

Pattern of Injuries in Patients Admitted to the Emergency Department of Alexandria Main University Hospital and its Relation to Substance Use

Kholeif WSAER* and Mashali AAER

Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Alexandria University, Egypt

*Corresponding author: Kholeif WSAER, Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Alexandria University, Egypt, Tel: 01221371021, E-mail: wskholeif@yahoo.com

Citation: Kholeif WSAER, Mashali AAER (2020) Pattern of Injuries in Patients Admitted to the Emergency Department of Alexandria Main University Hospital and its Relation to Substance Use. J Forensic Sci Criminol 8(1): 103

Received Date: April 11, 2020 Accepted Date: June 09, 2020 Published Date: June 11, 2020

Abstract

Rationale and Background: Injuries are one of the most important causes of morbidity and mortality among the non-communicable diseases. They also represent a big economic burden in countries worldwide. Substance abuse and injuries both are dangerous phenomena in all countries. The relation between addiction and injuries is obscure, and what occurs first is the question. The aim of this work was to determine the pattern of injuries in patients attended to the emergency department of Alexandria Main University Hospital and its relation to substance use.

Participants and Methods: It is a prospective study done in two months period during the morning shifts; all patients with different kinds of injuries were enrolled into the study. The clinical data were collected from a preorganized data sheet regarding type of injuries, age, sex, residence, occupation, smoking and addiction. History of substance abuse was taken orally from all patients.

Results: The mean age of the patients was 28.96 ± 13.13 years. Males accounted for 88.7% of the patients. More than half (67.2%) of the patients were from Urban areas. Nearly the kind of the patients (35.1%) was worker. 55.8% of the injured persons were smokers and only 14.5% of them were using substance. The most common type of injury was the injuries caused by sharp instrument (incised wound) which was the commonest type among males, urban areas, workers and addict.

Conclusions and Recommendations: Incised wound was the common type of injuries in patients attending to the emergency department of Alexandria Main University Hospital and addiction of drugs has a role in the occurrence of different injuries especially the injury caused by sharp instrument. So, it is recommended to verify the relationship between the occurrence of injuries and substance abuse using confirmatory tests for substance intake on a larger scale.

Keywords: Injuries; Wounds; Substance Abuse

Introduction

Injury means any harm, whatever illegally, caused to any person in body, mind, reputation or property (Aggrawal, 2016) [1].

Injuries are among the most prominent public health problems in the world, as well as being a leading cause of mortality particularly among children and young adults [2].

It is important to know the types of injuries because injuries are an important public health concern, and remain a growing problem in some countries [2].

The nature of injuries and violence varies considerably according to age, sex, region and income group. Among the causes of injury are acts of violence against others or oneself, road traffic crashes, burns, drowning, falls, and poisonings [3].

The international community needs to work with governments and civil society around the world to implement these proven measures and reduce the unnecessary loss of life that occurs each day as a result of injuries and violence [4].

In some countries, increasing awareness over the past decades that injuries and violence are preventable public health problems has led to the development of preventive strategies and, consequently, a decrease in deaths and disability due to injuries [5].

Injuries are classified as intentional or unintentional. Unintentional injuries include injuries related to traffic, occupational and work-related firearms, drowning and falls. Intentional injuries include interpersonal violence and homicide [6].

Injury caused by the application of physical force can be divided into two main groups: blunt force and sharp force. There are a number of other types of injury caused by non-physical forces, which can be thermal, chemical, electrical or electromagnetic which are referred to in other Chapters [7].

While a substantial literature exists demonstrating a strong relation of substance use and injury in studies of emergency department patients less is known about the risk of injury associated with substance use, although previous studies have suggested that many of those who have use substance have also used other drugs prior to the emergency admission [8].

Much of the research on the association of substance use and injury have focused on motor vehicular crashes and these studies have shown that many drugs impair psychomotor skills and other critical dimensions of performance and may therefore place users at increased risk of injury [8].

Substance use disorders are major health problems implicated in many deaths, both directly from overdose and indirectly as a result of injuries sustained while the individual is intoxicated. Furthermore, the number of available pharmaceuticals has increased greatly during the last few decades, as has social use and dependence on medicines. In addition, a large number of illicit drugs containing psychoactive substances are consumed each year [9].

