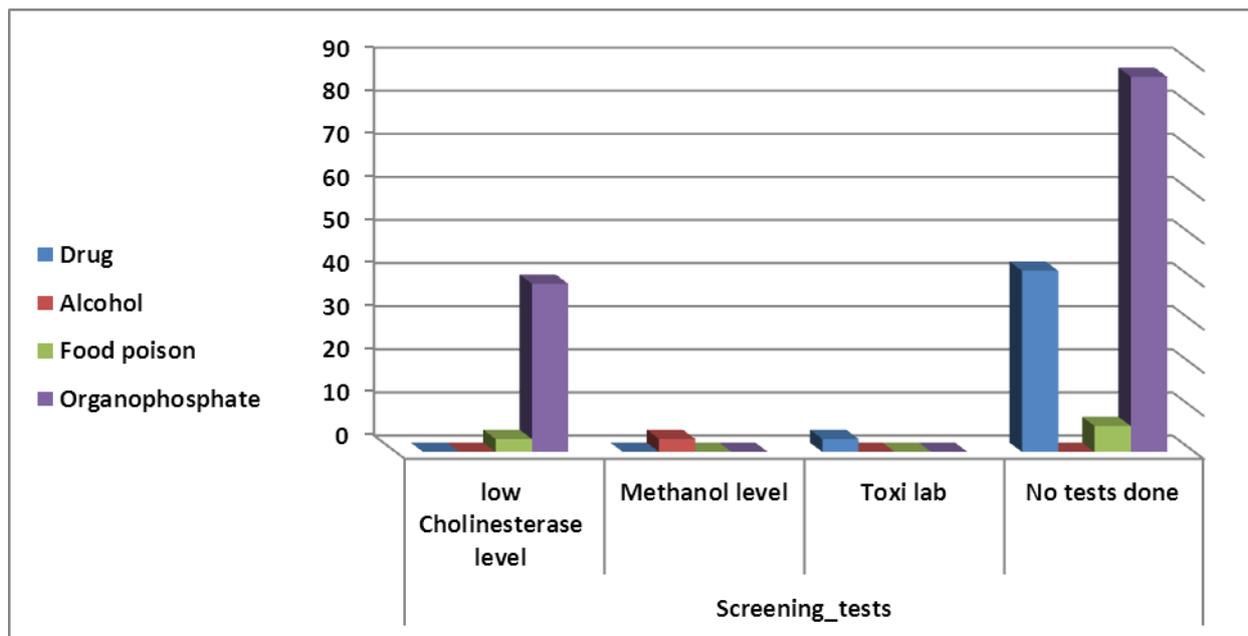


Chart (1): Multiple –Bars Chart Showing Distribution of Screening Tests in Relation to Type of Poisoning.

Regarding toxicological screening tests, low cholinesterase level was found in 39 cases of organophosphate poisoning. Methanol level was elevated in three cases of alcohol poisoning and Toxi-lab was positive in three cases of drug poisoning Chart (1).

Table (9):Chi-Square (X<sup>2</sup>) statistical Analysis of Different Lines of Treatment Versus Type of Poison

\*P&lt;0.05 significant

\*\*P&lt;0.001 highly significant

Treatment	Type of poison																				Total	X <sup>2</sup>	P.value			
	Corrosive		Drugs		Kerosene		Alcohol		Snake bite		Food poisoning		Organophosphate		Co poisoning		Dormex		Mixed							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				No.	%	
Emergency stabilization	6	25.0	3	12.5	0	0.0	0	0.0	3	12.5	0	0.0	9	37.5	3	12.5	0	0.0	0	0.0	0	0.0	24	100	8.1	<0.05*
Skin decontamination	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	27	100.0	0	0.0	0	0.0	0	0.0	0	0.0	27	100	10.3	<0.05*
GIT decontamination	0	0.0	48	29.1	0	0.0	3	1.8	0	0.0	0	0.0	105	63.6	0	0.0	0	0.0	9	6.4	165	100	65.4	<0.01**		
Inhalationdecontamination	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0	3	100	6.3	<0.05*
Physiological antidote	0	0.0	6	4.3	0	0.0	3	2.1	9	6.4	3	2.1	117	83.0	3	2.1	0	0.0	0	0.0	0	0.0	141	100	71.8	<0.01**
Supportive &symptomatic treatment	30	11.7	48	18.8	6	2.4	3	1.2	18	7.2	9	3.5	126	49.3	3	1.2	3	1.2	9	3.5	255	100	45.6	<0.001**		

