

Medico-Legal Study of Fatal Stab Wounds in Baghdad

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ABSTRACT :

BACKGROUND :

Even with the advent of more modern injury types, sharp force injuries and fatalities have been reported to be the most common crimes of violence in several countries, predominantly in those where access to firearms is restricted. Death due to sharp force violence is the most common cause of homicidal deaths in Sweden and in many other countries in Europe, Africa and Asia.

OBJECTIVE:

1-To estimate the percentage of sharp wound fatalities from the total number of all injuries referred to the medico-legal institute and the percentage of fatal stab wounds type.

2-To study the stab wounds according to age, sex, scene of injury, number, edge type, length and depth of each wound ,presence of other wound types, anatomical regions affected and organs injured

METHOD :

A medico-legal descriptive study conducted on 41 autopsies during 6 months period .

Cases were studied according to their age, sex, scene of incident , number and type of stab wounds , presence of other types of wounds , suggestive manner of injury , anatomical regions affected and organs injured . Blood sample was taken for alcohol detection then complete classical autopsy was done .

RESULTS:

Sharp force injuries were occupying the 8th class of major injuries. Males were 3 times than females . The mean age was 33.4 ± 13.8 years. Indoor and outdoor scenes of incident were almost equal in number with few unknown scenes. Most of victims were with stab wounds type only having single sharp edge wound. Homicidal manner of death was seen in all cases while defense stab wounds were seen in only 7 cases.

The mean length of all stab wounds in all cases was 2.98 ± 0.64 cm ranging from 0.5 cm to 8 cm and the mean depth of stab wounds was 9.75 ± 4.07 cm. ranging from 1 to 20 cm. Chest was the commonest anatomical region affected and the heart was the commonest organ injured . Alcohol had no role in causation of stab wounds in this study.

CONCLUSION :

Stab wounds are uncommon in Baghdad. Adult males were usually the victims. Homicidal manner was the only manner of death . Knives were the usual weapon used.

It was difficult to determine the exact dimensions of the weapons in most cases because of variability of wounds measurements. Anatomical regions and organs injured revealed their homicidal manner.

KEY WORDS : sharp wounds ,stab wounds ,homicide .

INTRODUCTION :

Sharp force injuries and fatalities have been reported to be the most common crimes of violence in several countries predominantly in those where access to firearms is restricted⁽¹⁾.

Wounds caused by pointed and sharp-edged

weapons can be divided in to four categories :

1-Stab wounds.

1-Incised wounds.

3-Chop wounds.

4-Therapeutic (diagnostic) wounds⁽²⁾.

Stab wounds are wounds produced from penetration using long narrow instruments having pointed ends in to the depth of the body⁽³⁾. The typical feature of these wounds is a depth greater than their width or length⁽⁴⁾. They are of two types

1-Penetrating wounds :

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When the penetrating object pierces the skin and deeper structures in to one of the natural cavities of the body

2-Perforating wounds :

When the wound pierces the human body one surface to the other⁽⁵⁾.

Stab wounds could be caused by a single-edge weapon like a knife when one sharp side and other blunt side are seen or double-edge clean cut if the cutting instrument has sharp edges on both sides⁽⁴⁾.

Fatal stab wounds are most commonly homicidal in manner⁽⁶⁾as it was found in a retrospective study conducted in France⁽⁷⁾.

In a previous study done in India , stab wounds accounted 40.79% of all sharp wounds and the brain was the most common organ injured⁽⁸⁾, while the thorax was the anatomical region most often involved as it was found in another study⁽⁹⁾.

METHODS :

A prospective study was carried out on 41 medico-legal cases referred to the Forensic Institute in Baghdad from the first of January 2011 till the end of June 2011. Of those cases, 31 were males and only 10 cases were females. Their age ranged from 10 - 70 years . Ethical approval was given from ethical approval committee at College of Medicine /University of Al-Nahrain.

Information regarding each case was obtained from investigation authority, police reports, close relatives of the victim, eye witnesses, past medical history and medical reports for those who were admitted to hospitals prior to death. Decomposed bodies were excluded from the study.

These information include the age, sex, scene of incident, circumstances of the injury.

External examination for each case was performed, which include examination of the clothes for any marks of damage, stain, and other legal evidences, and correlation with the site of injury on the body⁽¹⁰⁾.

Digital photograph was taken prior to the removal of the clothes, then gross examination of the naked body which include any sign of bruises or abrasions and other wounds and their location in addition to stab wounds number, shape and dimensions; which include length, and depth as well as anatomical regions affected . Any associated injuries were also reported, then another digital photograph was taken to the naked body. X-ray survey was also done to detect any piece of weapon which might be present inside the body and to detect other injuries and pneumothorax.

