

Anatomical Distribution and Autopsy Features of Gunshot Injuries to Support the Manner of Death

Dr. Muhammad Javaid Akhtar

Nishtar Medical College and Hospital, Multan

dr.raojavedakhtar@yahoo.com

ABSTRACT

The autopsy features of the gunshot wounds can help understand the cause of death. This study aims to provide practical information to help distinguish between murder and suicide based on the discovery of a specific body. A database search of the Cook County Medical Examiner's Office from August 2014 to April 2019 found 3491 deaths due to gunshot wounds. Deaths as a result of delayed gunshot wounds, pre-death hospital studies, and decomposing bodies were exhumed. The following details were recorded: the manner of death, details of the people, the gun and type of ammunition, the number and location of the gunshot wounds, the extent of the fire, the toxicity, and the additional injuries. The study focuses primarily on linear analysis. The left-to-right, the back-to-back course was the most anticipated form of suicide; a forward-looking approach was a common practice seen in massacres. When the internal route of a bullet is defined in terms of all available evidences you can move or confirm witness statements and highlight the consistency and inconsistency of investigative reports and group tests. Data revealed that the majority of the suicides were committed at home or in close vicinity of the home. Previous reports showed that approximately 40% of the homicide victims had been shot at their homes. Due to the nature of the study, several variables like geographical distribution of cases, comparison between suicidal and homicidal deaths could not be done. Autopsy findings suggested that multiple wounds, entrance sites, and distant wounds could be useful in the interpretation of death.

INTRODUCTION

In forensic literature and several reports, the site of the shooting the wound as a sign of suicide is emphasized (Adams, 2020). The importance of the presence of many gunshot wounds as a sign of murder has also been used by some author wound penetration, such as the presence of a bruise and/or tattoo tattooing, the presence of a brace on the hands, and the presence of blood from the victim or in the bin has always been so verified by several authors. In addition, there are many cases, related to overall suicide, such as mental illness, suicide notes, age, gender and type of the weapon used, has been read about the deaths of people with guns (Mukoyama et al., 2012).

All of these things are very clear at the scene, and, as a rule, they are written down by the police. However, the internal character trajectory may not be determined until a corpse was made. A few reports have focused on this issue but the most complete test of the internal character system associated with different login sites has not yet been published. Therefore, without the analysis of in general, this study has focused on the use of the internal character path as an indicator of suicide and suicide.

METHODOLOGY

Files of all gun deaths investigated at the hospital and data were taken from January 2019 to Dec 2020. Since this item contains only 11 people shot, all murders, accidental deaths, and gun uncertainty were assessed from January 2019 to Dec 2020.

Cases were investigated by examining old registration documents and computer registers. Death by explosives released. In addition, cases lack information on the number of injuries or wound entry area not included; however, multishot cases that lack details of other wounds are accepted if the full

number of wounds is present it's written.

All files were read and rearranged by the author. Determination of approach the deaths was based on a combination of circumstances and findings at the scene, however regardless of the number of wounds, the features of the wound wounds, the wound sites, and alphabetical direction. Files of different sizes, depending on case character, but it all contains the autopsy law, autopsy report, certificate of cause of death, and police report (including other suicides and all accidents, homicides, and unsubstantiated cases including a thorough local investigation). Thus, the age and sex of the victim, date, and place of death, type of weapon used, the exact size, shape, and position of the entrance and exit wounds, presence of soot on hands, toxicological findings, previous medical records, and a brief account of the circumstances were recorded.

RESULTS

This study included 200 cases of suicides, 64 homicides, 20 accidents, and 8 undetermined cases. Among those cases, 3 cases were considered to be suicides by forensic scientists and the police but the information of the case does not fulfill the requirement of the case. In other cases, no such changes have been made. Cases are distributed gender-wise. During two years, all firearm deaths in ...district were included in the study. It shows that 40% of the victims were females. The mean age of the suicide and homicides victims was 40 ± 19 and 36 ± 15 years old. For both groups, age values are normally distributed ($p = 0.44$ for homicides) and for suicides 0.91 respectively. The mean of deaths was also identified in all groups and shows significant result $p < 0.005$. Parents or caregivers, who later killed themselves, killed four victims under the age of 10. 18 of the 54 homicide victims had been killed in their homes by guns. Some suicide attempts occur due to acute heartbreaking relationships, in an acute stage of emotions specifically in men. Other reasons probe out, we found that severe economic troubles, imprisonments, and incurable disease. Due to long-lasting depression history came out in the majority of the cases and it points out psychiatric illness. Suicide notes are the primary source of cause of the death and it was found in 20% of the cases and the remaining 80% either had a history of psychiatric illness or left a note. Shotguns were the most frequently used weapon in suicide and homicide incidents, having caused 55% of the homicides and 42% of a suicidal wound.

Table 1 Distribution of Cases with Gender Inclusion

Gender	Homicide	Suicide	Accident	uncertain	Total
Male	37	165	18	6	226
Female	23	35	2	2	62
Total	60	200	20	8	288

The uncertain deaths were heterogeneous and comprised 8 cases.

Autopsy findings

As 60% of the homicide victims sustained more than one gunshot as compared to the suicide victims which account for only 3%. There was no difference in the wound frequency between male and female victims. In two of the suicides, the weapon had been fired from distance and used string to pull the trigger, while in others shooting from a short distance was found. It is also observed that eight of these had been fired with a single-handed weapon and ten victims with a two-handed weapon. The residue of the close-range wound, the weapon was unknown. Female victims had close-range wounds to a higher extent $p < .05$ than male victims.