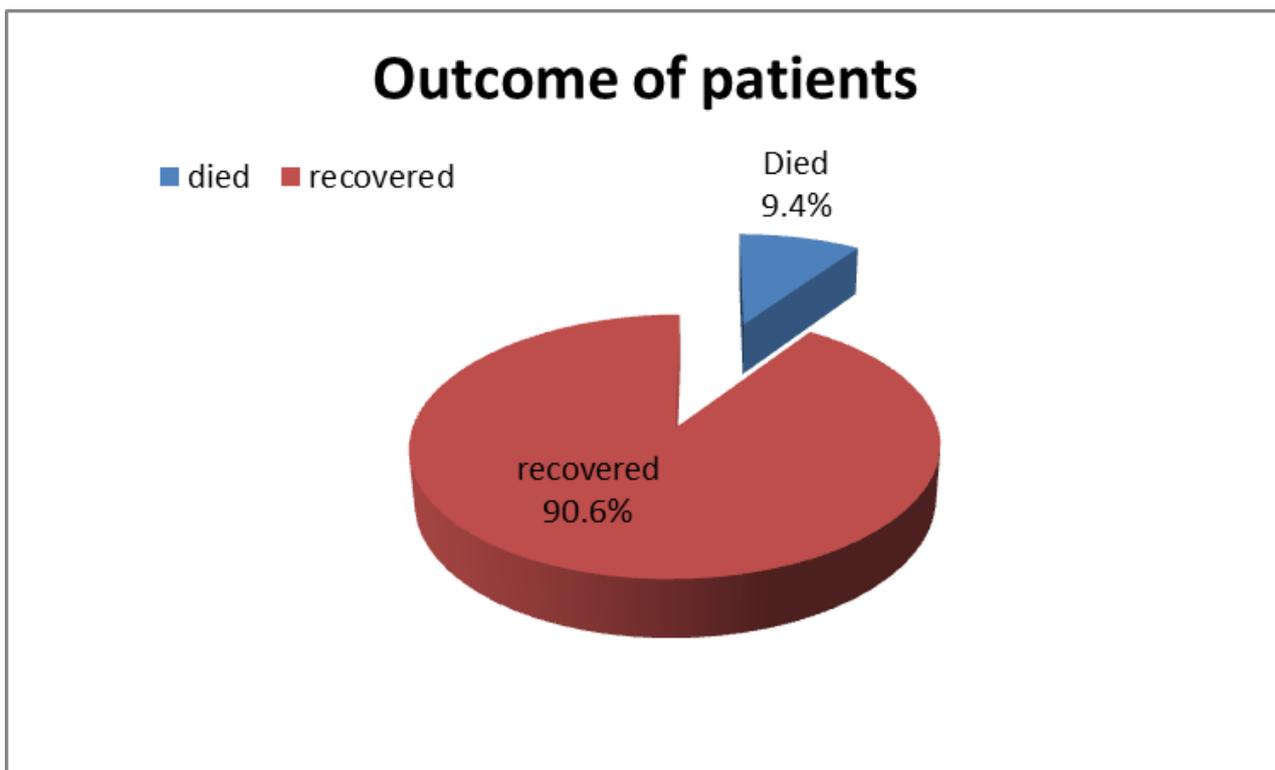
Emergency stabilization was done to 37.5% and 25% of cases with organophosphate and corrosive poisoning respectively. The cases that were treated by skin decontamination were all of organophosphate poisoning. All cases of Co poisoning treated with 100% O<sub>2</sub> inhalation. The relation between these lines of treatment and type of poison was statistically significant as P <0.05%. Nearly two thirds of the cases 63.6%, followed by 29.1% of cases treated by GIT decontamination due to

organophosphate and drug poisoning respectively. The majority of organophosphate poisoning cases 83% were given physiological antidote, followed by snake bite, and drug intoxication 6.4% and 4.3% respectively. Supportive and symptomatic treatment were given to organophosphate, drugs and corrosive poisoning cases 49.3%, 18.8% and 11.7% respectively. The difference was statistically highly significant where P value <0.01 Table (9).