Therefore, the present study was designed in order to find out the pattern of injuries in patients admitted to the emergency department of Alexandria Main University Hospital and to show the most common type of injuries in the patients admitted to the emergency department and also this study was conducted to determine the relation between the occurrence of injuries and substance use.

Participants & Methods

Approval of the ethics committee of Faculty of Medicine, Alexandria University was obtained after reviewing the proposal.

Informed consent was obtained from every subject with explanation of the purpose and nature of the study.

It was a prospective descriptive study conducted on individuals attending the emergency department during the morning shifts over two months (June and July 2019).

Excluded from the study were patients with injuries due to pathological condition such as bed sores and ulceration.

The clinical data were collected through a preorganized data sheet for each patient including: type of injuries, site of injuries, age, sex, residence, occupation, smoking and substance use.

All of the included patients were subjected to clinical examination on arrival to the emergency department for assessment of vital signs (measurement of heart rate, blood pressure, respiratory rate and temperature), general examination, examination of the injured part, and whole-body examination so as to detect any unrecognized injuries.

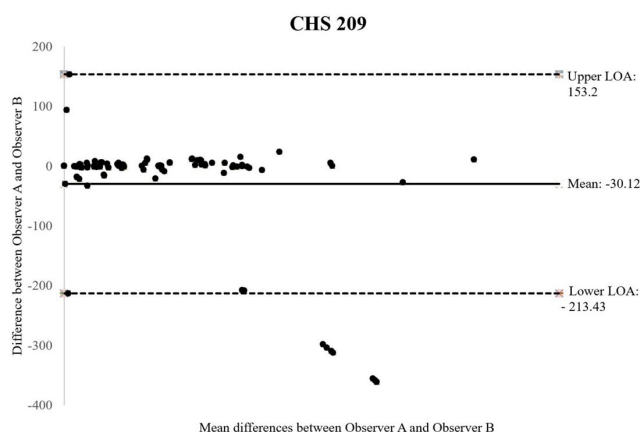


Figure 1: Multi-Drug Screen Test

Statistical Analysis of the Data

Data were subjected to statistical analysis using Statistical Package for Social Sciences (SPSS) version 20. Results were expressed as arithmetic mean and standard deviations. Student t-test and F-test were used to establish any significant differences. The level of significance was set at $p \leq 0.05$.

Results

354 injured patients were included in the study (314 males and 40 females).

The most common type of injury was the injury caused by sharp instrument (incised wound represents 39.5%) (Table 1).

Demographic data of 354 patients with different kinds of injuries were analyzed. Their mean age was 28.96 ± 13.13 years (range 1.5 - 84). Males accounted for 88.7% of the patients. Tow third of the patients (67.2%) were from Urban areas. Most of the patients (35.1%) were worker (manual & skilled) while employee represent the least percentage (16.9%). 44.1% of the injured persons were smokers and 14.5% of the injured persons were using substance (Table 2).

Type of wound	No.	%
1-Wound caused by blunt instrument		
Contused wound	98	27.7
Abrasions	52	14.7
Contusions	35	9.9
Amputation	11	3.1
2- wound caused by sharp instrument		
Incised wound	136	38.4
Stab wound	11	3.1
3-Fire arm wound	1	0.3
4- Wound caused by physical agent		
Burn	10	2.8
Total	354	100.0

Table 1: Descriptive analysis of the types of wound

Parameters	No.	%
Age (Years)		28.96 \pm 13.13
Minimum - maximum		1.5 – 84
Median		28
Sex		
Male	314	88.7
Female	40	11.3
Residence		
Urban	238	67.2
	116	32.8
Occupation		
Worker (manual & skilled)	124	35.1
Employee	60	16.9
Student	67	18.9
Unoccupied	103	29.1
Smoking		
Yes	156	44.1
No	198	55.9
Addiction		
Yes	52	14.5
No	302	85.5

Table 2: Descriptive data of the participants (n=354)

Relation Between Type of Wound and Age

Table 3 reveals that the most common type of injuries which was incised wound occurred at the mean age of 29.36. There was a significant difference ($p = 0.002$) between different types of wound and age.