Blood samples from the femoral vessels (5 ml.) were collected in tubes by disposable syringes and preserved with 1% of sodium or potassium fluoride for detection of alcohol and stored in a refrigerator for future analysis⁽¹¹⁾.

Complete autopsy was done for each case starting with the head, beginning with dissection of the scalp by making a skin incision from behind one ear to the other over the vertex. The initial incision was made by inserting the scalpel through the skin down to bone and then turning the scalp over with its back toward the periosteum and continuing the incision superiorly with the point of the blade travelling toward the vertex. The skin is reflected anteriorly and posteriorly to expose the superior surface of the skull and examination of the interior of the scalp for any signs of bruises. Opening of the skull was done by using an electrical saw and examination of the cerebral arteries for signs of air embolism after removal of the dura. Inspection of the brain was done, then examination of the base of the skull after brain removal for any signs of fracture. The brain was weighted and dissected into transverse slices for examination⁽¹²⁾.

Dissection of the body started by making a midline incision beginning from the laryngeal region on the anterior aspect of the neck as a straight line till the pubic area away from the umbilicus. Sternum was removed by the electrical saw from the costochondral junctions exposing the chest for removal of the neck structures and chest content. Examination of the chest organs for signs of chronic diseases and any sign of sharp force injury. Inspection of abdominal cavity for detection of any collection of blood or fluids, then evisceration of the abdominal organs was done and examination for any sign of sharp injury to the viscera.

RESULTS:

The study was conducted on 41 autopsy cases referred to the medico-legal institute in Baghdad during 6 months period starting from the first of January till the end of June 2011 .

Thirty one of them were males and only 10 were females , an almost ratio of 3 : 1. Their age range was between 10 – 70 years with a mean age of 33.4±13.8 years.

The study showed that sharp force injuries represent the 8th class of major injuries during the period of the study accounting about 3.28% of all types of injury as shown in the figure -1.

Regarding the scene of injuries , 19 of them (46.3%) were outdoors and 18(43.9%) were

indoors while 4(9.8%) were with unknown scene of injury.

Those with single stab wound type were twenty nine(70.7%) and 12(29.3%)were with multiple types of sharp wounds as shown in table 1.

Total number of stab wounds in all cases were 354 wound with a range of 1-54 per case and a mean of 8.2 ± 1.4 .

Single sharp edge type of wounds were seen in 36 autopsy cases (87.8%) while double sharp edge type wounds were found only in 5 victims (12.2%) as shown in table 2.

Homicidal manner of injuries were suggestive in all cases.

Stab wounds as defense in type were only seen in 7 cases (17%) while they were absent in 34 (83%).

The mean length of all stab wounds in all cases was 2.98 ± 0.64 cm ranging from 0.5 cm to 8 cm and the mean depth of stab wounds was 9.75 ± 4.07 cm. ranging from 1 to 20 cm.

Chest was the commonest anatomical regions affected by the injuries and seen in 21 cases representing 33.3% of allcases followed by the neck in 11 cases as shown in table 3. Multiple anatomical sites injuries were seen in most of autopsies.

The lungs were the commonest organs affected by stab wounds as they were found in 23 of all cases (21.7%) followed by the great vessels and the heart in 22 and 20 cases respectively as shown in table 4. Alcohol was detected in only one case in a concentration of 230 mg/dl.

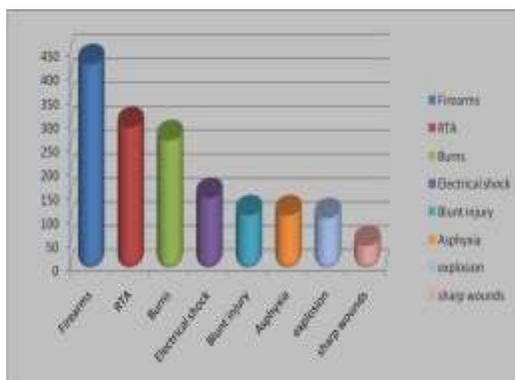


Figure 1 : Number of cases according to the types of violent deaths during the period of the study.

Table 1: Distribution of stab wounds with other types in all cases.

Sharp wounds type	Number	Percent
Single stab wound type	29	70.7
Mixed with other types	12	29.3
total	41	100

Table 2: Distribution of stab wounds according to the edge types.

Edge Type	Number	Percent
Single edge	36	87.8
Double edge	5	12.2
Total	41	100

Table 3: Distribution of stab wounds according to anatomical region .

Anatomical region	Number	Percent
Chest	21	33.3
Head	11	17.5
Neck	11	17.5
Abdomen	10	15.9
Back	5	7.9
Upper limbs	5	7.9
Total	63	100

Table 4: Distribution of organs injured by stab wounds.