Chart (2): Pie Chart Showing Mortality Rate among Poisoned Elderly Patients.

Chart (2): shows mortality rate in poisoned elderly patients which constituted (9.4%).

Table (10): Chi-Square (X<sup>2</sup>) Statistical analysis of Risk Factors of Outcome of Poisoned Patients.



			Outcome		Total	X <sup>2</sup>	P. value
			Died No=2 4	Recovered No=231			
Sex	male	No	15	144	159	00	>0.05

		%	62.5	62.3	62.4		
	female	No	9	87	96		
		%	37.5	37.7	37.6		
	Total	No	24	231	255		
		%	100.0	100.0	100.0		
Age	60-<65	No	18	195	213	1.610 <sup>a</sup>	>0.05
		%	75.0	84.4	83.5		
	65-<70	No	3	15	18		
		%	12.5	6.5	7.1		
	≥70	No	3	21	24		
		%	12.5	9.1	9.4		
Total	No	24	231	255			
	%	100.0	100.0	100.0			
Hypoxia	normal	No	6	213	219	80.9	<0.001**
		%	25.0	92.2	85.9		
	hypoxia	No	18	18	36		
		%	75.0	7.8	14.1		
	Total	No	24	231	255		
		%	100.0	100.0	100.0		
PH	normal	No	12	225	237	74.5	<0.001**
		%	50.0	97.4	92.9		
	acidosis	No	12	6	18		
		%	50.0	2.6	7.1		
	Total	No	24	231	255		
		%	100.0	100.0	100.0		
Coma grades	conscious	No	6	195	201	54.8	<0.001**
		%	25.0	84.4	78.8		
	coma	No	18	30	48		
		%	75.0	13.0	18.8		
	hallucination	No	0	6	6		
		%	0.0	2.6	2.4		
Total	No	24	231	255			
	%	100.0	100.0	100.0			

P>0.05 insignificant  
Table (10): indicates that there is no significant statistical influence of age and sex on outcome of the cases (p value >0.05) while other factors as hypoxia, PH & coma had a highly

\*\*P<0.001 highly significant  
significant statistical relation (p value <0.001). The study showed that 75%, 75% and 50% of cases who had hypoxia, coma and metabolic acidosis respectively were died.

Table (11): Binary logistic Regression Analysis for Factors Affecting Outcome of Poisoned Elderly Patients.

		B	S.E.	Wald	df	Sig.	Exp(B) Odd's ratio	95% C.I.for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Hypoxia	-2.679	.604	19.642	1	.000	.069	.021	.224
	PH	-1.505	.747	4.056	1	.044	.222	.051	.960
	Coma grades	-.864	.537	2.587	1	.108	.421	.147	1.208
	Constant	8.923	1.143	60.946	1	.000	7505.158		

a. Variable(s) entered on step 1: Hypoxia, PH, Coma grades.

Table (11): clears that PH was the most predictor affecting the outcome of poisoned elderly patients followed by hypoxia.