Relation Between Type of Wound and Sex

Table 4 shows that incised wound was the most common type among males (39.2%) and females (32.5%) and there was no significant difference between types of wound and sex except contusions which showed significant difference with sex where $F^E p = 0.042^*$.

Relation Between Type of Wound and Residence

Table 5 illustrates that incised wound was the most common type among urban areas (49.6%) while contused wound was the most common type among rural areas (50.9%). There was a significant difference between contused wound and residence and also between incised wound and residence where p value was <0.001 for each type. There was no significant difference between other types of wound residence.

Type of wound	No.	Age		F (p)	
		Mean ± SD	Minimum - maximum		
1-Wound caused by blunt instrument					
Contused wound	98	31.15 ± 15.9	1.5 - 80	3.802* (0.002*)	
Abrasions	52	22.72 ± 9.4	3 - 42		
Contusions	35	27.57 ± 15.6	3 - 84		
Amputation	11	35.18 ± 12.5	9 - 52		
2- wound caused by sharp instrument					
Incised wound	136	29.36 ± 10.8	4 - 63		
Stab wound	11	32.45 ± 10.55	21 - 58		

F: F for ANOVA test

*: Statistically significant at p ≤ 0.05

Table 3: Relation between types of wound and age

Type of wound	Sex				Total	χ ²	P
	Male (n = 314)		Female (n = 40)				
	No.	%	No.	%			
1-Wound caused by blunt instrument							
Contused wound	90	28.7	8	20.0	98	1.330	0.249
Abrasions	42	13.4	10	25.0	52	3.826*	0.049*
Contusions	27	8.6	8	20.0	35	5.177*	^{FE} p=0.042*
Amputation	11	3.5	0	0.0	11	1.446	^{FE} p=0.621
2- wound caused by sharp instrument							
Incised wound	123	39.2	13	32.5	136	0.668	0.414
Stab wound	11	3.5	0	0.0	11	1.446	^{FE} p=0.621
3-Fire arm wound	1	0.3	0	0.0	1	0.128	^{FE} p=1.000
4- Wound caused by physical agent							
Burn	9	2.9	1	2.5	10	0.017	^{FE} p=1.000

χ²: Chi square Test

FE: Fisher Exact

*: Statistically significant at p ≤ 0.05

Table 4: Relation between types of wound and sex

Type of wound	Residence				Total	χ ²	P
	Urban (n=238)		Rural (n=116)				
	No.	%	No.	%			
1-Wound caused by blunt instrument							
Contused wound	39	16.4	59	50.9	98	46.301*	<0.001*
Abrasions	36	15.1	16	13.8	52	0.111	0.739
Contusions	21	8.8	14	12.1	35	0.922	0.337
Amputation	7	2.9	4	3.4	11	0.067	Ep=0.755
2- wound caused by sharp instrument							
Incised wound	118	49.6	18	15.5	136	38.247*	<0.001*
Stab wound	10	4.2	1	0.9	11	2.889	^{FE} p=0.110
3-Fire arm wound	0	0.0	1	0.9	1	2.058	^{FE} p= 0.328
4- Wound caused by physical agent							
Burn	7	2.9	3	2.6	10	0.036	^{FE} p=1.000

χ²: Chi square Test

FE: Fisher Exact

*: Statistically significant at p ≤ 0.05

Table 5: Relation between types of wound and residence

Relation Between Type of Wound and Occupation

Table 6 shows that among workers incised wound was the common type (83.1%) followed by abrasions (9.7%) while among employee contused wound was the common type (50%) followed by contusions (20%) and among student contused wound was the common type (40.3%) followed by contusions and incised wound (17.9% for each), while among unoccupied persons contused wound and abrasions was the commonest type (36% for each) followed by incised wound (16%). There was a significant difference between different types of wound and occupation where p value was <0.001 except firearm wound and burn where p value =1.000 and p=0.971 respectively.