Organ	Number	Percent
Lungs	23	21.7
Great blood vessels	22	20.7
Heart	20	18.9
Intestine	14	13.2
Stomach	12	11.3
Liver	8	7.5
Trachea	2	2
Brain	2	2
Spleen	1	0.9
Kidney	1	0.9
Genitalia	1	0.9
Total	106	100



Figure 2 : Multiple single edge stab wounds on the lower chest and upper abdomen



Figure 3 : Multiple single edge stab wounds on the neck.



Figure 4: Multiple single edge stab wounds on the back.

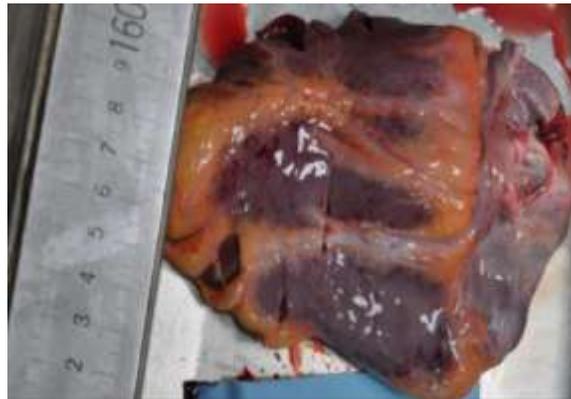


Figure 5: Two stab wounds perforating the posterior wall of the heart.

DISCUSSION :

Sharp force injuries represent the 8th class of major injuries as shown in this study preceded by firearm injuries, road traffic accidents (RTA), burns, electrical shock, blunt force injuries, asphyxias and explosions respectively .

This result disagreed with two retrospective studies carried out in India and Washington DC, which revealed that sharp force injuries represent the 2nd major class of injuries^(13,14). These differences in the results of the studies may be due to the easiness to get firearms and unfortunately unstable security situation due to the presence of terrorist groups in Baghdad leading to the wide use of firearms in committing crimes instead of sharp weapons.

Male cases were the majority of the stab injuries in this study.

Similar results were found in a study on homicide by sharp force performed in Scandinavia with same percentages and sex ratio⁽¹⁵⁾.

The mean age of victims in this study (33.4±13.8 years) was lower than the mean age in a previous study (43.5 years)⁽¹⁶⁾. This could be due to the difference in manner of death as it was homicide in all cases in this study while it was suicide in 40.68% of cases in that study and those were an older age group.

Stab wounds were almost equally distributed between indoors and outdoors scenes of crimes .This result is in disagreement with the result of another study done in India⁽⁹⁾.This disagreement could be due to different cultural, environmental and socio-economic backgrounds.

Only stab wound type was seen in most of the cases examined (70.7%) while it was much less than this percentage in another study done in India where other types of sharp wounds occupying a much higher figures like incised , cutthroat and chop wounds⁽⁸⁾.

The range of stab wounds numbers and their mean per case in the study were lower than the results found in a previous study conducted in France⁽¹⁶⁾. This is probably due to lower sample size of this study as well as the differences in the motives in committing crimes between the two studies.

In this study the commonest edge type of stab wound in all victims was single sharp edge type and it was found in the majority of all stab wound cases. This result is in accordance with that of DiMaio⁽²⁾.

The lengths and depths of all stab wounds in all

cases in this study were variable, this could be attributed to many factors such as the force used by the assailant to induce the injury, which could be used for introducing only the tip of the blade or more than the whole length of the blade, as well as the movement of the weapon by the assailant and movement of the victim during the injury.

Defense stab wounds were only seen in minority of cases while they were found in about third of the cases in a study done in India⁽¹⁷⁾. This difference could be due to that this study accounted only the defense wounds which were stabin type while most of the defense wounds are usually incised in type. It could be also due to restricted movement of the victims during the assault as many of them were taxi drivers in addition to the surprise and shock factors.

Chest was the commonest anatomical region affected by stab wounds in about third of the cases followed by the head and neck equally . This finding was similar to the finding in another study carried out in India where the chest was also the commonest anatomical region affected but in a much higher percentage due to larger sample size of the study⁽⁹⁾.

Lungs were the commonest organs injured followed by the great vessels (of the neck and chest) and the heart as the manner of death was homicide in all cases in which the perpetrator prefers the most risky anatomical regions containing vital structures .In another study in India , the brain was the commonest organ affected by stab wounds followed by the great vessels⁽⁸⁾. This variation may be due to the differences in the cultural and socio-economic status between Baghdad and Imphal (India) as most of sharp wounds in Imphal were chop wounds.

No major role of alcohol in the study as it was positive in only one case. This finding is not so different from a study done in Saudi Arabia⁽²³⁾. While alcohol was detected in 65% of sharp wound victims in another study performed in UK⁽¹⁸⁾. These differences in the results are almost attributed to the differences in the religious and cultural backgrounds between Iraq and UK.

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