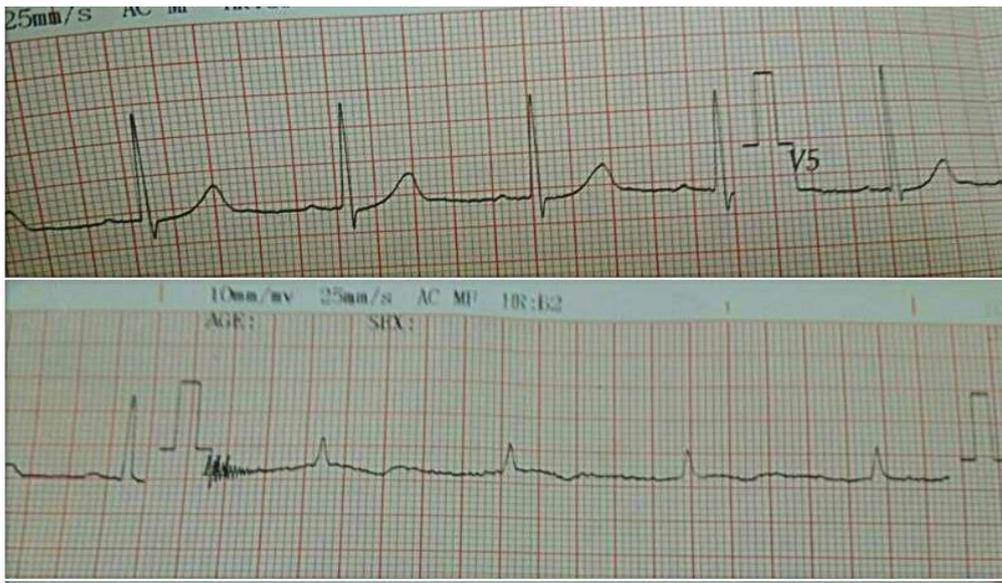


Figure (1): ECG of Female Patient 62 Years Old of Acute Digitalis Drug Overdose Showing Bradycardia.

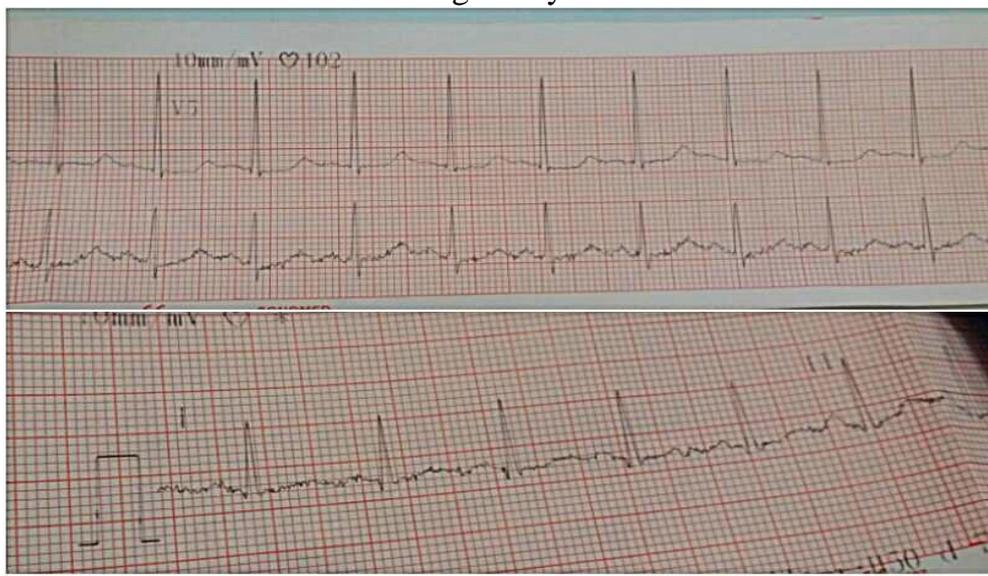


Figure (2): ECG of Female Patient 63 Years Old of Acute Theophylline Drug Overdose Showing Tachycardia.