Type of wound	Occupation								χ^2	P
	Worker (manual & skilled) (n = 124)		Employee (n = 60)		Student (n = 67)		Unoccupied (n = 103)			
	No.	%	No.	%	No.	%	No.	%		
1-Wound caused by blunt instrument										
Contused wound	5	4.0	30	50.0	27	40.3	36	35.0	57.617*	<0.001*
Abrasions	12	9.7	3	5.0	1	1.5	36	35.0	50.036*	<0.001*
Contusions	0	0.0	12	20.0	12	17.9	11	10.7	25.406*	<0.001*
Amputation	0	0.0	4	6.7	7	10.4	0	0.0	19.555*	MCp<0.001*
2- wound caused by sharp instrument										
Incised wound	103	83.1	5	8.3	12	17.9	16	15.5	162.137*	<0.001*
Stab wound	0	0.0	4	6.7	6	9.0	1	1.0	14.615*	MCp<0.001*
3-Fire arm wound	1	0.8	0	0.0	0	0.0	0	0.0	2.316	MCp=1.000
4- Wound caused by physical agent										
Burn	3	2.4	2	3.3	2	3.0	3	2.9	0.493	MCp=0.971

χ^2 : Chi square Test

MC: FiMonte Carlo

*: Statistically significant at $p \leq 0.05$

Table 6: Relation between types of wound and occupation

Relation Between Type of Wound and Substance Use

Table 7 depicts that incised wound was the most common type among substance use (40.4%) and non-substance use individuals (38.1%) and there was no significant difference between different types of wound and substance use.

Cannabis, tramadol, benzodiazepine and barbiturate was the substance that abused by the injured patients.

Cannabis was the most common type of substance which abused by the injured patients followed by tramadol Table 8.

Type of wound	Substance use				Total	χ^2	P
	Yes (n = 52)		No (n = 302)				
	No.	%	No.	%			
1-Wound caused by blunt instrument							
Contused wound	12	23.1	86	28.5	98	0.646	0.422
Abrasions	6	11.5	46	15.2	52	0.483	0.487
Contusions	8	15.4	27	8.9	35	2.068	0.150
Amputation	2	3.8	9	3.0	11	0.111	FEp=0.668
2- wound caused by sharp instrument							
Incised wound	21	40.4	115	38.1	136	0.100	0.752
Stab wound	1	1.9	10	3.3	11	0.284	FEp=1.000
3-Fire arm wound	0	0.0	1	0.3	1	0.173	FEp=1.000
4- Wound caused by physical agent							
Burn	2	3.8	8	2.6	10	0.232	FEp=0.646

χ^2 : Chi square Test

FE: Fisher Exact

Table 7: Relation between Association between types of wound and substance use

Substance abuse	No.	%
Non abusing	304	85.9
Cannabis	26	7.3
Tramadol	15	4.3
Benzodiazepine	5	1.4
Barbiturate	4	1.1
Total	354	100.0

Table 8: Descriptive analysis of substance use

As Regard the Region of the Body Affected

The head was the most common body part affected (39.0%) followed by the upper limb (36.5%) while the abdomen was the least region of the body affected (0.8%) Table 9.

Region of body affected	No.	%
Head	138	39.0
Upper limb	129	36.5
Lower limb	69	19.5
Chest	9	2.5
Back	6	1.7
Abdomen	3	0.8
Total	354	100.0

Table 9: Descriptive analysis of region of body affected

Discussion

Determination of the patterns of injuries is important as injuries a leading cause of disability and preventable death and produce a major economic burden for society [10].

A substantial literature exists demonstrating a strong association of substance use and injury and a similar elevated risk of injury was found in substance use individuals [8].

Analysis of the socio-demographic characteristics of our patients showed that most of them were young people (mean age was 28.96).

Unlike many chronic diseases that occur later in one's life, trauma has a disproportionate impact on young and middle-aged people [11]. Male gender predominated in trauma patients (88.7%) in the present study, which is consistent with other studies such as Akoğlu *et al.* (2005) [12] who reported a rate of 67% for males. It is possible to suggest that males are more liable to trauma and hence they constitute the majority of that kind of studies (Norris, 1992) [13].