The site of the gunshot to the body has also been described in reports, shown that suicidal gunshot wounds had entered the mouth and the left side of the chest. Although the pattern of the homicidal wound is much more complicated. The entrance sites were determined of 300 gunshot wounds of the

firearm victims. Of these victims 277 also provide directions of the internal bullet path. Results show that majority of the homicidal gunshot wounds hit areas outside the type of suicidal wounds.

Table 2 Type of Wound Determinant of Wound Range

Wound type	Male	Female	Total
Close range	12	21	34
Distant wound	41	24	65
Total	53	45	98

A gunshot wound in the right temple most likely happened in suicidal cases, but if a bullet showed anteriorly it is most likely the case of homicide (Tütüncüler et al., 2015). Since some suicidal entrances sustained with a single-handed weapon and two-handed weapon are less likely to be used.

DISCUSSION

The age distribution of suicides and homicides in this study was similar to that found in other reports and this study also shows that the mean age for suicidal and homicides tend to be higher. A study of Linköping shows, that consecutive firearm suicide occurs in females. Similarly, another study shows a low figure in the study of Denmark and Germany where women constituted 21% and 18% than male. In comparison to the official statistics of Sweden, found that 19% of the men and only 2% of the female chooses this kind of death (Thomsen et al., 2021). This pattern of deaths is far different in US countries (Maghin et al., 2019). Data revealed that the majority of the suicides were committed at home or in close vicinity of the home. Previous reports showed that approximately 40% of the homicide victims had been shot at their homes (Gitto et al., 2021).

Weapons such as shotguns were the most frequent ones used in all groups being responsible for about half of the homicidal and suicidal deaths. A similar proportion of deaths was also found in England and Denmark. Weapons used in this study were purchased and stolen for this particular purpose (Godhi et al., 2011). Due to the nature of the study, several variables like geographical distribution of cases, comparison between suicidal and homicidal deaths could not be done (Khunkitti and Nusri-un, 2018). To some extent it has been done on the type of places where homicide and suicide occur. Two cases were excluded due to insufficient information on the site of an entrance wound. Due to the nature of the study, some variables like age, gender, range of shooting, and the entrance of bullets don't affect it.

The wounds have penetrated the normal areas of suicide. However, as an excessively man-made gunshot wound can strike any part of the body, other fatal wounds are also expected to penetrate the suicide scene. In fact, in this study, 38% of fatal wounds reached these areas (Hejna et al., 2012). Therefore, if the way to death should be based on this one factor, one-third of gun-related killings could be it is considered suicide. However, the impetus for this study is that it is internal the bullet method of a particular entry site can vary between murder and suicide characters. In other words, if a suicide victim points a weapon somewhere, the differences in the teaching of the alphabetical index can be limited by anatomical reasons.

Previously the direction of the internal bullet path has only been defined in the literature. In a homicide case where the victim sustained a handgun wound in the mouth and findings concluded that a horizontal direction increases suspicion. The reasons behind finding the close range in female deaths that murdered by a relative who wanted to make sure that victim is dead, whereas male victim mostly died in the fight.

CONCLUSION

According to this study, doubt of homicide should be aroused when the shotgun victim is female, found outdoor, away from home, and when the murder/death weapon is missing. Autopsy findings

suggested that multiple wounds, entrance sites, and distant wounds could be useful in the interpretation of death. The direction of the bullet must be carefully investigated in all cases of fatalities.

REFERENCES

1. ADAMS, J. L. 2020. An Unusual Case of multiple-Gunshot Suicide with Nine Gunshot Wounds by an Active-Duty Soldier. *Journal of Forensic Identification*, 70, 395-405.
2. GITTO, L., ARUNKUMAR, P., SEGOVIA, A., FILKINS, J. A., FORMICA, M. K. & SERINELLI, S. 2021. Anatomical distribution and autopsy features of gunshot injuries to support the manner of death. *Journal of forensic and legal medicine*, 79, 102135.
3. GODHI, S., MITTAL, G. S. & KUKREJA, P. 2011. Gunshot injury in the neck with an atypical bullet trajectory. *Journal of maxillofacial and oral surgery*, 10, 80-84.
4. HEJNA, P., ŠAFR, M. & ZÁTOPKOVÁ, L. 2012. The ability to act—multiple suicidal gunshot wounds. *Journal of forensic and legal medicine*, 19, 1-6.
5. KHUNKITTI, W. & NUSRI-UN, N. 2018. Forensic Autopsy of Gunshot Suicide: Cases Study in Srinagarind Hospital, Faculty of Medicine, Khon Kaen University. *Srinagarind Medical Journal*, 33, 247-250.
6. MAGHIN, F., ANTONIETTI, A., FARINA, D., BENEDETTI, P. & VERZELETTI, A. 2019. A case of suicide by double gunshot wounds to the head: the ability to act after the first shot. *International journal of legal medicine*, 133, 1469-1476.
7. MUKOYAMA, H., RIEDERER, J., SELLIER, K., SETA, S., THATCHER, P. & THORNTON, J. 2012. *Forensic Science Progress*, Springer Science & Business Media.
8. THOMSEN, A. H., LETH, P. M., HOUGEN, H. P. & VILLESSEN, P. 2021. Gunshot homicides in Denmark 1992–2016. *International journal of legal medicine*, 1-8.
9. TÛTÛNCÛLER, A., ÖZER, E., KARAGÖZ, Y. M. & BEYAZTAŞ, F. Y. 2015. Evaluation of femicide cases committed between the years 1996–2005 in antalya. *OMEGA-Journal of death and dying*, 71, 198-210.