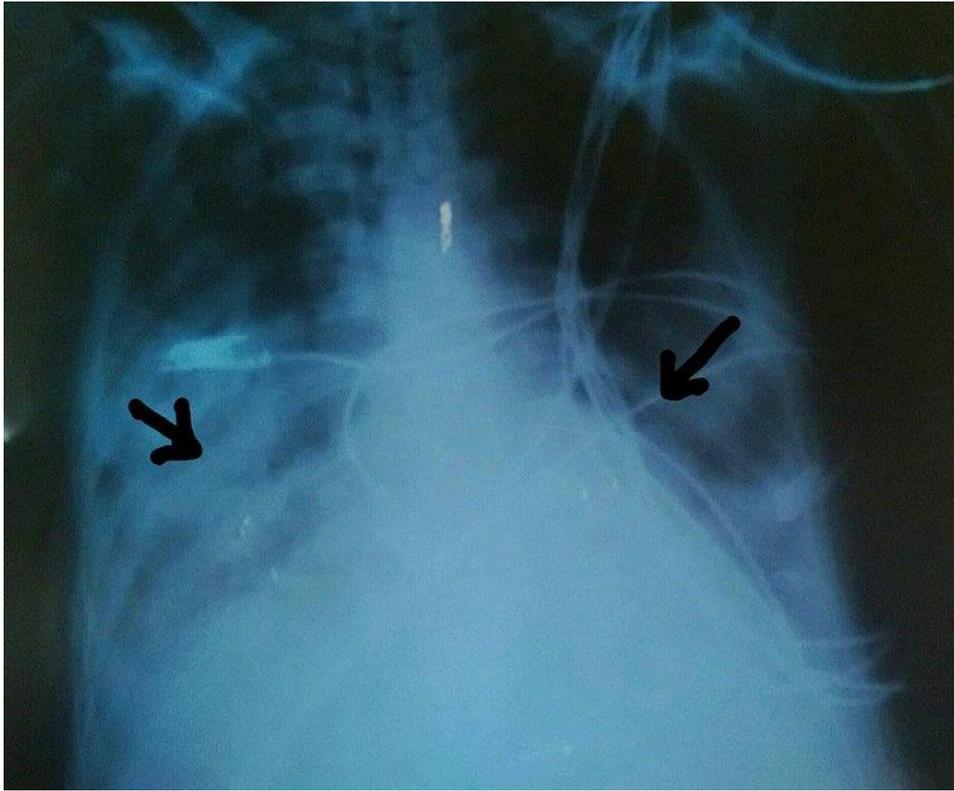


Figure (3): X ray of Female Patient 78 Years Old of Acute Potash Ingestion Showing Bilateral Alveolar Opacities (Arrows).



Figure (4): C.T of Male Patient 60 Years Old of Acute Dormex Exposure Showing Brain Edema (Arrow).

ECG was done for 25 cases, 24% & 16% of them showed bradycardia and tachycardia respectively "fig".(1&2). 36 patients underwent X-ray, 11.2% & 8.3% showed increased broncho-vascular marking and alveolar opacities respectively "fig". (3), while CT was done for 6 cases only and half of them showed brain edema "fig". (4).

#### DISCUSSION

The present study revealed that 3.9% of the poisoned cases during the period of study were above 60 years old. This is nearly similar to the study of El-Meligui et al., (2014) which was performed on geriatric patients (1.1%) presented to the poison control center Ain Shams University hospitals during one year from December 2009 to

December 2010. The majority of cases (83.5%) were in the age group 60-<65 years old and 63.4% of them were males. This coincides with Paula et al., (2012) who found in their study in Brazil between 2004 and 2008, over 88.7% of intoxicated patients were aged 60 to 64 years old. Generally males (62.4%) outnumbered females and more than fifty percent of cases came from urban areas. This is similar to other studies (Hu et al., 2010; El-Meligui et al., 2014).

Accidental exposure to poisoning was in farmers, manual workers and housewives. This could be explained by dealing with agricultural toxins, solvents and household substances. Sixty percent of retired cases and 50%

of unemployed committed suicide this may be attributed to those cases suffered from psychological troubles, some lifestyle modification and social isolation. Only manual workers 6.7% and farmers 4.2% of cases were exposed to homicide. This is most probably due to personal troubles. There was significant relation between gender and mode of poisoning in the age group 60-<65 years old where, all criminal cases were males, 71.1% of male cases were accidental and 52% of female cases committed suicide. These results are similar to the studies of Bertolote and Fleischmann (2002) and Hu et al., (2010). In age group  $\geq 70$  all homicidal cases and 66.7% of suicidal attempts were males. This didn't coincide with the study conducted in Italy where, 67% of female admissions were due to poisoning by suicidal attempts and 77% of cases were more than 70 years old (Taiana et al., 2004). The difference may be due to different geographic conditions and lifestyle.