In our study, most patients (67.2%) were from urban areas. The urban development and modern civilization in Egypt resulting from the sharp rise in the establishment of many roads has contributed to increased number of road traffic accidents and hence the occurrence of the injuries.

In the present study, incised wound (sharp injury) was the most common type of injuries (39.5%) followed by contused wound (blunt injury) which represent 28.5% while the firearms injury showed the least percentage (0.3%).

In 2006, Ali *et al.* (2014) [14] studied the pattern of injuries in patients with different kinds of trauma who were brought to the Accident and Emergency Department of Jinnah Hospital, Lahore. In 111 413 patients treated at the department, 51.99% had sharp injury, 30% had blunt trauma and 2.86% had penetrating firearms injury. These percentages for the different causes of injury are similar to our study.

Regarding the relation between type of wound and sex, the current study revealed that incised wound was the most common type among males and females and there was no significant difference between types of wound and sex except contusion which showed significant difference with sex. These findings agree with the study of Amdeslasie *et al.* (2016) [15] which stated that Assault including incised and contused wound was common among males and females with significant difference between types of injuries and sex.

Concerning the relation between type of wound and age, the present study showed a significant difference between different types of wound and age and the most common type of injuries which was incised wound occurred at the mean age of 29.36 years.

This is because the assault including incised wound was common among adult.

This is in accordance with results obtained by Amdeslasie *et al.* (2016) [15] who found that incised wound was common among age between 26-35 years and there was a significant difference between types of injuries and age.

Comparison between urban and rural areas regarding the different types of wound revealed a significant difference between contused wound and residence and although between incised wound and residence. Incised wound was the most common type among urban areas due to the wide spread of the assault using sharp instruments in these areas while contused wound was the most common type among rural areas as in rural areas, they usually fight using blunt instruments like stick.

In contrast to the present study, Hokkam *et al.* (2015) [6] reported that there was no significant difference between different types of wound and residence and blunt trauma like contused wound was the most common type among both urban and rural areas.

Regarding the occupation, incised wound which was the commonest type of wounds was higher among workers this may be due to the wide use of sharp instruments among workers while contused wound which was the second common type was higher among unoccupied. There was a significant difference between different types of wounds and occupation except puncture wound.

The study of Cieslak *et al.* (2014) [16] showed that most of injuries were common among young workers which were more or less similar to the result of the present study.

Concerning the relation between type of wound and substance use, incised wound was the most common type among substance use and non-substance use individuals and there was no significant difference between different types of wound and substance use.

Substance use is an important risk factor for all types of violence. The risk of inflicted wounds either homicide or suicide was increased in the community due to the increase in the abused drugs [17].

There were a considerable number of patients with substance use because of the pain they are feeling or may be due to physiological, environmental or social aspects like poverty and education.

Cannabis, tramadol, benzodiazepine and barbiturate were the substance that abused by the injured patients but cannabis was the most common type of substance which abused because it is cheap, available and can be obtained without medical prescription.

In our study, the head was the most common body part affected (39.0%) followed by the upper limb while the abdomen was the least region of the body affected.

The results of this study are similar to those of Amdeslasie *et al.* (2016) [15] in Northern Ethiopia which showed that the head was the most commonly involved part of the body (33.5%) and the abdomen was the least part of the body affected (2.3%).

In contrast to the present study, Hokkam *et al.* (2015) [6] reported that the highest percentage of the body part affected by injuries in his study (18.8%) was among upper limb while head trauma represents (6.3%).

Conclusion and Recommendation

From the current work, it could be concluded that incised wound was the common type of injuries in patients admitted to the emergency department of Alexandria Main University Hospital and substance addiction has a role in the occurrence of different injuries especially the incised wound. So, it is recommended to verify the relationship between the occurrence of injuries and substance abuse using confirmatory tests for substance intake.

Limitation of the Study

Detection of substance use done using screening test which may show false positive result.

Acknowledgement

We would like to express our deepest gratitude and appreciation to all participants in the study.

Ethical Approval

This study followed the ethical guidelines of ethical committee of Alexandria University and a written informed consent was taken from all participants.

Conflict of Interest

There was no conflict of interest related to the publication of this paper.

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