Organophosphate was the commonest poison (87.5%) among farmers this could be due to dealing with such substance in spraying and dusting without safety measures. Also housewives were commonly intoxicated with organophosphate. This could be explained by the agricultural nature of menoufia government, insecticides are available in many houses that made it as household products.

Drugs intoxication represented the commonest type of poisoning among the unemployed, retired and drivers (50%, 40% and 40% respectively). This explained by availability of drugs and ease of use mainly in suicidal cases. In this study antipsychotic and antidepressant intoxication were

(5.8%), cardiovascular drugs were (2.7%), analgesic (3.1%), addicts (2.4%), theophylline (1.6), and oral hypoglycemic combined with antihypertensive (1.2%). These results coincide with the study of Martin et al., (2009) who found that older patients were more likely to ingest tricyclic antidepressants, lithium, and cardiovascular drugs but less likely to ingest non steroidal anti inflammatory drugs. Therapeutic errors occurred in 25% of cases. The ingestion of extra doses of medications because of forgetfulness, mistaken identity of drugs, incorrect route of administration and improper storage of medications are among the primary reasons for unintentional drug poisoning (Chan, 2006). All alcohol (methanol) poisoning cases were drivers. This differs from the study of El-Meligui et al., (2014) who found that ethanol was the commonest toxin involved due to addiction (66.7%).

There was a highly significant relation between clinical findings and type of poison. Constricted and pin point pupils, sweaty skin and cyanosis were seen in cases of organophosphates this was referred to its muscarinic action on the eye, sweaty glands and respiratory function as it produces bronchorrhea, bronchospasm and severe respiratory distress (Hodgson, 2004). Dormex (agrochemical) used in agriculture, cases of its intoxication presented by dermatitis and first degree of burn this could be due to rough, unsafely equipment and procedures for handling. Cyanosis was seen in snake bite cases due to neurotoxic effect and weakness in respiratory muscles which results in interference with respiratory movements (Bradly and Riley, 2006).

Coma and hypothermia were in cases of drug intoxication and organophosphate poisoning due to its effect on the central nervous system.

All cases had hyperthermia were food poisoning, this may be due to contamination of food by poisons (toxins) from bacteria in the food. More than 90% of cases of food poisoning are caused by salmonella or E. coli group of bacteria (Selner et al., 2015).

Metabolic acidosis was seen in cases of corrosives, organophosphate and alcohol intoxication. Hypoxia occurred in all cases of Co poisoning, drugs, snake bite and organophosphate. This is concurrent with the work of Antonia, (2008). Hypoxia in CO poisoning is due to reduction in oxyhemoglobine saturation and decreased oxygen carrying capacity. In addition, the oxyhemoglobin dissociation curve is displaced to the left, impairing oxygen delivery at the tissues (Omaye, 2002). The mechanism of hypoxia in snake bite envenomation could due to neurotoxic effect and weakness in respiratory muscles which results in interference with respiratory movements (Bradly and Riley, 2006).

ECG changes in the studied cases that needed it, bradycardia was seen in 6 cases of digitalis (cardiac glycosides) toxicity which it slows conduction and increases the refractory period by stimulating vagal tone. Also digitalis has parasympathetic properties, which include hyper sensitization of carotid sinus baroreceptors and stimulation of central vagal nuclei (Eisner et al., 2009). Tachycardia was seen in 4 cases of theophylline intoxication. Its toxicity is through the excess of cataecholamines and adenosine antagonism. High levels of

theophylline inhibit phosphodiesterase, resulting in elevation of cyclic adenosine monphosphate (cAMP) and consequent adrenergic stimulation (Marshall et al., 2004). Alveolar opacities in chest X-ray were seen in 3 cases of corrosive poisoning due to aspiration pneumonities. Also increase bronco-vascular marking found in 4 cases of kerosene poisoning. Tormoehlen and Tekulve, (2014) stated that in cases of acute exposure, no definite radiographic changes will be seen on chest X- ray with aspiration, however hydrocarbon pneumonities may ensue, with chest X-ray findings developing over the course of hours.

Analytical toxicological tests showed low cholinesterase level in 39 cases of organophosphate poisoning. The primary mechanism of action of organophosphate pesticides is inhibition of Acetylcholinesterase enzyme (AChE) that degrades the neurotransmitter Acetylcholine (Ach) into choline and acetic acid. Once AChE has been inactivated, Ach accumulates through the nervous system, resulting in over stimulation of muscrinic and nicotinc receptors (Yurumez et al., 2007). Serum cholinesterase level may be a useful parameter in following the acute prognosis of organophosphate poisoning (Amgun et al., 2002). Toxilab was positive in 3 cases of drug intoxication. Toxicological tests aim to identify and to quantify the toxic substance in order to confirm or refuse the diagnosis of poisoning to evaluate the severity of poisoning or to monitor the effectiveness of treatment (Parasuraman, 2011). Methanol level was elevated in three cases of alcohol poisoning. According to Zakharov et al., (2014) measurement can help in the

laboratory diagnosis and clinical management of acute methanol poisoning.

Regarding decontamination as a line of treatment of poisoned cases, twenty seven cases of organophosphate poisoning were treated by skin decontamination as they were primarily poisoned by dermal exposure. All cases that were treated by inhalation decontamination were poisoned by carbon monoxide (Co). The initial treatment of patients with symptomatic carbon monoxide poisoning is relatively straight forward. A non-re-breather mask supplies 100% oxygen to quickly clear carboxy-hemoglobin from the blood (Maj and LtCol, 2007). Gastrointestinal decontamination was done for 63.6% and 29.1% of organophosphate and drug intoxication respectively. Gastric lavage is the most common form of decontamination for organophosphate poisoning despite the absence of randomized controlled trials to confirm benefit (Eddleston et al., 2005). Repeated Gastric lavages are recommended in china to remove pesticide remaining in the stomach, although substantial amounts of organophosphate are unlikely to remain in the stomach after one lavage (Gu, et al., 2004). Guidelines for treatment of drug poisoning suggest that lavage should be considered only if the patient arrives within one hour of ingesting poison (Vale and Kulig, 2004). Physiological antidotes were given for 83% and 6.4% of organophosphate and snake bite cases respectively, also for all cases of methanol and Co poisoning. Antidotes reduce or reverse poison effects by a variety of means. They may prevent absorption, bind and neutralize poisons directly, antagonize end-organ effects, or inhibit conversion

to more toxic metabolite (Michael et al., 2006). The mortality rate in this study was 9.4%. It is similar to earlier reports concerning older patients admitted to hospital after poisoning (Cook et al., 2008; Heyerdahl et al., 2008). This indicates a greater impact of co-morbidities and lack of social support on outcomes in elderly patients.

There was high significant association between clinical findings in poisoned cases as metabolic acidosis, hypoxia and coma with outcome. CNS dysfunction or hypoxic ischemic events results in death from metabolic acidosis (Braunwald et al., 2001). Seventy five percent of died patients were comatose, Maheswaran et al., (2007) reported that there was a significant relation between non traumatic altered mental state of conscious patients and poor outcome. There was no significant relation between age and sex of cases with outcome. This does not coincide with the work of Brojen et al., (2010) where fatalities were more in male than female (3:1) as females in their study mostly used less toxic household substances.

Regression analysis for factors affecting outcome of poisoned elderly patients. PH was the most predictor followed by hypoxia. The major problem caused by the acidemic state is suppression of myocardial contractility and unresponsiveness to catecholamines. This may lead to a vicious cycle of hypoperfusion, worsening lactic acidosis and further cardiac suppression, causing multi organ failure (Morris and Low, 2008). Hypoxia impairs cellular mitochondrial function. This alters normal oxidative metabolism and allows toxic metabolites to accumulate. If not

reversed, this leads to tissue necrosis and cellular death (Wilkins, 2000).

### **CONCLUSION AND RECOMMENDATION**

There was significant relation between mode of poisoning and sex in age group 60-<65 years old. 9.4% of cases were died. Hypoxia, PH and coma

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constituted the risk factors. PH was the most predictor affecting the outcome of poisoned elderly patients. So effective measures, appropriate diagnosis and treatment should be done to decrease morbidity and mortality rates among elderly poisoned patients.

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## دراسة استرجاعية لحالات التسمم الحاد في المسنين التي ادخلت مركز علاج السموم بالمنوفية ، مستشفيات جامعة المنوفية من 2012 الي 2014

عزة وجيه زناتي و ستهم السيد العجمي  
قسم الطب الشرعي و السموم الإكلينيكية، كلية الطب، جامعة المنوفية

### ملخص البحث:

**مقدمة:** يعتبر المسنون الأكثر عرضة للسموم من المرضى الصغار. وكذلك لديهم اختلاف في الأيض لكثير من الأدوية.

**الهدف من البحث:** تقييم التسمم في المرضى المسنين.

**الحالات و طرق البحث:** تم تقييم ودراسة احصائية مرجعية لحالات التسمم في المسنين 255 حالة (اعمارهم 60 سنة فأكثر) و التي ادخلت الي مركز علاج التسمم بالمنوفية في الفترة من يناير 2012 الي ديسمبر 2014. النتائج: وجد أن 3,9% حالات تسمم في المسنين من اجمالي 6556 حالة تسمم خلال فترة الدراسة. وجد أن 83,5% من الحالات في المجموعة العمرية 60 الى اقل من 65 سنة. فاق عدد الذكور (62,4%) الإناث. 57,6% من الحالات من الحضر. اتضح أن ربوات البيوت كن الأكثر شيوعا (32,9%) يليهن الفلاحين (28,2%). كانت حالات الانتحار هي الأكثر في مجموعات المحالين على المعاش والأعمال الحرة (60% و 100% على التوالي). الحالات العرضية 79,2% في الفلاحين بينما 6,7% و 4,2% من الحالات الجنائية كانت في العمال و الفلاحين على التوالي. التسمم بالمبيدات الحشرية كانت الأكثر شيوعا في الفلاحين (87,5%) بينما التسمم بالأدوية 40% لكل من المحالين على المعاش و السائقين ، 50% لغير العاملين. وجد أن الأيض الحامضي في حالات التسمم بالمواد الكاوية و المبيدات الحشرية 33,3% لكل منهما. وجد انخفاض في مستوي الكولين استريز عند 39 حالة تسمم بالمبيدات الحشرية كما ارتفع مستوى الميثانول في 3 حالات تسمم بالكحول وتوكسي لاب كان ايجابيا في 3 حالات تسمم بالأدوية. اجري رسم القلب الكهربائي الي 25 حالة و الذي اظهر وجود بطء وزيادة في ضربات القلب في 24% و 16% من هذه الحالات على التوالي. خضعت 36 حالة الي الفحص باشعة اكس و الذي اظهرت وجود زيادة في علامات الشعبات الهوائية و الأوعية الدموية و عتامة الحويصلات الهوائية في 11,2% ، 8,3% على التوالي. وجد أن معدل الوفيات 9,4% من الحالات. أوضح تحليل الإنحدار اللوجستي أن مستوى الحموضة في الدم هو المتنبئ الأكثر تأثيرا على الناتج يليها نقص الأوكسجين في الدم. **الإستنتاج و التوصية:** وجد أن عوامل الخطورة في الناتج هو مستوى الحموضة في الدم، نقص الأوكسجين و الغيبوبة لتقليل معدل الوفيات لهؤلاء المرضي يتطلب ذلك التقييم الملائم و الملاحظة المستمرة لحالات التسمم في المسنين.